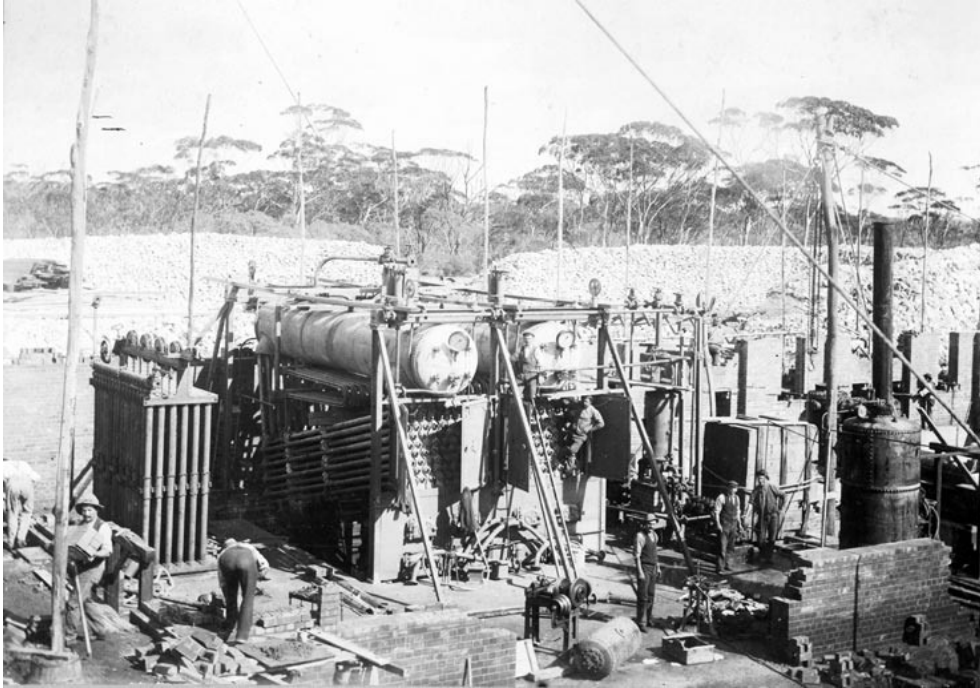


Construction of a pumping station, 1901



Description

This is a black-and-white photograph of a pumping station being built along the route of a pipeline to supply water to arid gold fields in Western Australia. Some men are laying the bricks that were to form the outer wall of the pumping station and, in the skeleton of a boiler room, two boilers that will generate the steam to drive the pumping engines are under construction. In the background are piles of stone and rubble to be re-used for further construction. The photograph measures 21 cm x 16 cm.

Educational value

- Pumps were a crucial part of the infrastructure of the Coolgardie Water Supply Scheme. Eight steam-powered pumping stations were constructed as part of the project designed to pipe water 560 km from a dam on the outskirts of Perth to WA's arid gold fields along what was, in the early 1900s, the world's longest freshwater pipeline. A shortage of fresh water had impeded development and resulted in death and disease from insanitary conditions before the Scheme successfully solved the problem.
- There was one steam boiler for each of the pumping engines in the eight pumping stations. The first four pumping stations each had three engines and three boilers, while the remaining four needed only two pumping engines and two boilers each because they were situated in flatter country, thus making 20 'pumping sets' (boilers and pumps) in all. Two of the boilers that generated steam to power the water pumps are visible in this photograph. The walls of the boiler house and adjoining engine house were built around the equipment, as it was not possible to manoeuvre the large parts into a completed building.
- The boilers shown were imported from Britain, manufactured by Babcock and Wilcox, a US firm with manufacturing works in Glasgow and London.
- The 20 'pumping sets' for the Scheme were transported by ship to WA in a total of 5,000 packing cases. Each engine, along with its accompanying boiler, was



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allocated a distinctive colour and letter (A-T) to ensure the correct parts were sent to the correct pumping station. Cases were painted and numbered for transportation according to this system. Railway, shipping and wharf workers used the colours and letters to send containers to their correct destinations. Across the entire Scheme only one complaint was made, for a missing half-inch (1.27-cm) hydraulic valve.

- The Coolgardie Scheme used some of the latest developments in boiler technology at the time. Each boiler had a firebox, or furnace, at the base to heat the water. Water to be boiled circulated between the cylindrical drum at the top and the long inclined tubes at the bottom. Steam from the boiling water was then directed through the superheater (the U-shaped tubes immediately below the drum), which heated it to dry steam, ensuring that no moisture was carried over to the engines. The nest of vertical tubes on the left of the boilers in the photograph is an economiser, through which exhaust gases from the furnaces were passed to preheat the water in the tubes before it entered the drums. The tubework and furnace were eventually enclosed in firebricks for insulation.
- One of the reasons for the pipeline's success was that it was actually constructed as eight discrete sections. Each section had a receiving tank from which the pumps drew water to send on to the next pumping station, and this pattern repeated along the length of the pipeline. Critics of the Scheme had claimed that water could not be lifted so high or pumped so far, but in fact each pumping station pumped water only as far as the next receiving tank, across distances and up to heights that had been achieved previously. Excavation for one such receiving tank is visible in the background of the photograph.
- The construction of the pipeline provided considerable employment in WA, with hundreds of men being employed in constructing the pumping stations along the pipeline's route. Employment was maximised because much of the work had to be done by hand. Because of the short timeframe given for completion of the contract, work was carried on simultaneously at the eight stations.
- A major engineering feat for its time, the Scheme was officially opened in January 1903 and is still in operation. It continues to draw water from the original dam and still uses more than half of the original pipes, although the steam-powered engines have been replaced by electric pumps.

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