

## Building the weir wall at Mundaring, 1902



### Description

This is a black-and-white photograph that shows a section of the wall of the storage dam built for Western Australia's Coolgardie Water Supply Scheme while it was under construction. The photograph, taken in 1902 from the southern side of the dam, looking across the length of the wall, shows the methods used in building the concrete wall. The photograph indicates the large number of workers, the buildings and the equipment needed to build the dam. It measures 15 cm x 11 cm.

### Educational value

- The photograph depicts the building of the wall of Mundaring Weir, the dam built to store water for the Coolgardie Water Supply Scheme. The Scheme involves pumping water from this dam, near Perth, along a 560-km pipeline to WA's gold fields, raising the water 390 m from source to destination. The Scheme is an engineering feat that attracted worldwide attention at the time and has been declared a national engineering landmark. It is still in operation today.
- In the 1890s prospectors rushed to the areas that became known as Coolgardie and Kalgoorlie following rich discoveries of gold. Water was so scarce in the arid gold fields region that some men literally died of thirst, while others died of diseases spread by lack of sanitation and clean water. The gold-mining industry and the railways also needed water. Attempts to obtain water from local underground sources and dams proved unsustainable and finally it was decided that a pipeline was the only viable solution.
- Large granite boulders known as 'plums' can be seen on the wall near the group of men. Plums were embedded in the concrete to minimise the amount of cement used in construction and to help one layer of concrete bond to the next. Up to 1.5 cubic m in volume, they came from a quarry below the weir site. The original plans called for 50 per cent of the wall to consist of these large rough granite blocks but without the appropriate equipment this was not feasible. Once



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a layer of concrete had been poured and spread, the plums were dropped into place. They were thoroughly bedded in before the next layer was poured in order to 'key' the layers together.

- The large derrick crane, and the travelling steam crane (in the centre of the wall) were used to handle skips containing concrete for the dam wall. The concrete skips were conveyed on a trolley line from the mixing house to the derrick crane, which had a boom to lift the skips onto temporary tramlines on the growing wall. The trolleys were then pushed by hand to the steam crane, which lifted each skip then overturned it, emptied it and returned it to its trolley. The only known fatality during the construction of the Weir occurred during this operation. In February 1901 a rope became entangled when a labourer was hooking a skip to the steam crane. He was left dangling over the wall, lost his hold and fell. He hit projecting timber before hitting the water 11 m below.
- The cement 'slaking shed' is visible in the top left of the photograph. This shed was needed because the imported cement required airing before use so it could absorb moisture and start a chemical reaction that resulted in a better quality concrete. The construction of the weir wall required 76,418 casks of cement, most of it from Britain and some of it from Germany. The cement took at least six weeks to reach the port of Fremantle by steamship. By sailing ship its journey took 90-100 days.
- A railway spur line, visible in the background, was built to the site and opened on 1 June 1898. The spur was used to bring all the material for the dam wall, including cement and sand, except the crushed stone for the concrete. The line was also used to transport pumping equipment, fuel and other materials to the pumping station at the foot of the dam.

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