

Douglas Fir

Oregon timber

Pseudotsuga menziesii

Broken Hill is over 1,000 km west of Sydney. How did the timber from a west coast North American conifer play such an important part in the development of this mining city in a semi-arid region of Australia?

Other than *Sequoia sempervirens* (Californian Redwood), at 90 metres or more in height, Douglas Fir is the tallest conifer in the Pacific Northwest of North America. There are two varieties: *P. menziesii* var. *menziesii*, the Coast Douglas, southern Canada through to the coastal ranges of California; *P. menziesii* var. *glauca*, the Rocky Mountain Douglas Fir that extends south to Mexico.



Douglas Fir, cone and foliage: Walter Siegmund, CC BY-SA 3.0 <<http://creativecommons.org/licenses/by-sa/3.0/>>, via Wikimedia Commons



Pseudotsuga menziesii – Douglas Fir – in natural environment. Walter Siegmund, CC BY-SA 3.0 <<http://creativecommons.org/licenses/by-sa/3.0/>>, via Wikimedia Commons



Douglas Fir, *Pseudotsuga menziesii*, courtesy Dural Christmas Tree Farm.



Photo courtesy of Dural Christmas Tree Farm

These days in Australia, young Douglas Fir trees are very popular as Christmas trees but the timber, commonly referred to as *oregon*, had greater significance in times past. Indeed, it was probably the best known timber in the world, and vast quantities were exported, particularly to Australia for house construction. It has now largely been replaced by plantation-grown Radiata Pine – *Pinus radiata*.

Broken Hill, rich in silver, lead and zinc, was undoubtedly one of the greatest mineral deposits in the world. In 1883, Charles Rasp, a German station hand on nearby Mt Gipps Station and with some knowledge of mineralogy, discovered silver and lead and subsequently, with six others from the property on which he worked, set up a syndicate to establish mineral leases on the odd shaped hill now known as Broken Hill. In June, 1885, the Broken Hill Proprietary Company Limited was floated and paid substantial profits as early as 1891.

However, problems with cave-ins beset early mining endeavours. Amongst other problems, underground chambers were not backfilled with rock leading to subsidence, and there were problems with stability of the workings. There was an urgent need for reinforcement.

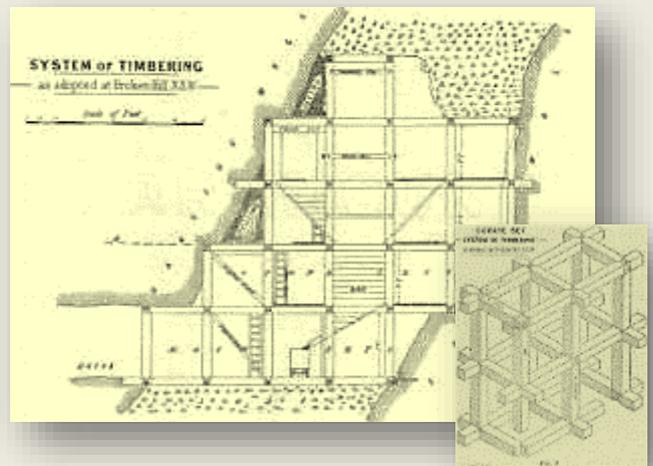




Broken Hill has a distinct lack of trees, especially because any trees within 100 km of Broken Hill had already been cut down for use in the mines, for housing or fuel. Furthermore, South Australia had minimal timber resources compared to the coastal forests of eastern Australia that were rich in hardwood species.

In 1887, American mining engineer William Patton took over the management of BHP. He is remembered for developing advances in mining technology, in particular *square-set timbering* and chose *oregon*, shipped from North America, to resolve the shortage of timber needed for the mines in Broken Hill. The principle of square-set timbering is to use oregon timber to build strong scaffolding to fill the

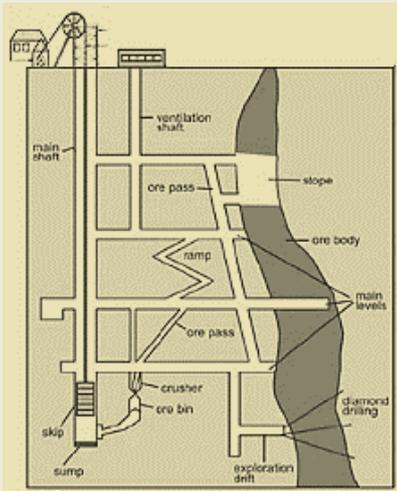
open spaces between the floor and the roof of each stope (the open space left behind when ore has been removed). Square-set timbering provided temporary support for roof and walls and prevented small rock falls.



Oregon square-set timbering clearly visible, exposed in the Kintore Open Cut mine at Broken Hill. The open cut pit encompassed the original Kintore shaft and underground mine. The stopes had been backfilled with tailings from the mill. Photo: David Edgecombe.

Despite shipping costs there were many advantages in using Oregon timber. Oregon was known to creak and splinter, giving advance warning to miners of significant ground movement. The wood is exceptionally strong, prized for heavy construction, has a uniform, long fibrous grain, and can be produced in very long lengths, up to ~ 20 metres, with

relatively few knots. When a mine closed, most of the timber could not be retrieved. These days, square-set timbering has been replaced by steel rock bolts, mesh and sprayed concrete, and the use of steel props where the ground is poor.



Mines are not unlike icebergs, little visible above the surface, massive construction underground.



Oregon timber used in the head frame erected over the Browne Shaft at Broken Hill in the 1890s, is still in exceptionally good condition.

The quantity of timber shipped from the west coast of North America to Broken Hill is staggering. Up until June, 1964, the Silverton Tramway Company Ltd had shipped in more than 1,300, 000 tonnes of timber!

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