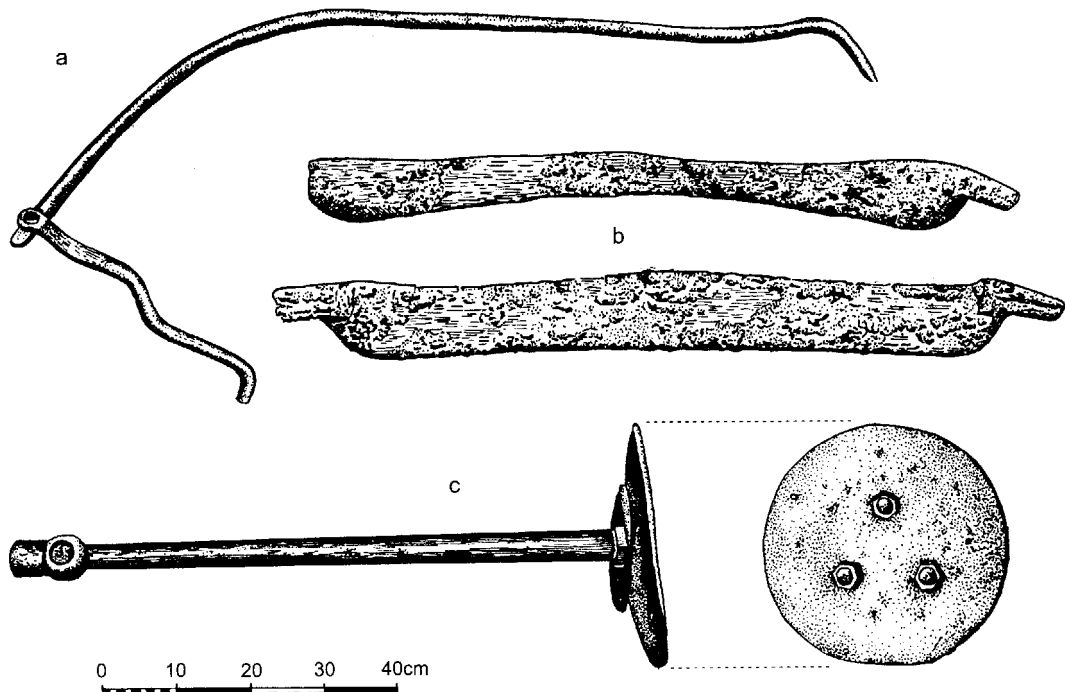


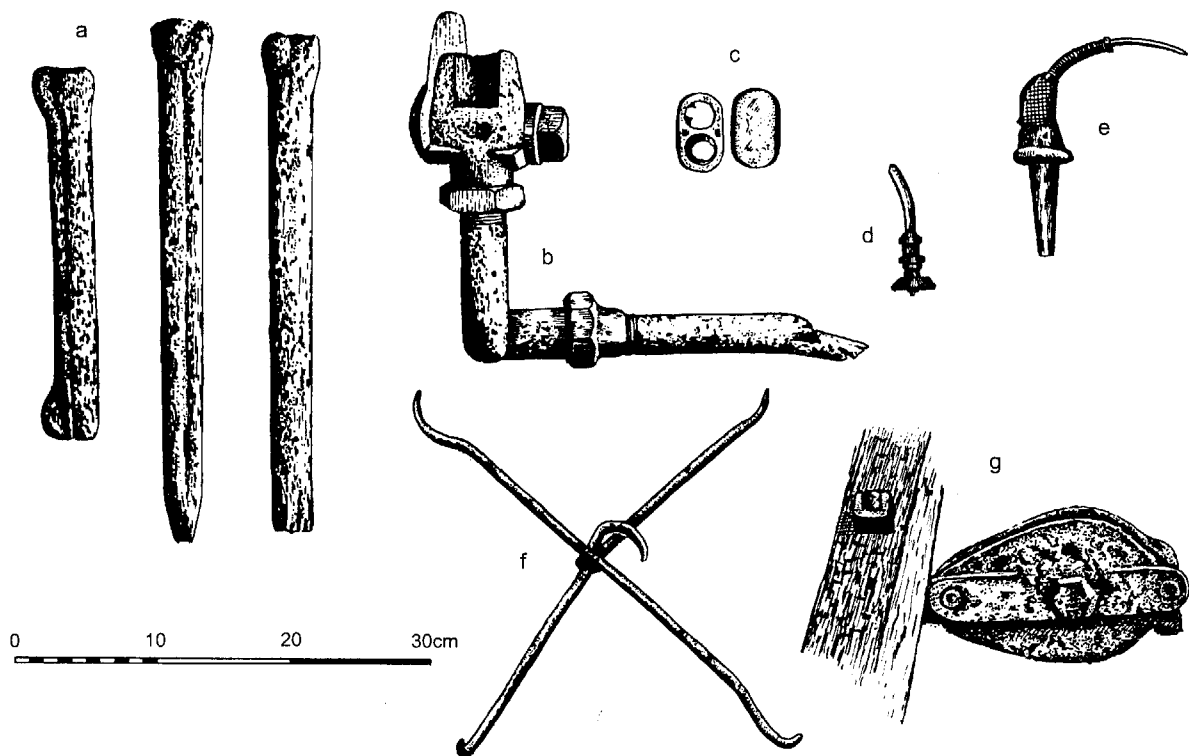
Supplement

Iron artefacts and the whim spindle

In February 2000 at Reefton, Kevin Jones and Chris Edkins (science illustrator, Science & Research Unit, DOC) recorded and drew a number of iron artefacts, especially those relating to the engine house and bath house, and the whim spindle. On this occasion aerial photographs were also taken (see Frontispiece).



(a) Handle probably for operating vents or flues on the boiler stack. (b) Firebars from a dump of firebars in the mullock behind the engine house. These were arranged in an array to form the grate of the boiler. (c) Indicator plate mounted on winding engine and which indicated position of cage within the shaft.



(a) Spent rock drills from engineer's shop vicinity. (b) Pressure gauge holder from engine. (c) Part of snuff box. (d) Part of door handle assembly, engine house. (e) Plunger mechanism from oil can. (f) Wrought iron suspended clothes hook from bath house vicinity. (g) Pulley and part of beam, probably a small derrick rig, found by floor plate of the engine house partition.

Whim spindle description

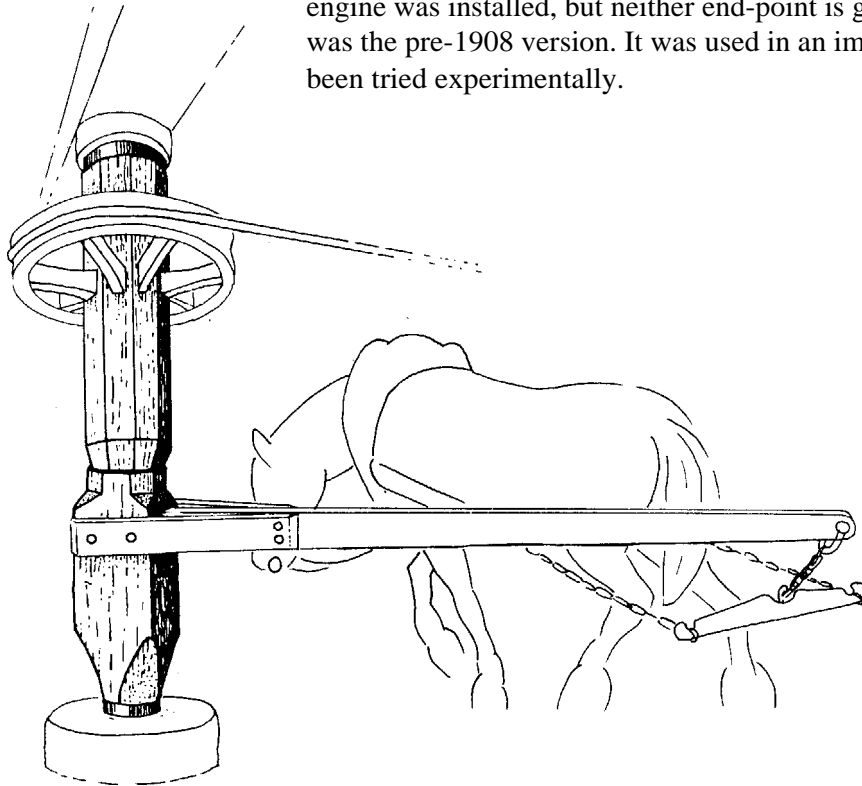
The wood appears to be an Australian hardwood, although this remains to be confirmed. The spindle was the vertical central axis of a drive mechanism for the upper return wheel of the aerial cableway for the ore buckets, estimated to have been in use c. 1890-1910. Extra power was needed for the cableway because there was not quite enough fall to the stamper battery. One end of a beam was pulled around in a circle by a horse, the other end being cantilevered and bolted or braced on to the spindle (see bolt in figure). Further along the spindle were mortices for the spokes of a drive wheel which would have carried a belt across to the return wheel of the cableway.

The spindle is 230 cm long with a steel collar and stub axle at either end to mount in a framework. The end to which the beam was fixed is 34 cm square and the section is taken by way of a chamfer to an hexagonal section at the wheel spoke end. The mortices are marked by Roman numerals and an Arabic 4. The spindle appears to have been designed to operate with the horse working below the power take off wheel. The figure opposite shows a speculative assembly with the horse at work under a beam into which the upper stub axle fitted. The figure also shows the use of the swingle tree connecting the traces to the beam.

The spindle may have had a long lifetime of use of which Big River was the last phase. There is a secondary collar or bearing towards the centre of the spindle and just below the beam mortices. This is 'lined' with bent iron nails hammered into the surface, and appears to have been a bearing surface at some point in the

life of the spindle. Instead of the spindle being pivoted between beams in a frame, at that time it appears to have been held in position by a bottom pivot and by the secondary collar, while the horse walked around the platform which contained the bearing which enclosed the secondary collar. The vertical orientation would have been reversed from the arrangement as designed and shown below.

Using bent nails as a bearing surface has to be the most improvised of all bush engineering. Perhaps this provides a clue to its use. The quartz aerial cableway needed whim assistance because of the limited fall down to the battery. If so, there would be a limited and perhaps variable amount of power needed to drive the system and the collared interpretation would come very much into the picture. The whim was replaced in 1908 and continued until a small Tangye air engine was installed, but neither end-point is given. We suggest that the spindle was the pre-1908 version. It was used in an improvised set-up, which may have been tried experimentally.



Speculative assembly and use of the whim spindle.

Whim spindle. The bottom view has been rotated through 45 degrees.

