

## NOTES ON STONE HAMMERS

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**Abstract:** Stone hammers from Cwmystwyth in mid Wales, and Chuquicamata in northern Chile are described, and experimental reconstructions of working hammers are compared with an original.

This brief note on stone mining hammers compares material from Cwmystwyth in central Wales, Chuquicamata in northern Chile, and hammers that we have made and used in our firesetting and mining experiments.

I will start with a brief description of the hammers from Copa Hill, Cwmystwyth (Figures 1, 2 & 3). These examples are from dated Bronze Age contexts, not surface finds, although similar hammers can be found on the old tips on the side of the hill.

Fig. 1 This is a hammer with no notches or modification for hafting, but it almost certainly originally had a withey handle. It has only been used on the broad end, and this would tend to push the stone more firmly into its handle with each stroke, making modification unnecessary.

Fig. 2 This hammer is similar in shape to

the previous piece but has been used on both ends. Its first use was on the broad end, probably without modification. To enable the stone to be used on the other end an area has been roughened on one side and a notch has been made on the other. This notch was made after the broad end had been broken, as it just goes over the edge of the flake scar which has also had its sharp edges blunted. The pecked area in the middle may be from secondary use as an anvil, but it is more likely to have been deliberate removal of the sharp flake edges which could have cut into the subsequent hafting.

Fig. 3 This piece has had heavy use on both ends. The first use was on the lower end using the notch on the left to facilitate hafting until the large flake came off. Then the notch was extended over the flake scar making a partial groove and the stone was hafted again for use on the other (upper) end, until the stone finally

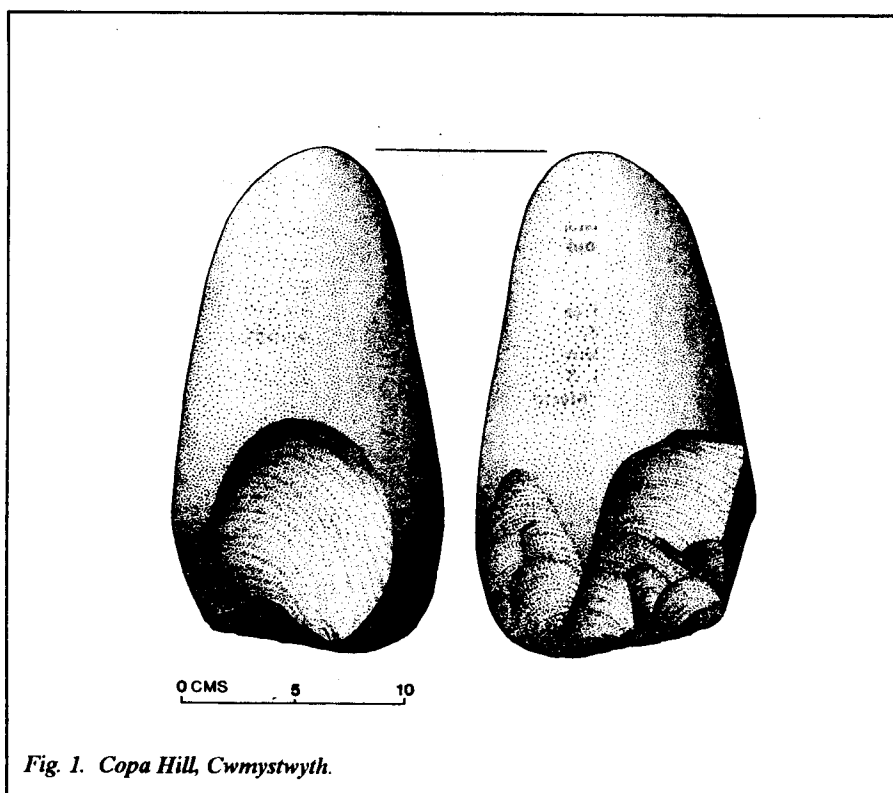


Fig. 1. Copa Hill, Cwmystwyth.

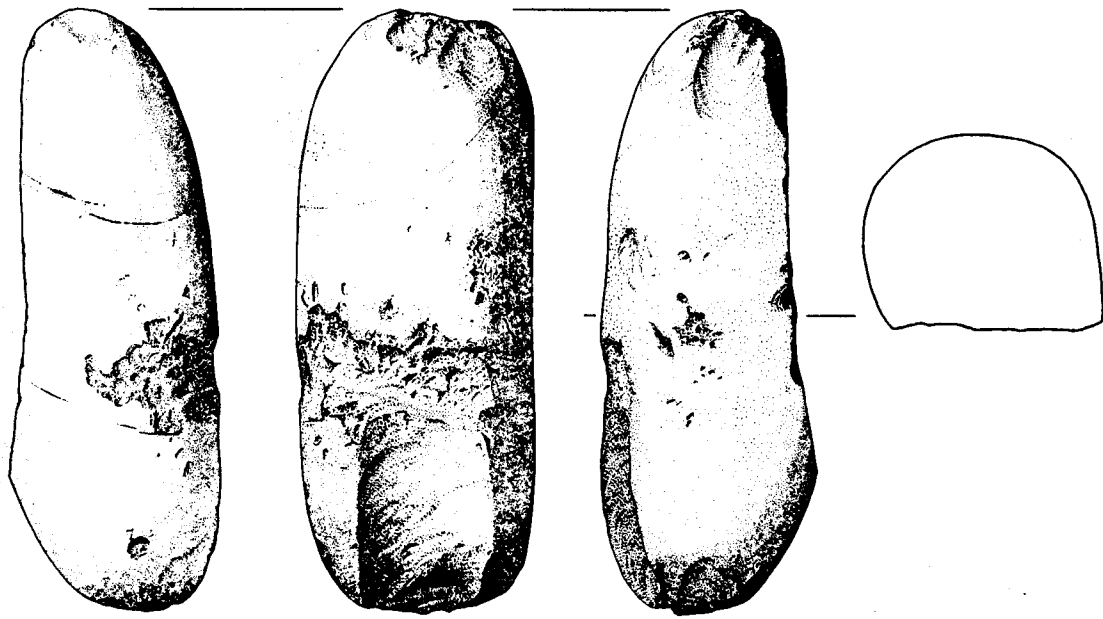
split and was abandoned.

Our knowledge of how these stones were hafted has come from various sources; the twisted hazel handle from Mt. Gabriel (O'Brien 1990) and the tools found with the 'Copper man' at Chuquicamata in Chile (Bird 1979, Weisgerber 1992).

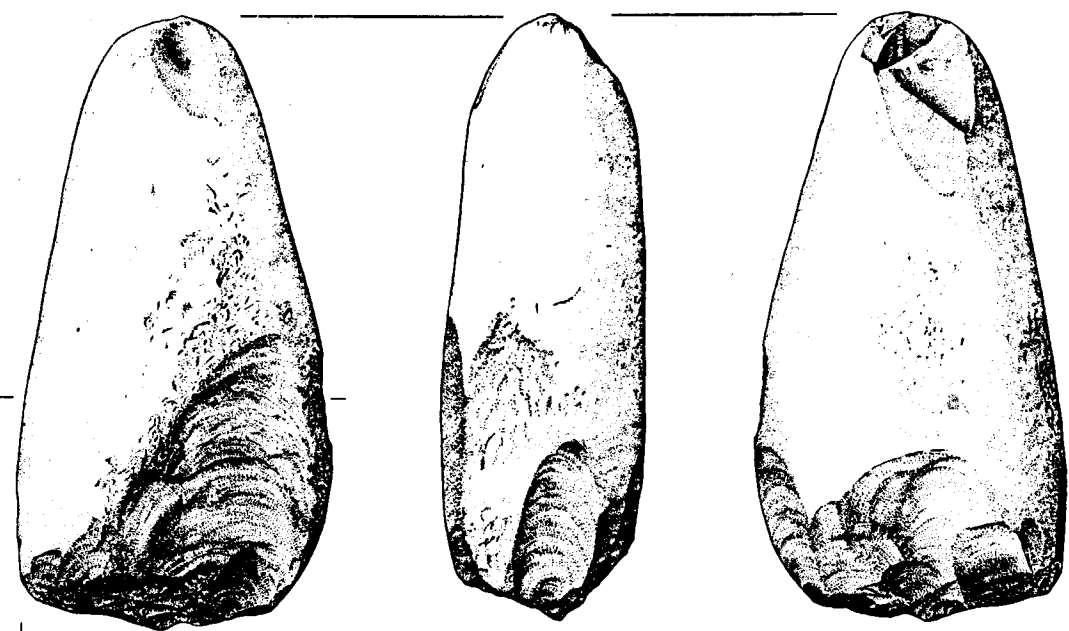
The tool in figure 4 was found at Chuquicamata in the early years of this century, although apparently not with the 'Copper man'. It was examined in the British Museum in 1992 whence I had the opportunity to study it and make measured drawings. It has a provenance within the mine, but at present its connection with the previous discoveries is not known. Material associated with the buried miner has been dated to around 500 AD. The stone is a granite, and therefore very hard. I was unable to ascertain if there had been any modifications as the hafting covers the places where I would expect to find them, and radiography proved inconclusive. The handle is of one continuous piece of round wood about two cm in diameter, with the bark still on in places. The wood has been twisted in the middle to break out the fibres which enabled it then to be bent round into a loop. The stone was secured by two pieces of rawhide (llama ?), each about two metres long. Except for the drawing together of the two ends of the handle, the lashings seem to have no particularly logical or symmetrical course. They were bound round the body of the stone, threaded through any convenient gap and were finally tied off and the ends tucked in. A short third piece of rawhide binds the two handles together at the top. It is hoped to publish a fuller description of this hammer, with dates and identification of the materials in 1995.

The stone hammers in the photographs have been used in the Early Mines Group firesetting and mining experiments (Timberlake 1990, Craddock 1990). They were made before I had the opportunity to study the Chuquicamata hammer at the British Museum, and these reconstructions were based on the rather poor original photographs reproduced in Bird's 1979 article, and on various ethnographic pieces.

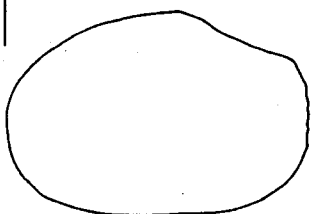
Plate 1 Hafted hammers. The smaller hammer weighs 1.5 kg. This is its second hafting; it has three notches only two of which are used by the present haft. The notches' basic function is to reduce the angle through which the withey has to bend as well as holding it in position. The withey was used double as it is only 0.5 cm average diameter. The lashings are of rawhide (a 'dog chew', from the pet shop!) and hand-made hemp string. After firesetting two people mined a



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Fig. 2 (top). Fig. 3 (bottom). Stone hammers from Cwmystwyth.

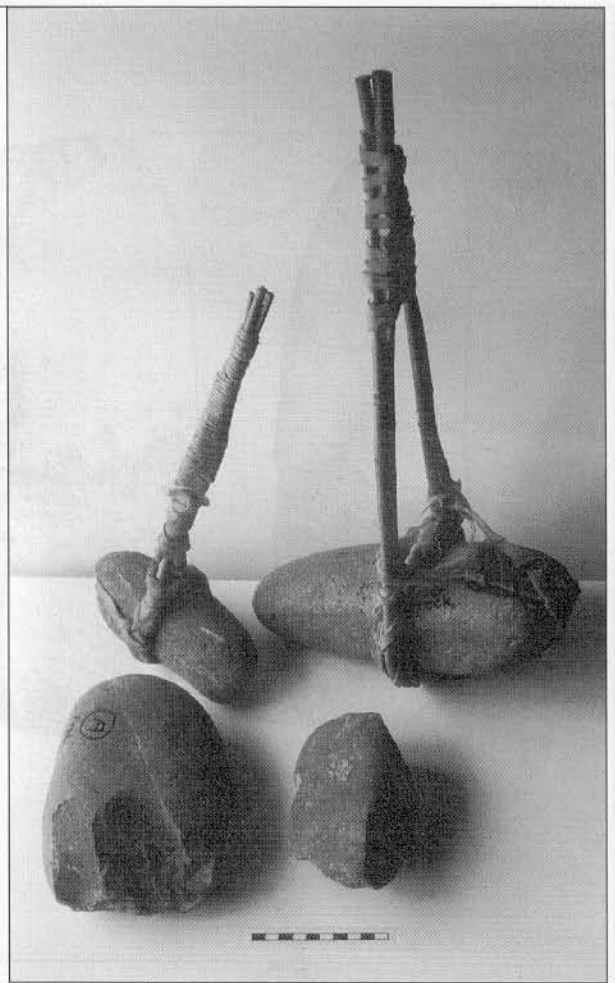
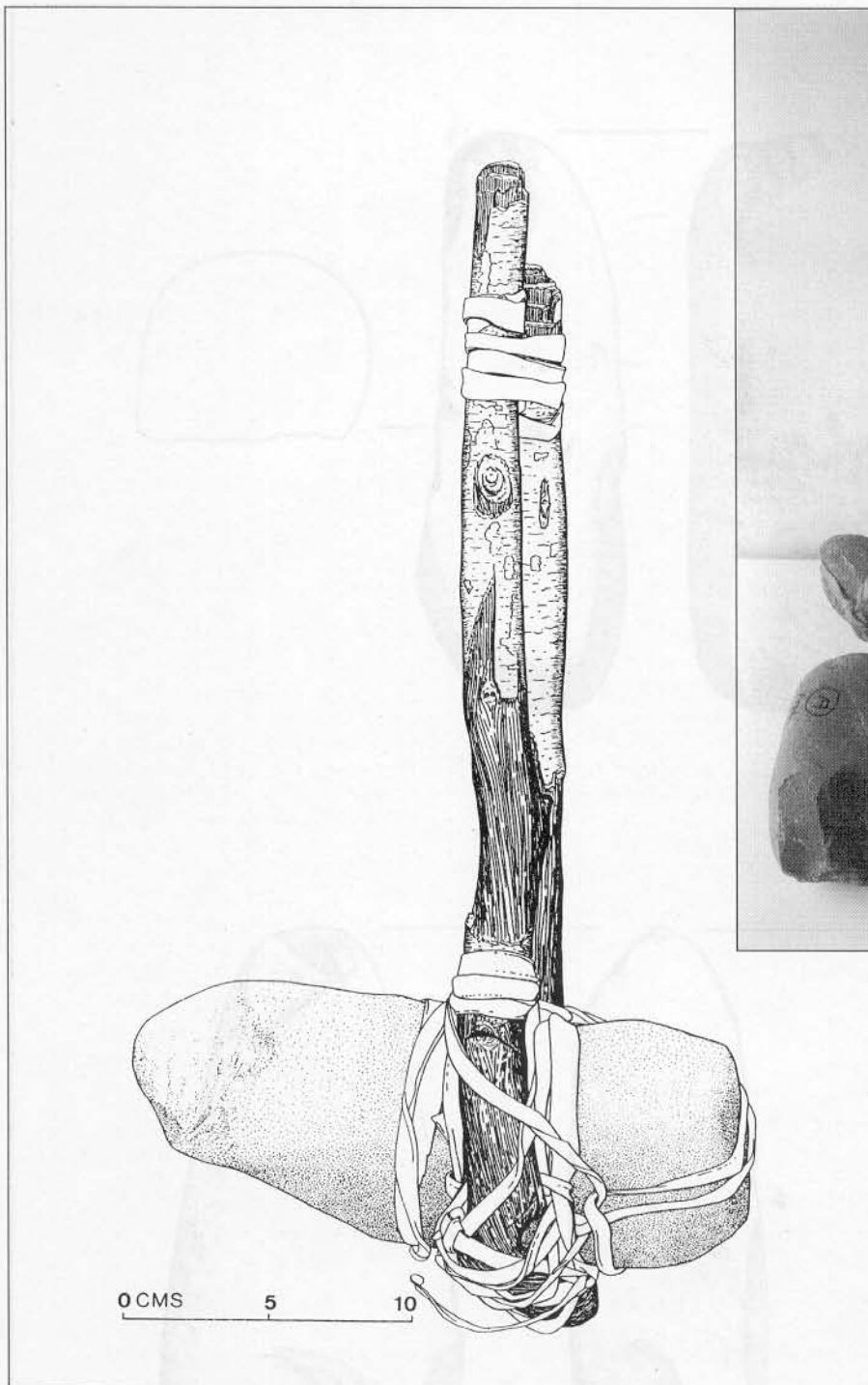


Plate 1 (top right) Reconstructed hammers.  
Fig. 4 (below) The Chuquicamata stone hammer

tonne of rock using this hammer and an antler pick in less than five hours.

The large hammer weighs five kg and is the largest stone I have hafted to date. The stone has three notches all used by this hafting, which is of a double withey of a centimetre diameter. The lashings are of rawhide as before. This tool has not yet been used.

Plate 1 Unhafted stones that we have used in previous firesetting experiments. The large stone was first used at Cwmystwyth in 1989 (Timberlake 1990), and then rehafted and used again at Plas Tan y

Bwlch where it was hammer No. 1 (Craddock 1990), the smaller hammer was hammer No. 3 in the same experiments. The damage to the working ends is clearly visible and the handles have been removed to expose the hafting notches and modifications. The pattern of wear, damage and modification closely resembles that found on the Bronze Age originals.

#### ACKNOWLEDGEMENTS

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