Early Mining and Metalworking: its impact on the Environment
T M Mighall and F M Chambers

Abstract

Historic mining and metalworking has altered the landscape in numerous ways, including changes in woodland composition, promoting river valley alluviation and sedimentation, and possibly causing pollution on a local scale. However, until recently, relatively little was known about the environmental impact of early mining and metalworking. This paper provides a review of new research, based on archaeological and palaeoenvironmental analyses (principally of pollen), which examines the effect of early metallurgical industries on the landscape, in particular on woodlands. Results from pollen analysis of peat deposits adjacent to two Bronze Age copper mines and one Iron Age ironworking site suggest that early mining and metalworking activities did not have a severe impact on woodlands. Woodland clearances were generally small-scale during the inferred period of industrial operations.

Introduction

There is a reasonable amount of evidence to suggest that mining and metalworking played some part in bringing about, or contributing to, environmental changes since Medieval times. Studies have shown that during the historic period, mining and metalworking activities utilised large amounts of timber which resulted in woodlands being either managed or destroyed (Darby 1951, 1956, Lindsay 1975, Rackham 1986). Changes in the geomorphology and alluviation of river valleys, as well as heavy metal contamination, have been linked with historic coal and metal mining in parts of Britain (Lewin et al 1983, Macklin and Lewin 1986, Macklin et al 1991). In recent years there has been a marked growth of archaeological interest in early mining and metalworking in prehistoric Europe (Aiano 1977, Scott and Cleere 1980, Tylecote 1986, 1987, Ellis-Jones 1988, Crew and Crew 1990, Shepherd 1980, 1993) but the environmental impact of such sites is still relatively unknown. However, there is abundant evidence to suggest that prehistoric cultures exploited the natural environment in numerous ways and with increasing intensity. The adoption of agricultural practices contributed to widespread woodland clearance, especially from the Bronze Age onwards (Evans et al 1975, Jones 1988, Birks et al 1988, Chambers 1993). Pollen analysis is the main approach that has been used to assess the environmental impact of prehistoric cultures, yet only a few pollen-analytical studies have considered the effect of metalworking practices on the landscape. For example, Pott (1986) has conducted a pollen-analytical study to look at the effect of ironworking and agriculture on woodlands in southern Germany. This paper sets out to redress the balance by examining recent palaeoenvironmental and archaeological evidence for environmental disturbance as a result of early mining and metalworking activity in the British Isles. Where appropriate some comparisons and contrasts will be made with the mining and metallurgical industry in historical times.

Archaeological evidence

So far, any discussion concerning the exploitation of woodlands for fuel during prehistoric times has been generalised and lacks firm evidence. More attention has been given to establishing the amount of wood fuel required to sustain prehistoric mining and metalworking operations. This has generally been accomplished in