Compton Martin Ochre Mine, Somerset

[ST 542 567]

Introduction

This GCR site lies on the east side of Compton Combe, south of the village of Compton Martin (see (Figure 6.8)). At this locality, iron mineralization (red ochre) in the Triassic Dolomitic Conglomerate and the relationship between mineralization and stratigraphy were available for study underground and in surface exposures on the eastern fringe of Compton Wood. The mine is said to have been worked between 1910 and 1960. Exposures are extensive and accessible but unsafe in places: The site provides evidence for the relationship between the various ochre-types and the country rocks.

Description

Compton Combe is a steep valley formed in the Hotwells Limestone Formation of the Carboniferous Limestone. The limestones have been extensively quarried on the west side of the valley for ochre. In the quarries the limestones dip at 40°W to the north-east. A short distance up the Combe, the Triassic Dolomitic Conglomerate is seen to be directly overlying the Carboniferous Limestone and can be traced, thickening, up the east side. The mine is situated within the Dolomitic Conglomerate, consisting here of fine-grained sedimentary rocks with scattered pebbly layers. Much of the description presented here is based on the unpublished work of W.I. Stanton (pers. comm.). This locality is the largest, best-preserved and most accessible of the red-ochre workings of the Mendip area.

The ochre bed forms part of the local Dolomitic Conglomerate succession, which is coloured bright-red by disseminated hematite over a wide area of the surrounding country. The bed, about 2 m thick, dips at about 20° to the east. It consists of mudstones and pebbly sandstones, brilliant red in colour, and soft enough to be easily worked by hand, or with a pick and shovel. There is a vague internal stratification. Irregular lenses of harder material are scattered through the bed and appear to be calcite and/or quartz impregnations. The mine galleries terminate, in a southerly direction, where this harder material is so plentiful as to make the ochre bed difficult to work.

The roof bed is much harder, more calcareous and less ferruginous, but is still fine-grained. At the mine entrance the ochre bed is seen to be overlain by about 5 m of these harder beds, which are overlain in turn by conglomerates. The floor bed is never fully seen in section.

Near the mine entrance, large vugs lined with quartz crystals (geodes) are present on the west wall of the main gallery. At one point, near the south end of the workings, a small irregular calcite vein cuts the ochre bed, and contains blebs of galena. Accompanying it is a thin neptunian dyke of pale greenish-grey porcellaneous limestone.

The microconglomerates of the ochre bed are composed of a jumbled mass of small (0.2–1.5 mm) grains of red, brown, and sometimes yellow, iron oxides and hydroxides, locally showing a concretionary or oolitic structure. The grains are often ooliths or sub-rounded to rounded fragments. The matrix varies from red ferruginous mudstone like that elsewhere in the ochre bed to (in the hard patches) calcite or clear quartz. The latter may be a later infilling as it seems to be continuous with thin cross-cutting veins of clear quartz.

Interpretation

The ochre bed is thought by Stanton (pers. comm.) to have been deposited in water as a layered mass of iron oxide pellets of various types, perhaps in an ephemeral lake or a pond fed by hot springs, in the Triassic desert, not formed by the replacement of pre-existing sediments by iron minerals. However, a source of the iron from a lateritic regolith overlying the Coal Measures and mulling a karstic surface seems more likely, although certain features of the deposit are consistent with water-saturated lateritic regolith locally reworked in a spring-fed lake.

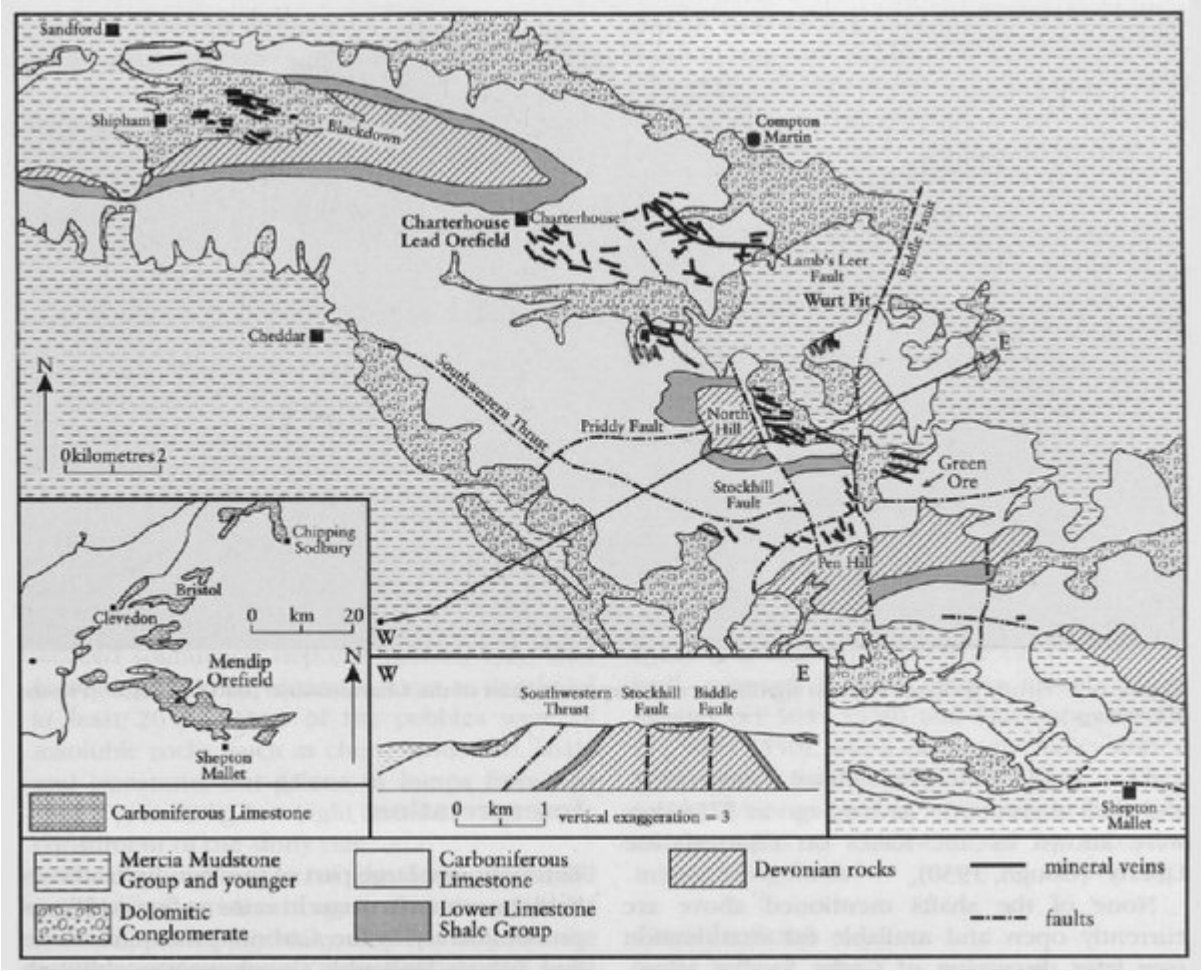
Alabaster (1982) argued that ochre is believed to represent largely an alteration product of massive iron ores. Certainly many of the varied deposits at the Compton Martin Ochre Mine GCR site have formed from a combination of mechanical transport of eroded iron ore and direct chemical precipitation of iron minerals from highly ferruginous groundwaters.

Lenses, pods and impregnations of quartz and calcite are a further feature of the Compton Martin deposit, leading to many vugs lined with quartz. Again, this phase of silicification appears to be a later event than the iron mineralization and may have been responsible for modification of the iron ores.

Conclusions

The Compton Martin deposit provides interesting comparisons with the supposed origin of the replacement iron ores at the Hartcliff Rocks Quarry GCR site and Winford. Exposures at Compton Martin are considered to provide evidence that iron mineralization in the Triassic rocks of the site area represents saturation of a lateritic regolith with ground water issuing from temporary springs. The site provides the best-preserved and most accessible of the red ochre workings of the Mendip Hills region.

References



(Figure 6.8) Outline map of the Mendip Orefield showing the location of the Charterhouse Lead Orefield, Wurt Pit and Compton Martin Ochre Mine GCR sites. Based on Ford (1976), and Pattrick and Poyla (1993).