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DRAWING ANCIENT MINES

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Abstract: The advantages of drawing poorly lit and awkwardly shaped mine workings over the use of photography are discussed and illustrated.

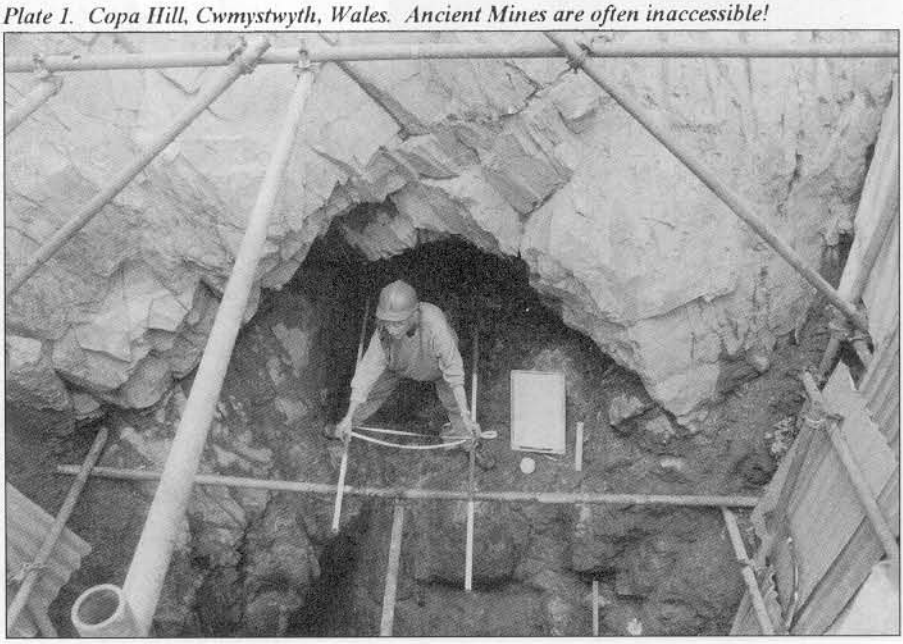
The question people always ask is "why don't you just take a photograph?" The answer to this question is "we do", but for various reasons it is sometimes better to have a drawing as well. We have all seen the fuzzy grey unidentifiable products occupying space in many publications. This, to do the photographer justice, is often a problem in the reproduction process. A pen and ink drawing however reproduces well and can place emphasis on the features you want to show. The camera's eye sees light/dark colour changes. The colour changes in rock, whether geological, cast shadows, or just damp, are often the most prominent features to the camera. The details of hammered surface or gentle undulations left by a set of fire etc, are not so clear to the simple eye of the camera. The eye of the draftsman can analyse what it sees and make choices as to what is important and what is not (Fig. 1). In this drawing it has been possible to draw attention to the fact that the main round arch has a space to surface behind it by accentuating the way in which the light catches the rock face.

The next questione asked is "How on earth did you draw it?" This is usually after they have seen the photographs.

The main problems in drawing ancient mines is their almost universal inaccessibility, and the light - too much / not enough, or in the wrong place. These problems apply whether it is a surface exposure or an underground working (Plate 1). Inaccessibility is not only having to carry a drawing board and measuring equipment miles up a wind-swept hill or dragging a portfolio etc. through a muddy crawl underground, or both, but having got there, finding a convenient view-point from which all that needs to be drawn can be seen. The latter is also a problem for photography and often makes taking a satisfactory photograph impossible. This is where the human eye and a patient draftsman are of more use than much camera equipment.

The problem of light on workings at the surface is often too much AND not enough! Bright sun casts grotesque and confusing shadows on an exposed shaft or incline making the form difficult to understand. In parts of the world where grey days are rare, it is not always practical to wait for diffused light for photography. However the draftsman can go into the working and understand what is happening. With the information from close inspection, after allowing the eyes

Plate 1. Copa Hill, Cwmystwyth, Wales. Ancient Mines are often inaccessible!



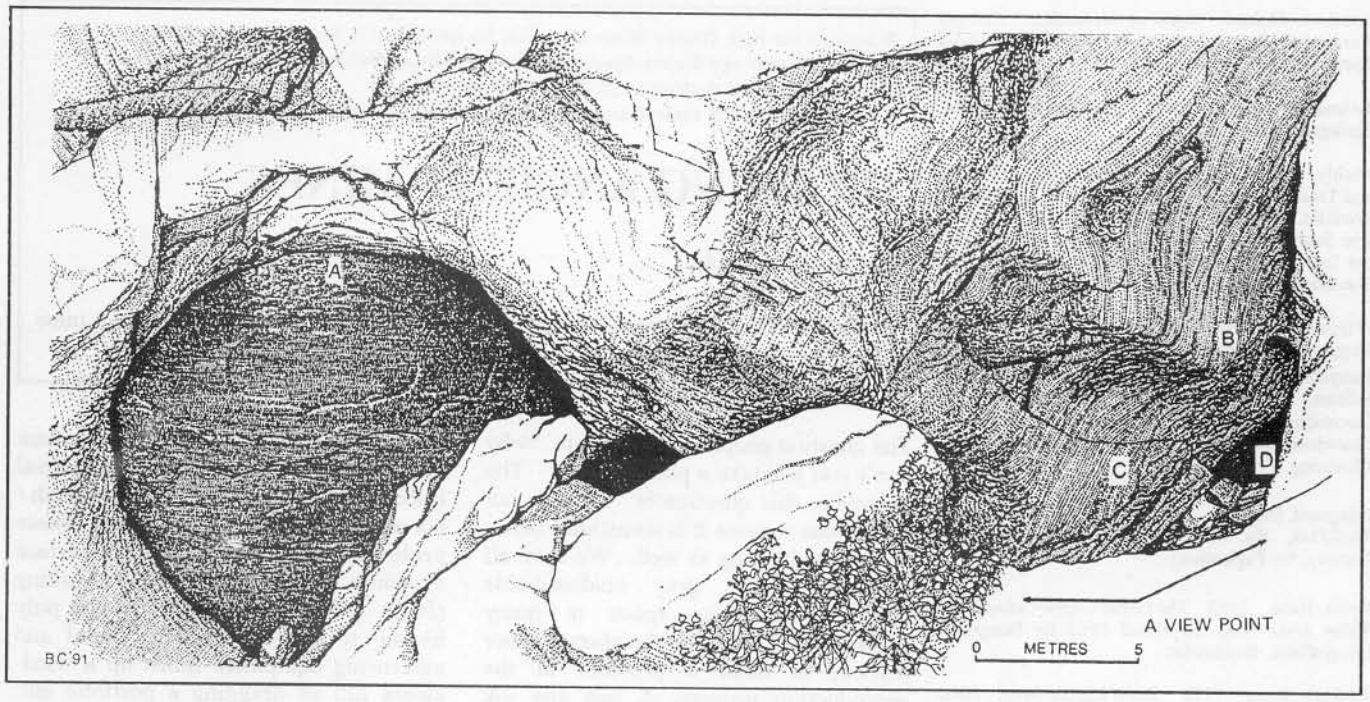
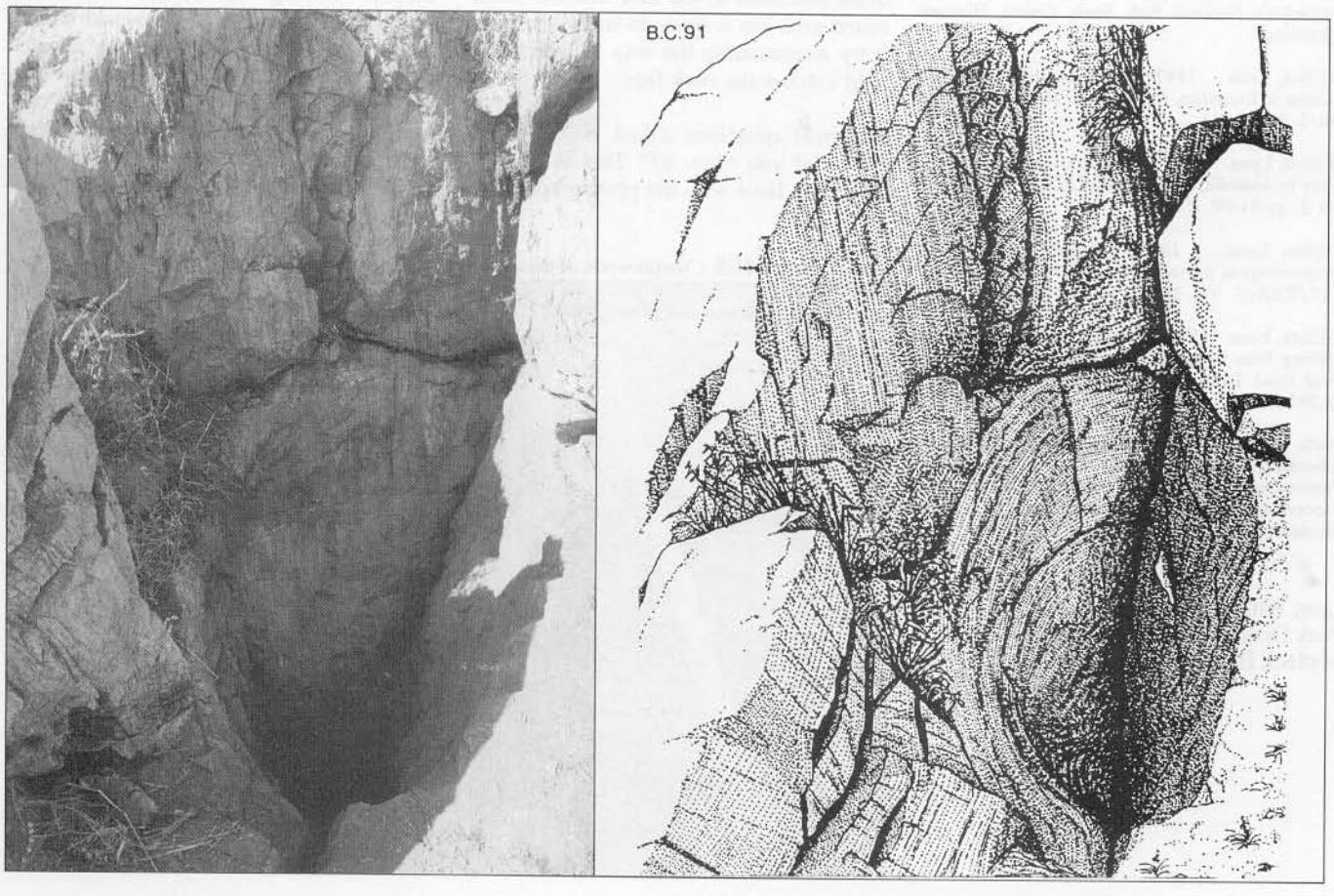


Fig. 1. Zawar Mochia. Late period open working, using fireset inclined benching, cutting into earlier period vertical stope, and working on two veins. Left, the large arch cuts into, from the nearest to the further vein (A), whilst right, an upper earlier phase (B) and lower fireset benches (C) have just cut through the nearest vein, seen at the extreme right (D).

to adjust to seeing in the shadows, a drawing can be made that will tell more than a photograph taken under the same conditions (see Plate 2 and Fig. 2). Mahdan Mine at Khetri, India, in Fig. was so big it was impossible to light with available equipment, and impossible to photograph except in small pieces. By going down and examining the lower reaches, and then finding a suitable vantage point, it was drawn by available light from the surface. It is surprising what can be seen when the eyes adjust to the gloom.

Two things that can be done by drawing are panoramas and the "removing" of obstructions without explosives!

Plate 2 (below left) and Fig.2. Zawar Mochia. Firesetting downwards from surface utilising a joint.



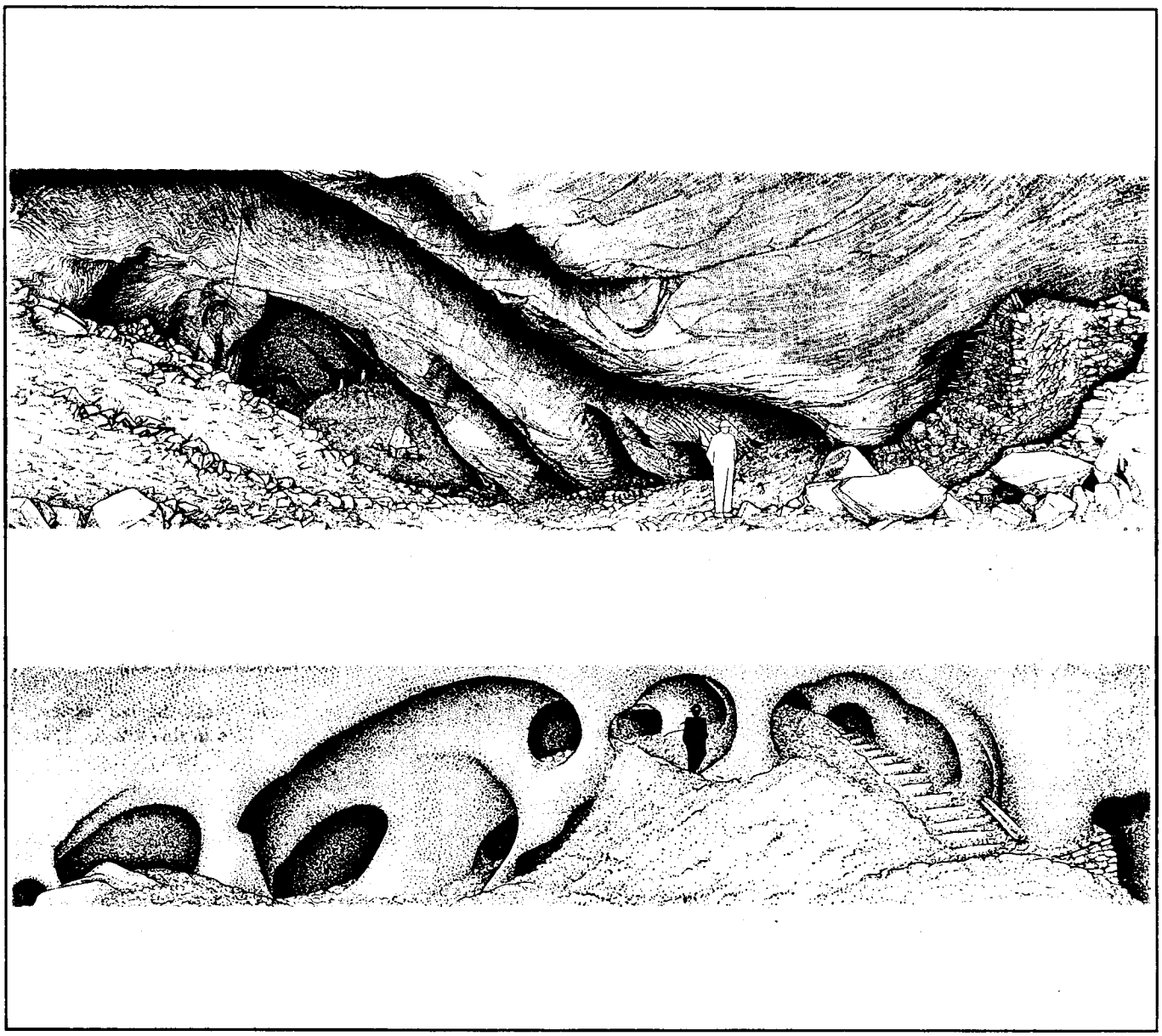


Fig. 3 (top). Mahdan Mine, Khetri, Rajasthan. 160° panorama from the right looking down No. 1 stope. To the right is a platform of stacked deads stabilised with layers of acacia twigs from which the roof was fireset. To the left are the remains of tumbled platforms, the twigs still just visible.

Fig. 4 (above). Zawar Mala Mine. View from top of arches area showing upper, earlier period working and lower, later period retreat working, with steps leading towards the Upper Chamber, 260° panorama.

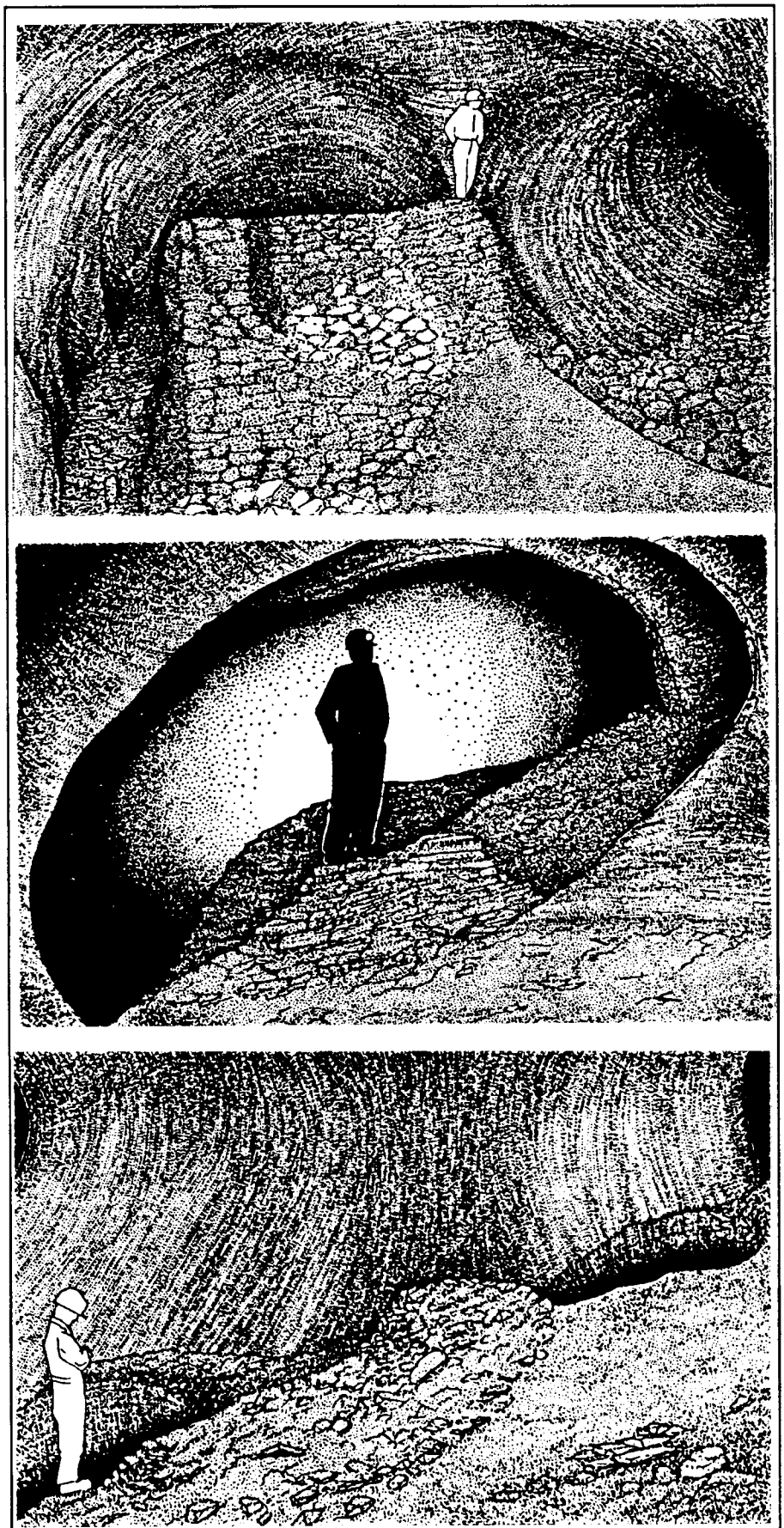
Panoramas are a useful device as the need to get far enough back to get everything in, as for a photogrpah, is eliminated, provided the subject can be seen from one vantage point by simply turning round. An example of this is the Fig. 3 Mahdan Mine drawing, which is from 90° right through 160° to the left.

The Zawar Mala Mine arches (Fig. 4) began as a full 360° panorama. I sat in the middle and simply turned round. The drawing reproduced is about 270°. The remaining, uninteresting, section was recorded to ensure the relation-ship between the start and finish point had been maintained.

The Zawar Mochia fireset arch and benches (Fig. 1) has a diagram in the corner to show the viewpoint and angle. The right-hand side recedes away from the viewer and the side nearest the viewer has been removed to enable the view along the benches to be represented. Other obstructions can be removed, for example, large rocks in the way. If it is possible to go and observe behind the obstruction, then the visible features can be drawn in, then those behind can be sketched-in and joined-up to key points in the drawing.

It is drawing underground by cap lamp which is really hard as the subject can only be seen a little at a time, and not at the same time as the drawing. This makes it difficult to relate the different parts of the subject, and easy to lose the thread of what is happening. The three Zawar Mala (near Udaipur, Rajasthan, India) drawings of Fig. 5 were done by the light of a cap lamp. The dramatic lighting in (b) was an effect noted when photographic flashes were being used somewhere behind the stack.

Another way of recording all the information is a series of drawings as those of Zawar Mala Mine again (Fig. 5). In (5a) the figure is seen standing on stacked deads with a large fireset arch to



Figs. 5a (Top). Zawar Mala Mine, entrance area of Top Chamber. Stacked deads, partially removed at left and rear (hidden) to allow further firesetting visible on left-hand side. The figure is standing in the same position in 5b (centre) and 5c, which shows benching of the floor using firesetting. Waste is from the right hand hollow. Viewed from north-west.

the right. In (5b) we have stepped through that arch, the figure is still in the same place, but framed by the arch. Drawing (5c) is the area to the right of the stacked deads through which the arch which can still be seen in the top left. This method is useful when a single vantage point is not available.

Finally, a few details of the mechanics of actually getting the subject on to paper. In the field I always work in pencil on A3 size paper. I prefer to work `sight size', that is measuring off with a pencil held up at arm's length and that measurement used directly on the paper without any change of scale. Used carefully with much cross-checking it seems to be accurate: the 360° panoramas usually join up. There is one disadvantage, the size of the original sketches, which can be quite large. Madhan Mine (Fig. 2) filled seven sheets of A3 paper. The field drawings are reduced back in the office and redrawn in ink at a more convenient size.

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