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NEW OBSERVATIONS ON THE HAM HILL STONE (LOWER JURASSIC)

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The Ham Hill Stone is a famous building stone that has long been quarried at Hamdon Hill, west of Yeovil. Today, there is only one continually working quarry [ST 479 163], although stone is occasionally abstracted from the large pit at the north end of the Hill. On the top of Hamdon Hill there are many old workings with isolated exposures. The Ham Hill Stone (Cope *et al*., 1980; Jenkyns and Senior, 1991) is 25 to 30 m thick at its maximum development, but thins rapidly in all directions away from Hamdon Hill. Davies (1969) has described the sedimentology and petrography of the Ham Hill Stone and included in his description a small 'channel lag conglomerate' high in the succession. This small-scale conglomerate, the presence of mega-ripples and the current directions led Davies to postulate a tidal-channel environment of deposition for the Ham Hill Stone. Bryant et al. (1988), in a review of the sedimentology of the Upper Lias Sands of south-west England, accepted this model as a possible explanation, although they also indicated that the Ham Hill Stone could be a 'shell-rich' sandwave (Knox *et al*., 1982).

Jenkyns and Senior (1991), in providing an alternative model, postulated that the Ham Hill Stone is the product of deposition on a submarine high, which excluded elastic input from the Shelly limestones. They related this to east-west submarine faulting and thereby produce a model very different from that of Davies (1969). These authors also cited Davies' facies map as further evidence for this east-west structural control.

The working quarry operated by the Montacute Estate [ST 479 163] has numerous blocks of a massive conglomerate all around the yard. These come from the lowest part of the succession, some 4 m below the present quarry floor. This conglomerate, in a smaller-scale version, can also be seen at the base of the thinner limestone succession at the north end of the hill. Both conglomerates contain fragments of indurated, bored and encrusted Yeovil Sand (Figure 1). The matrix contains much shell debris, together with ammonites, belemnites and frequent oysters. It would appear to be a form of channel-lag conglomerate which would seem to support the Davies (1969) model.

There are, however, several problems with this interpretation. The limestone above this conglomerate is poor in detrital quartz. It is only higher in the succession that there is much elastic input. This would appear to support the clastic-starvation of the Jenkyns and Senior (1991) model.

There is currently little of our own work that supports the shell-rich sandwave model of Knox *et al*. (1982). The smaller conglomerate, higher in the sequence (Davies, 1969, fig. 11), repeats the succession on a much smaller scale as the limestones immediately above that level are also sand-free.

The east-west faulting model of Jenkyns and Senior may also have problems when the distribution of faults/joints in the limestones is considered. Rose diagrams show a definite north-north-east—south-south-west trend [akin to the old 'Bath axis' of Wilson *et al*. (1958)] rather than an east-west pattern. There is no doubt, however, that east-west faults control the present outcrop pattern of the Ham Hill Stone.

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Work continues on the depositional setting of the Ham Hill Stone. The presence of two channel-lag conglomerates in the succession is clearly significant and will hopefully be built into a comprehensive model of the palaeoenvironment.

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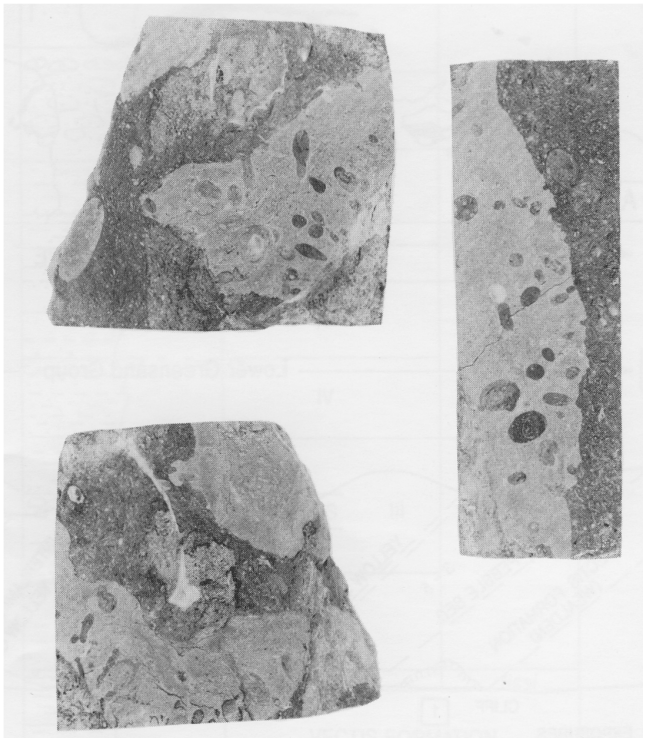

Figure 1: Photographic montage of three blocks of the basal conglomerate from the working quarry on Hamdon Hill. The long vertically arranged block is 12 cm long. The other blocks are the same scale.