Read at the Annual Conference of the Ussher Society, January 1995

SURFACE SUBSIDENCE IN SOMERSET, DORSET AND DEVON

H. C. PRUDDEN

H. C. Prudden, 2 Yeovil Road, Montacute, Somerset TA15 6XG.

Subsidence at the surface is often associated with chalk bedrock or areas of former mining activity. However it is dear from incidents in Somerset, Dorset and Devon that collapse at the surface may be due to other causes. Apart from on the Chalk, subsidences have been noted on the Yeovil and Pennard Sands, Mercia Mudstone Group and Blue Lias. Running water has been observed at the bottom of most of the cavities which suggests that erosion is taking place where water is channelled in underground conduits.

Ground subsidence frequently occurs after periods of heavy rain. A majority of collapses are found on lower valley slopes where ground water might be expected to emerge as springs. The collapse at Holway Hill in Dorset appeared to be associated with a gull aligned parallel with the nearby escarpment.

The Mesozoic rocks of Somerset and Dorset are riven with joints, many of which appear to be the result of north-south Tertiary compression and wrench faulting. Sub-surface conduits may well develop along lines with a high density of these joints.

The Chalk below pipes filled with Clay-with-flints tends to be partially decomposed and the subsidence on the ridge above Langdon Farm, Dorset, [ST 5090 0180] may be the result of solution of the Chalk. The many dolines in Dorset (e.g. on Bronkham Hill [SY 626 870] are generally assumed to be the result of acidic water dissolving the Upper Chalk which underlies the Tertiary sands and gravels (House, 1991).

Smooth cylindrical conduits, reminiscent of water-worn passages observed in karst regions, have been observed in the Chalk, e.g. low in the face of the old Chalk quarry at Beer, Devon [SY 215 896]. Some passages contained Clay-with-flints which had clearly been washed in from above.

Perhaps more consideration should be given to the idea that some collapses in Chalk country may be the result of mechanical removal of sediments by underground streams, as well as by removal in solution.

SUMMARY OF DETAILS

Measurements are width x depth at the surface unless otherwise stated.

Butleigh (Higher Hill Farm), Somerset, [ST 5178 3183]: 6 m x 9 m below the surface on the Blue Ills dipslope, March 1976.

Corscombe (Langdon Farm), Dorset, [ST 5090 0180]: 1.9 m x 1.8 m on ridge-top on Clay-with-flints over Chalk, winter 19767.

Montacute, Somerset, [ST 5012 1668]: 1.8 m x 3.6 m at the base of the Yeovil Sands escarpment, 1975. A previous subsidence at the same spot had been filled with earth in 1929.

Poyntington (Holway Hill), Dorset, [ST 6339 2070]: 2.6 m x 16 m close to top of Yeovil Sands escarpment over a gull, 1988.

Tintinhull, Somerset, [ST 4983 1849]: 1.2 m x 1.52 m on lower valley slope on Pennard Sands, 1978.

Wrantage (Meare Court Farm), Somerset, [ST 2938 2240]: 3 m x 9 m on lower valley slope on Mercia Mudstone Group, 1977.

Yarcombe (Hay Farm), Devon, [ST 2448 0677]: a series of persistent shallow collapses on a lower valley slope on Mercia Mudstone Group.

Yeovil (Marl Close), Somerset [ST 5439 1714]: 3 m x 12 m on the junction Bed/Pennard Sands dipslope, October 1993.

REFERENCE

House, M. R. 1992. Dorset dolines. part 2, Bronkham Hill. *Proceedings of the Dorset Natural History and Archaeological Society (for* 1991), **113**, 149-155).