Review

The Origin and Development of Surface Depressions in the Mendip Hills, by A. M. COLEMAN AND W. G. V. BALCHIN; *Proceedings of the Geologists' Association*, Vol. 70 (Part 4), April, 1960 (pp. 291–309).

Every spelæologist will agree with the opening remarks of this paper, that surface depressions in limestone country have received little useful study, and that textbooks of geomorphology offer conflicting and unsatisfactory explanations of them. The authors felt that intensive study of a small area would be a useful approach to the problem. They begin by stating that two types of depression (apart from stream sinks) are recognized in the literature: holes due to gradual solution, and holes due to sudden collapse. The first type should have imperceptible beginnings and progressively enlarge, while the second attains its greatest size suddenly and its later history is of degradation and silting up. It is thus possible for different workers to accept the same developmental series of forms, but in opposite directions according to whether solution or collapse is assumed to be the cause. This is, in fact, the point of difference between the hypothesis of the Stride Brothers and that of the authors of this paper. Knowledge as to which process is dominant in an area is important in the search for new cave systems, since a hole due to collapse requires the pre-existence of a cave, whereas one due to solution does not.

Miss Coleman and Professor Balchin have attempted to determine the relative importance of solution and collapse in the case of depressions in the Mendips by applying six criteria: (*a*) local eye-witness accounts; (*b*) shape; (*c*) ratio of depth to diameter; (*d*) nature of the infilling; (*e*) relationships of known solution features to the surface; (*f*) distribution. It is clear from (*a*) that sudden collapse does occur; it is also clear that all depressions in areas where the Carboniferous Limestone is covered by layers of insoluble younger rock (as on the plateau above Harptree) must be due to collapse. Solution pipes were examined in the walls of quarries but in no case was there a corresponding surface depression above a pipe. From these and other lines of evidence the authors conclude that the great majority of Mendip depressions have been formed by collapse, and that solution has been unimportant.

Spelæologists would do well to study the authors' reasoning carefully. While much of the evidence is necessarily indirect, and some is not, in itself, at all decisive, the authors may well be right in their general conclusion.

The approach to the problem in this paper lays too much emphasis on theory. The exhaustive examination and critique of the literature which the writers have made was doubtless an essential part of the development of their views, but need it all have been incorporated in the final paper? What the reader wants to know is, first, the actual observations in as much detail as possible, and, second, the conclusions which have been drawn from them. It seems to the present reviewer that discussion of previous theories has been elaborated at the expense of presentation of the observed facts. For example, the evidence of the distribution of the depressions on different rock-types, already mentioned, is of the first importance, yet it is allotted only one-third of a page in which it is stated in very general terms. Throughout the paper there are very few references to specific examples, and while details of all the 1000-odd holes examined are clearly out of the question, one would have welcomed fuller accounts of certain typical sites. One of the few examples named, Wurt Pit, provides occasion for a major howler when the authors state that Carboniferous Limestone is exposed in its sides; the pit in fact lies in siliceous rocks of Liassic age.

The same preoccupation with theory is evident in the elaborate classification of holes which is proposed. There is, of course, a developmental sequence, but it is to be feared that the numerous symbols used for the different stages will merely provide more jargon for spelæological writers. To conclude, a study of the origin of surface depressions has been well justified, but it is a pity that we could not have had a more factual account of them. Nevertheless, the authors have shown the way towards a proper understanding of these features in the Mendip landscape.

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