

V. CASTELLANI and W. DRAGONI discuss the karst of the Hamadas in S. Morocco. The Hamadas are limestone plateaux which rise abruptly from the desert plains. The authors refer briefly to the surface 'dayas', shallow depressions, which are numerous on the hamada surfaces. The cliff faces are, however, riddled with a network of vertical tubes up to one metre in diameter; these tubes have been formed by solution, but are independent of surface run-off. The present climate of the area is arid—50 to 60 mm/year of rainfall and an average annual temperature of 19.6°C. It is unlikely that the solution tubes could be formed by vadose percolating water, and their distribution and form suggest a solutional origin by condensation water and dew. Calculations of the amount of condensation water available show that the hypothesis is a reasonable one.

The issue also contains a short report (in German) on the 1st German Speleological Expedition to the Himalayas, where the longest cave in the Himalaya (Patalae-Chhango, 2,057 m) was surveyed.

It will be seen from this short review that this issue of the *International Journal of Speleology* has much of interest to cavers and karst workers.

PATERSON, K. and SWEETING, M. M. (eds.): *New directions in karst*. Norwich, Geo Books, 1986, 613 pp. ISBN 0 86094 195 7. Price £49.50. (reviewed by S. L. Hobbs)

*New Directions in Karst* is a collection of papers presented at the Anglo-French karst symposium held in Britain in September, 1983. The book is divided into seven sections: karst processes, karst rocks and structures, karst hydrology, karst caves, tropical karst, karst pavements, and the evolution of karsts. There are thirty-three papers; the six in French have English summaries, but no English titles or English figure headings—a rather annoying omission which makes them difficult to interpret.

Considering the high cost of the book, the paper is not of a particularly good quality, a fact that has resulted in poor reproduction of photographs. These are set in the text, but small size often inhibits interpretation of the subject matter.

The book is called *New directions . . .*, and according to the preface deals with 'contemporary methods and techniques in karst geomorphology'; however this is, in a large number of the papers, not the case. For example, Pfeffer's morphological description of tropical karst in Jamaica is a highly qualitative account paying no attention to the underlying physical processes at work. It does provide a useful background to the area, but whether it should have been included in this book is questionable. Similar criticisms may be directed at Carrol's paper describing soils associated with Carboniferous Limestone in England and Wales. The three papers by Chinese workers are also largely descriptive and contain little in the way of new theories, but they are interesting as they are some of the earliest papers on these hitherto restricted areas.

On the other hand papers such as Kumar's, concerning the relationship between drainage basin morphometry and lithotectonic zones, apply known techniques (principal components analysis) to new areas in karst geomorphology. However Kumar's paper is confusing, little physical interpretation being given for the results observed.

On the positive side, the book does contain a number of useful papers, although few of these are directly concerned with new techniques. Smart *et al.* take a comprehensive look at one part of the groundwater system in the

Burren, Ireland, an area they describe clearly and concisely. The well described methodology enabled them to identify the three major processes controlling ionic components of diffuse authigenic percolation water. The main point to note concerning the paper is the fact that it is a study of a single geochemical environment by underground sampling which enabled much detail to be learnt concerning one section of the aquifer.

The Pitman paper concerning weathering in the chalk of Yorkshire is also good, and is one of the few papers to detail the weathering of such rocks. It looks at chemical variations between water in three sections of the aquifer and identifies the processes controlling these variables. The significance of these processes to the karstification of chalk are assessed and an estimate of the rate of surface lowering given.

The Hunt and Gale paper concerning palynology as a tool for British cave studies is useful as it is one of the few papers on this subject associated with British caves, even though the methods have been used on the continent for some time. Similarly, details concerning different types of cave formation in granite by Finlayson is one of the few papers on the subject. This clearly describes in some detail the three main types of granite caves, reinforcing his points with well thought out diagrams; whether this belongs in a book concerned with karst is doubtful, though.

In summary, the book contains a large cross-section of papers, few of which are directly concerned with *New directions in karst*, but many are quite interesting none the less. The papers tend to be very site specific and give little information of use to the reader wishing to gain an insight into new advances in karst research. A number of these advances are not represented at all, including Uranium series dating of speleothems, electron spin resonance, and the use of radon. The high price of the book means that it is essentially one for libraries, the wide range of areas covered making it a useful reference.