work. To persons of a more critical disposition, the most valuable part of each chapter will be that concentrating on problems and pitfalls of interpretation and the suitabilities of different materials for dating. The chapters on palaeomagnetism, U-series and ESR are the most useful in this respect.

Although now collected together as a book, the chapters originally appeared separately as review articles in *Geoscience Canada* over the years 1978–82. Some have been completely revised (to 1984) for reprinting; others not at all. Despite this unevenness, the modest price should make this book an essential purchase for libraries and for individual archaeologists or speleologists who are not willing to take the dating experts entirely 'on trust' and want to find out more for themselves about how the different dating methods work.

International Journal of Speleology vol. **15** (1–4), 1986. Published by Società Speleologica Italiana. ISSN 0392 6672. Price US$20.
(reviewed by M. M. Sweeting)

This issue of the *International Journal of Speleology* contains four original articles and one short report. The coverage of the articles is world-wide—from China to Morocco—and many aspects of caves and karsts are discussed. The articles are well illustrated with clear diagrams and photographs.

Song Lin Hua reviews the origin of the stone forests in China. Stone forests are defined as groups of stone pillars over 5 m. high; when the pillars are less than about 5 m high they are usually called stone teeth. For stone forests to develop, thick-bedded and massive limestones are necessary; the rocks must also dip only slightly and the conditions must be such that soil water can enlarge fissures and separate the limestone blocks. Furthermore a thick soil cover or rock where water can penetrate is needed as solution is predominantly by sub-soil corrosion. The stone pillars are exposed by the removal of the soil or cover rocks and are later modified by rain-water corrosion. Many of the stone forests in China are developed in the Permian Mao-Kuo limestones. Song Lin Hua gives a diagram suggesting the evolutionary stages of the stone forests.

An article by F. Jaskolla and P. Volk illustrates the use of accurate cave surveys for tectonic analysis. Their supposition is that caves are controlled by tectonic lineaments—joints, faults and other features of deformation—and that mapped cave passages and tectonic (particularly micro-tectonic) elements show a very close relationship. Several well-known caves in S. Germany and the Alps are used as examples. In the Hölloch cave the directions of passages in the upper inactive part of the system are quite different from the directions of passages in the active lower levels—representing two different fabric patterns. The article illustrates the need for accurate cave surveys, for a fuller understanding of the fundamentals of micro-tectonics and for greater statistical data processing. It is to be hoped that this work will encourage more speleologists to give their time to preparing detailed cave surveys.

Two of the articles deal with speleogenetic role of air flow and condensation water. Arrigo Cigna and Paolo Forti look at the theoretical possibilities of corrosion in domes by condensation caused by convectional air movement. From their calculations based on parameters measured in the Grotta Giusti, the amount of $CaCO_3$ which could be dissolved in one day could be as high as 630 g/litre. Even though this figure is an upper limit, is it clear that the importance of convectional air-flow and condensation water have been underestimated in cave corrosion. Possible cave erosion forms resulting from condensation waters are illustrated.

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