values. Mathematicians should find this notation most interesting. Another feature is that 2-component spinors are used throughout the book; the simplicity and utility of these objects is thus brought home and high energy physicists may well succumb to their charm. Also, the definition of a manifold in terms of its ring of smooth functions should please many a mathematical physicist. While this approach is not new, to my knowledge this is the first time that it appears in a monograph accessible to physicists.

There are, however, a few omissions that I personally regret. The first is the geometrical interpretation of Lie derivatives, and of curvature tensors. While the "algebraic or axiomatic approach" to derivative operators used here is excellent, in that it brings to the forefront the properties that one frequently needs in practice, graduate students would have been greatly helped if the geometrical structure involved had been somewhere explained. Secondly, it would have been helpful if a symbol — the abstract index analogue of the Infeld–Van der Waerden symbol — representing the isomorphism between hermitean spinors and tensors had been first introduced explicitly and then dropped in calculations involving a fixed space-time metric. When one deals with a fixed conformal class of metrics, this symbol can be dispensed with and suitable spinor indices can be simply identified with tensor indices. However, sometimes — for instance in certain perturbation calculations as well as in quantum gravity — one needs to work with a wider class of metrics. In these cases, it is important to keep track of how the chosen isomorphism between spinors and tensors changes with the choice of the metric, particularly because the metric does not determine the isomorphism uniquely. An inexperienced reader may miss this point altogether. Finally, I feel that it would have been useful to have a section or an appendix summarizing the relation between the 2-component spinors and the 4-component ones.

These points by no means detract from the stature of the work as a whole. In recent developments in classical gravity, there have been instances of constructions which are essentially spinorial in the sense that they cannot even be recast in the language of world-tensors. There are growing indications that such constructions may also play an important role in quantum gravity. Thus, the book has come out just in the wake of the realization that spinors may play an even more profound role in theoretical physics than they do today. Because of this, and because Penrose's ideas have influenced the younger generation of relativists so deeply, it is very likely to become a classic. □

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Pronouncing on the language

Joanna Czechowska

The English Language.

By Robert Burchfield.

Oxford University Press: 1985. Pp.194.
£9.50, \$19.95.

DURING the fifth century AD the Roman establishment moved out of the British Isles and Germanic tribes from northern Germany and southern Denmark moved in. The descendant of the language they spoke is now the mother tongue of more than 300 million people worldwide and the second language of many millions more. Robert Burchfield's book documents the history of English from the fifth century to the present day, tracing the changes caused by the absorption of other languages, the influence of English settlers in overseas colonies and the increasing introduction of new words designed to cope with technological advances.

Old English, spoken from the fifth century until the Norman Conquest, was an inflected language belonging to the Germanic family. It was written down using runic characters, an alphabet consisting of linear strokes which could easily be carved onto wood or stone. Even when the Roman alphabet was adopted, certain runic characters remained for a time to symbolize peculiarly English sounds. The advent of Christianity in the sixth century brought about the introduction of many Latin words, but it was after the Conquest of 1066 that the language changed dramatically when Norman French words became absorbed, leaving traces which are still discernible.

The introduction of printing in the fifteenth century fossilized the spelling of English while pronunciation continued to change. This accounts for the considerable discrepancy in the way some English words are spelt and the way they are pronounced. British settlers in the United States, Canada, Australia, New Zealand and South Africa adapted the language to describe new features they encountered in the environment, often by borrowing words used by the native inhabitants, for example *skunk*, *kangaroo*, *moccasin*.

Dr Burchfield's summary of English is perfectly suited for anyone with some interest in the subject. It is not a specialist book but it leaves the reader with a sound overall view of the language without having to wade through the minutiae of syntax (indeed he castigates "despotic professors of linguistics [who] have failed to notice that they have taken the subject beyond the reach of intelligent laymen"). There is a fascinating section on slang — rhyming slang (*butcher's hook*, *look*; *Todd Sloan*, *alone*), back-slang (*yob*) and Citizens' Band Radio slang which has infiltrated

British English from North America. The popular myth that the English spoken in the United States is antiquated and therefore somehow "purer" than that spoken in Britain, he largely dispels; in the seventeenth century words such as *fertile*, *leisure* and *dormitory* were pronounced in both the British English and American English manner.

This is a brief but clear and immensely readable book. Fifteen-hundred years of English has been condensed into some 200 pages of text without losing sight of how rich, diverse and complex our language is. □

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African past

A.C. Hamilton

Southern African Prehistory and Palaeoenvironments.

Edited by Richard G. Klein.

Balkema: 1984. Pp.404. Dfl. 70,
£17.50, \$24.

EVER since the discovery of australopithecines in the 1920s and 1930s southern Africa has been a focus of attention for the study of the evolution of man. The archaeological record is one of the longest in the world. Progress has been hampered by the difficulty of dating the major sites, although, as Rightmire points out in this book, some control is possible through comparison of fossil hominids and vertebrate assemblages with the better dated East African material. The Middle Pleistocene fossil hominid record of the region remains very poor.

A difficulty confronting prehistorians and palaeoenvironmentalists working in southern Africa is that few people outside their own disciplines are interested in the details of their working techniques, despite the widespread popular interest in early man. This book is aimed at the specialist and all of the articles are marked by an excellent critical approach to evaluation of the evidence. Most contributors do, however, attempt to provide a story-line and some chapters should be understandable to a wider audience. Let us hope that this is so. The various branches of Quaternary science have much to contribute to one another and, outside scientific circles, the study of human evolution is an especially important subject in the Republic of South Africa. Apartheid is buttressed partly by theological dogma which is at complete variance with estab-

● Recently published by Cambridge University Press in their *World Archaeology* series is *African Archaeology*, by David W. Phillipson, a concise, non-technical account of the subject. The book will be reviewed in a future issue of *Nature*.