REVIEW

ALLEN, J.R.L., 1975. *Physical Geology.* Edited by J.A.G. Thomas, published by George Allen & Unwin Ltd., 139 pp. incl. index: 88 figs: 37 plates. Softbound £1.85.

The publication of another book in the 'Introducing Geology' Series has, no doubt, been eagerly awaited by many teachers of G.C.E. Ordinary Level Geology. Physical Geology by J.R.L. Allen may, however, prove something of a disappointment as much of the text is far too advanced for the majority of 14 - 16 year old pupils.

As a teacher's reference book it will be very useful, as it summarizes the origin of sediments; the chief physical agents of sedimentation and their products; earth movements and their effects on sedimentation and strata. J.R.L. Allen has also included many useful suggestions for simple experiments which can be carried out to develop insight into many of the points discussed in the text.

Following the introductory chapter in which the structure of the earth and geocycle are explained the book continues with the explanation of weathering and the agents involved in entrainment, transport and deposition of sediments. The following six chapters take each of the agents and describes the relevant features and resulting sediments involved in the work of rivers, wind, seas and oceans, and ice. The work of the sea is discussed, understandably and of necessity, in great depth.

Chapter 10 'The Restless Lithosphere' is most welcome as it will hopefully encourage many geology teachers to become more aware of modern theories in structural geology as J.R.L. Allen makes particular reference to the use of strain markers and compressional and tensional folds. The text ends with a very useful chapter which summarizes continental drift theories together with the newer theories of sea-floor spreading and plate-tectonics.

The main criticisms of this book are that it is in the main too advanced and too detailed for use by fourth and fifth year 'O' level pupils but it will be a useful text for pupils studying for G.C.E. advanced level Geology. Many of the photographs are of rather poor quality, several of them having no real value. The diagrams are, in many cases, rather complicated and often not fully explained in the text.

In conclusion, this third book in the 'Introducing Geology' Series will be a useful addition to the series as a teachers, or advanced level text, but not for use by 'O' level pupils. The cost, £1.85, may also prohibit many schools from acquiring more than a few copies.

J.M.A.

REVIEW

L. BEVERLY HALSTEAD and JENNIFER MIDDLETON 1972: *Bare Bones. An exploration in art and science.* Edinburgh: Oliver & Boyd. Toronto: University of Toronto Press 8 Unnam. + 119 pp., many illus. $7-95.

Bones have, for most people, a sinister, graveyard context; the very word evokes visions of death and dissolution. It needs an effort of thought to recognise that bones are also the framework for life and to remember that bone has long been the material of tools and a medium for art.

This book must surely be the first ever to try to assess bones in all their contexts and uses and, indeed, to convey the fascination of bones. Its authors are well fitted to do this: one of them, Beverly Halstead, is a vertebrate palaeontologist holding a dual appointment in the Departments of Zoology and Geology of Reading University; the other, Jennifer Middleton, is a medical artist. (Appropriately enough, the portrait of the authors (p.3) is a radiograph!) Together they have produced a thoroughly fascinating book, excellently illustrated, surveying bone as a living material in action, bones and disease, bones as tools and in toolmaking, bone as a material for carving (and, in particular, the beautiful scrimshaw work of French prisoners-of-war in England during the Napoleonic period), and the representation of bones in cartoons, sculpture and paintings.

The first five chapters all contain much of interest to paleontologists. It is interesting, for example, to learn that growth rings in dinosaur bone indicate life spans of up to 120 years; that the short, "functionless" fore limbs of *Tyrannosaurus* were sufficiently well muscled to allow that reptile to rise from a prone position; that plesiosaurs were incapable of diving; that pterodactyls were furred and that the big pterodactyl *Pterarodon* could fly at 15 to 35 m.p.h. and was highly manoeuvrable. After seeing many reconstructions of Neanderthal man as a stooping, shuffling "inferior species", it is salutary to be reminded that the reconstruction was based on the skeleton of a 70-year-old, affected by arthritic diseases - a man who had survived to that age at a time when his contempararies rarely lived past 30 and who thus was definitely exceptional!

The authors stress the need for vertebrate palaeontologists to avoid similar misinterpretations by studying the effects of bone disease. They also give a qualified defence of Dr. Raymond Dart's much-criticised "osteodontokeratic" cultural interpretation of the bone accumulations found with the remains of *Australopithecus*; and they provide fascinating accounts of the origin of bone and of earbone evolution in mammals.

All in all, this is a unique and very readable book, that can be highly recommended.

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