

far discovered, is one of a fairly singular and almost constant advance of cranial capacity and cultural complexity (based on stone tools), from an unknown size of *Ramapithecus* to *Australopithecus* to *Homo habilis* to *Homo erectus*, and so forth. This picture is surely oversimplified, for it excludes any dynamism or change of selection pressures beyond that associated with cultural complexity. Unfortunately, the major component of a cultural adaptation, namely the use of arbitrary symbols or symbolization, is never explained in any neural terms. Indeed, the whole issue of selection for body size and allometric growth of the brain is ignored, except in relation to Tobias's continuing use of Jerison's concepts of the "extra neurones" in the cortex, which are produced in tables for the hominids, including the East African *habilines*. This is not really a criticism, however, for the problem eludes all of us, and the book retains a clarity that would have otherwise been lost if this consideration had entered the discussion.

I am naturally gratified to find my own name and works so often referenced. I am curious, however, why Tobias continues to use a value of 500 ml. for the Taung specimen, when both he and Alun Hughes corroborated my results of 442 ml. for the adult, based on a value of 405 ml. for the child. All three of us found that my midline was accurately placed within one millimetre. I also must demur regarding any "chicken-egg" argument with Washburn over the role of the brain in human mosaic evolution, as I only pointed out that reorganization of the brain along human lines had taken place very early in human evolution, which is not the same as saying "the brain evolved first". Both Bielicki's (1969) and my (1967) papers, utilizing Maruyama's discussion of deviation-amplification and feedback between brain and cultural evolution, form the basis for the synthesis that Tobias attempts to bring forth near the end of the book; but why did Tobias not find my original synthesis between brain size, internal cortical structure, and the evolution of behaviour of some use, beyond a general citation?

The volume has much to present in exemplary fashion, but one cannot help feeling that the interpretative task still remains to be worked out, and that it is this aspect of the book which is perhaps a little weak. For example, Tobias offers the following schema for parameter interrelationships: increase in brain size \Rightarrow increase in complexity of internal organization \Leftrightarrow changing functional patterns \Leftrightarrow changing patterns of behaviour. Unfortunately, this model is only partially discussed, and one is left with the impression that Tobias indeed sees the first and last items as

ends of a chain. Is this possible, or should it really be a continuous cycle of interrelatedness without ends? Certainly these two "ends" of the chain should be studied.

While this book by Tobias is an admirable and much needed compilation of recent data and perspectives on the evolution of the human brain, the serious student should closely examine many of the references given for himself, and should remain sceptical of several of the values given for the East and South African hominids, regardless of who did the determinations. This latter *caveat* is most important because the methods of ascertaining the volumes, particularly those based on partial endocasts, have not yet been fully tested for their accuracy. This is particularly applicable to the Olduvai Hominid 16, and to some of the South African fragments, such as MLD37/38 and STS 19/58.

R. L. HOLLOWAY

Algebraic Geometry

Introduction to Algebraic Geometry. By Serge Lang. Pp. xi+260. (Addison-Wesley: Reading, Massachusetts, 1972.)

THIS is an unchanged reprint of the book with the same title first published by Interscience in 1958. It gives an introduction to algebraic geometry, including the following topics: Places, algebraic sets, k -varieties, (affine, projective, abstract) varieties, Zariski topology, correspondences, product varieties, derived normal varieties, linear systems of divisors, differential forms, simple points, algebraic groups, Riemann-Roch theorem on curves.

This book does not cover the intersection theory, Grassman varieties, Chow varieties nor equivalence relations of cycles.

Chapter I contains basic theorems on valuation rings. Chapter II deals with algebraic sets, k -varieties and product varieties. Chapter III introduces the Zariski topology. Chapter IV considers geometric correspondences and the notion of abstract variety. Chapter V contains Zariski's main theorem for birational correspondences. Divisors and linear systems of divisors are dealt with in Chapter VI. Chapter VII deals with differential forms, Chapter VIII with simple points and Chapter IX with algebraic groups and abelian varieties. The Riemann-Roch theorem on algebraic curves is proved in Chapter X. Most chapters contain some useful references to literature. The book could well be used for a specialist course on algebraic geometry at the final honours or at postgraduate level.

T. J. WILLMORE

Keratins

Keratins: Their Composition, Structure and Biosynthesis. By R. D. B. Fraser, T. P. MacRae and G. E. Rodgers. Pp. xi+304. (Charles C. Thomas: Springfield, Illinois, June 1972.) \$16.75.

THE keratins are the α -keratins of mammalian epidermal appendages—hair, wool, horn and hoof and the feather keratin of birds and reptilian skin. They have played a central part as a material around which many of the key concepts in structural molecular biology have developed and are of more than academic significance to dermatologists, cosmeticians and, fortunately, the Australian wool industry. Part of the interest of this book is that it is essentially a product of the Division of Protein Chemistry of the CSIRO in Melbourne, a laboratory which has been largely responsible for modern views on the structure, composition and biosynthesis of keratins.

This volume reviews several aspects of the keratins. The histology and fine structure, the molecular structure and arrangement within the keratinized tissue, the physical properties and chemistry of the keratins are all described. There is an admirable didactic chapter on biosynthesis and a tantalizing concluding account of our woefully restricted understanding of the evolution of the keratins. The complexity of keratin structure is astonishing in view of their relatively inert biological function, and there are some suggestions in the book as to the reason for this.

This book fills the need for a comprehensive source-book on the keratins. The relevant data and arguments are presented and, in controversial situations a reasoned assessment provided. The production of figures and photographs is excellent.

ANDREW MILLER

Geography of Disease

Man, Environment and Disease in Britain: a Medical Geography through the Ages. By G. Melvyn Howe. Pp. xviii+285. (David and Charles: Newton Abbot, Devon, September 1972.) £4.75.

IN a way, this volume may be regarded as an extension of the author's previous book, the *National Atlas of Disease Mortality in Britain*. Here, in fact, Professor Howe sets out to look a little more closely at some of the variation charted in his atlas, and to attempt to compare the geographical variation with other differences of a biological, cultural and geological nature. He is also well aware that the dimension of time