

Biological Sciences

Man in Homoeostasis

An Introduction to the Study of Man.
By J. Z. Young. Pp. xxv+719.
(Clarendon: Oxford; Oxford University: London, September 1971.) £6.

THIS is a monumental work. It ranges from the cellular make-up of the human body to the neurobiology of consciousness, from the information system of DNA to that of human speech and writing, from the origin of life to the origin of man, from the distribution of genes to the over-population of the Earth; it encompasses natural selection and social control; youth and senescence, conflict and cooperation, life and death.

Over this remarkable range the information is admirably organized and lucidly and vividly presented. The exposition proceeds logically from a consideration of molecular, physiochemical and genetic properties at the cellular level through the reproductive stages and the whole life cycle of the individual. From the individual it proceeds to an analysis of group biology, evolution of the species and the diversity of mankind. No other single work on human biology, probably no other single author, I believe, could provide equally satisfactory chapters on such topics as human evolution, human variation, the development of the brain, intelligence and speech, on bodily growth and ageing, and on consciousness. While much of the material presented is of necessity fairly standard, there are many new aspects and particular topics treated in Young's own inimitable, stimulating fashion. A good example is his chapter on the origin of life which develops into a discussion on the origin of self-maintaining systems—a topic of special significance in a book of this kind. As one might expect, he is especially illuminating when he deals with the many-sided theme of communication. It is hard to find a major topic which has been neglected, though I missed reference to the important work by Lieberman on the evolution of the vocal mechanism based on comparative studies of man and ape, which has made it possible to demonstrate that Neanderthal could not have had a language capacity at all comparable to modern *sapiens* man.

In a book so comprehensive and one which deals at every level with the notions of organization and integration, one may well ask to what extent this wide range of subject matter is given analytical coherence by the author. Professor Young achieves this by employing very effectively a number

Schwarzhal's Billy Goat



Living member of an ancient herd of goats whose home for at least five centuries was Bagot's Park in Staffordshire. The photograph is one of the illustrations to *The Wild Goats of Great Britain and Ireland*, by G. Kenneth Whitehead (David and Charles, Newton Abbot, 1972). £2.95.

of generalizing concepts or principles which appear variously as biological control, directed action, persistence, integrity, survival and pervasively as "homoeostasis". It is by virtue of the fundamental property of self-maintenance, exerted by the organism to counter stress, to satisfy needs or to ward off disease, through all the vicissitudes of development and of interaction with the environment, that he would wish us to understand the significance of the life activities of the individual, the local population and the species. He introduces the important notion of homoeostatic capacity. He sees bodily growth as a way of increasing, tissue repair a way of maintaining, and senescence the gradual loss, of this capacity. He

stretches the concept to include learning, intelligence and culture as devices for enlarging and improving the efficiency of homoeostatic response. The store of genetic variation available to a population and even random mutation are in the long run homoeostatic in that they ensure continuity, albeit with modification. He thus expands the use of the concept beyond the classical Bernard-Cannon doctrine, but as an organizing principle one must admit that it is heuristically convincing. Indeed, really to appreciate what the work is about, to get a clear "introduction" to this introduction, one can strongly recommend that the reader begins with the very last chapter in which Young provides "a summary of homoeostatic