

should be taken to press home on public opinion, as well as on the Government and on Parliament, the value of such an approach and the contribution which information services of high quality, when wisely used, can make to the national welfare and strength. It is essential to remove misunderstandings and to overcome the prejudices which in some quarters still hinder the full use of both external and internal information services by the Government. The two are sometimes complementary and the scientist as such is closely concerned in both. Such developments as automation, nuclear energy and particularly the full exploitation in other areas of the technique and knowledge which Britain can offer the world in this new field, can only be realized to the full if the public information services are adequate and efficient. As regards defence, when the shape of our new forces has been decided in agreement with our partners in the North Atlantic Treaty Organization, a large contribution from information services, both in Britain itself and in the other countries affected, will be required both to prevent misunderstandings or even misrepresentation, and to secure the co-operation and the acceptance of the changes and sacrifices involved.

THE HISTORY OF REPTILES

Osteology of the Reptiles

By Prof. Alfred Sherwood Romer. Pp. xxi+772. (Chicago Ill.: University of Chicago Press; London: Cambridge University Press, 1956.) 150s. net.

THE group of reptiles is of special interest because it lies, in a systematic sense, between the amphibians, the first land-living tetrapods, and the mammals and birds. Thus fossil reptiles have been the subjects of very many scientific papers, and the recent reptiles of far more.

Unlike mammals, whose teeth are usually extremely characteristic, so that from them most fossil forms can safely be determined, reptiles have teeth which are usually quite without recognizable characters. Thus it is reptile bones which have to be considered by palaeontologists. Cuvier recognized this need and, in 1825 and earlier, published splendid copper plate engravings of bones of modern reptiles. No such wide series appeared again until, after the death of S. W. Williston in 1918, his "Osteology of Reptiles" was published in 1925, arranged by W. K. Gregory. This book was most useful, and thus went out of print some twenty years ago.

Now Prof. A. S. Romer of Harvard has come to the rescue with a magnificent volume nearly three times the bulk of the original, which brings together an account of the osteology of reptiles with a detailed classification of the group, discussing the qualities on which it is based, and the probable nature of the ancestral histories of the major groups.

An introductory section of 45 pages gives an admirably clear account of what is known about the musculature of recent reptiles, of their nervous system, sense organs, and of the cranial vascular systems; that is, of those 'soft parts' which directly influence the shapes of bones. Then the skeleton is taken systematically. The skull, as it is found in the primitive *Seymouria*, is described and illustrated by a series of new figures. From this the story goes on,

the general structure, including the embryonic development, being described, and then that of each reptile group in turn being figured, described and discussed. The section covering the skull occupies about 150 pages, and is illustrated by some seventy text figures, each including four or more individual drawings, all admirably clear and precise. So the book continues: the lower jaw, the vertebral column, limbs and limb girdles, the dermal armour, are each in turn described, discussed and illustrated by excellent new drawings.

That 462 pages so made should actually be readable is remarkable; it is indeed an extraordinary testimony to the precision and clarity of statement which have made Prof. Romer's text-books so very widely used.

Then begins the second part, on the classification and range of reptiles. This opens with a short history of reptilian classification from Owen onward, and then proceeds to give a complete new classification of reptiles still living and fossil, which refers not only to all valid genera, but lists also invalid synonyms often used in morphological descriptions. This section is not a mere list of names; it gives for each family or higher group a condensed but admirably clear account of the skeleton and discusses the systematic position, derivation and special interest of each. Each group of higher rank is discussed so that its characteristic qualities are made evident and its origin and fate considered.

The classification of reptiles is discussed in a special section, and eventually all the sixteen orders, excluding the Cotylosauria, are divided into two groups, the Sauropsid and Therapsid orders. This grouping, based largely on the fenestral pattern of the temporal region, seems to me to fail to do justice to many more deep-seated qualities. But this is a very minor point; the "Osteology of Reptiles" is a book necessary to all those who work on the group, for which they are very deeply indebted to its author.

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POLYETHYLENE

Polyethylene

By R. A. V. Raff and J. B. Allison. (High Polymers: a Series of Monographs on the Chemistry, Physics and Technology of High Polymeric Substances, Vol. 11.) Pp. xii+551. (New York: Interscience Publishers, Inc.; London: Interscience Publishers, Ltd., 1956.) 16 dollars.

IT is perhaps not surprising that a material of such scientific interest and technical and commercial importance as polyethylene should, twenty-three years after its discovery and seventeen years after its first commercial production, have an extensive literature; this is illustrated by the inclusion in this book of more than 1,100 references to papers and patents and by an author index containing more than a thousand names. The literature is still expanding rapidly and one can well understand that the authors contemplated postponing the writing of this book, the first to deal solely with polyethylene, but as they have been able to include references to publications as recent as April 1956 they should not fear that their book will rapidly become outdated. In a statistical appendix a list is given of some thirty manufacturers of polyethylene, and it is shown that production in the United States alone has risen from less than