institutionalized, and even propagandized by the Royal Institution in the nineteenth century, so much so that it ultimately became the ideological basis on which science grew from modest avocation to full-scale enterprise. The RI was first a challenge, and then a model, for organized scientific research.

A word should be added about the volume itself, which is a handsome one and of obvious quality. The reproduction of the minutes, which was made by photo fascimile, is full folio size and the pages are virtually as clear as those of the original manuscript. A very comprehensive and useful index of all names mentioned in the text has also been provided. Considering the normally high cost of photo reproduction, and the care taken in preparation, the price of the series—£175 for fifteen volumes—would seem to be quite reasonable. MORRIS BERMAN

Satellites

A Guide to Earth Satellites. Edited by David Fishlock. Pp. xi+159. (Macdonald: London; Elsevier: New York, November 1971.) £2.50.

IN the past two decades few areas of scientific and technological endeavour have commanded such world-wide attention as man's activities in space.

On October 4, 1957, the first small sputnik was triumphantly placed in orbit. In the fourteen years which have elapsed since that historic event, several hundreds of space vehicles of one sort or another have followed Sputnik I into Earth orbit and satellites have become an accepted part of the modern scene. The publication of what can be described as an intelligent man's guide to Earth satellites is then greatly to be welcomed. This volume consists of some eight chapters contributed by authorities in their respective fields. The topics covered include launching vehicles, satellites for communication, meteorology, the study of Earth resources, navigation, scientific research and satellites for military purposes. The concluding chapter is devoted to a brief discussion of some advanced satellite concepts. The treatment of each topic is necessarily brief but is sufficient to provide the general reader with a balanced overall picture of the current situation. The quality of the separate contributions is a little uneven, and there is some occasional overlap between the topics covered, but this does not detract greatly from the value of the volume.

The book is excellently produced with a few photographs and a good number of clear line diagrams. It can be recommended to all requiring a readable and concise background survey of the field.

W. J. G. BEYNON

Modified Nucleosides

The Modified Nucleosides in Nucleic Acids. By Ross H. Hall. Pp. xiii+451. (Columbia University: New York and London, October 1971.) £9.50.

THE concept that ribonucleic and deoxyribonucleic acids are both made up from four nucleoside units is a simplification of the facts. Although RNA molecules are built up largely from four principal ribonucleosides, thirty-four other nucleosides have so far been isolated, especially from tRNA digests. These minor nucleosides are virtually all derived directly from the principal nucleosides, and may therefore conveniently be termed modified nucleosides: many of the latter are simple methyl derivatives of the principal nucleosides but some are more complex modifications. Only five modified deoxyribonucleosides have so far been isolated from DNA digests.

Studies connected with the identification, biosynthesis and function of these modified nucleosides have attracted the attention of biochemists and chemists for a number of years and sufficient data have now been accumulated (many of them by the author himself) to make the publication of a monograph on this subject a welcome event. Professor Hall is to be congratulated on writing an excellent book which will be both a standard text and a practical handbook for research workers in this field. Indeed, this book is strongly recommended to everybody who is interested in nucleic acids.

After a short introduction, there follows a very long chapter (nearly two hundred pages) which is concerned with the physical properties and chemical synthesis of the principal and modified nucleosides (in both the RNA and DNA series) and of the bases derived from them. There is a separate section for each base or nucleoside: melting points, specific rotations (where appropriate), pK_a data, ultraviolet absorption curves and, in some cases, plotted mass spectra are given. There then follows one or more synthetic procedures for each compound, and a section dealing with the occurrence of each modified nucleoside. Although this chapter will be very useful to research workers, it warrants a few minor criticisms. First, although nuclear magnetic resonance (NMR) spectroscopy has been valuable in the elucidation of the structures of what Professor Hall calls hypermodified nucleosides, no NMR data are given. Secondly, in a number of cases, pyrimidine and purine derivatives are represented as lactim (or thiolactim) tautomers although the corresponding lactam (or thiolactam) tautomers are known to be more stable. For a few compounds, both tautomeric forms appear in different parts of the chapter. Finally, while it is a very good idea to give synthetic procedures, the most useful (and possibly the original) should be emphasized. For example, seven methods are given for the synthesis of adenosine but the first listed would certainly not be the method of choice. In a few cases where only one procedure is given, the method listed is not the best.

There then follows an excellent chapter on the isolation of modified nucleosides, followed by a chapter on the primary structure of tRNA with special emphasis on the relative positions and possible function of the modified nucleosides. The next chapter is concerned with nucleoside modification in DNA. In the following chapter on biosynthesis and metabolism, the evidence for modification occurring at the polymeric level is clearly presented. Chapter 7 deals with various aspects of the chemistry and biology of N^6-(Δ^2-isopentenyl)-adenosine (and related compounds) and *N*-[9-β-D-ribofuranosyl-9*H* - purin - 6 - yl) - carbamoyl]-L-threonine. Unfortunately this book went to press too early to include an account of the chemistry of Y riboside, the latest hypermodified nucleoside to be characterized.

The last main chapter is concerned with chemical reactions which can be applied selectively to nucleic acids. Certain aspects of this important subject such as methylation and reduction are particularly relevant to a discussion of modified nucleosides, and thus the inclusion of this chapter is to be welcomed. The book ends with a general summary and a useful appendix on paper chromatographic data. C. B. REESE

Ethology of Sexuality

Sexuality and Homosexuality: The Complete Account of Male and Female Sexual Behaviour and Deviation—with Case Histories. By Arno Karlen. Pp. xx+666. (Macdonald: London, January 1972.) £7.

THE larger part of this competent piece of science journalism is occupied with the history and ethnography of different attitudes toward human homosexual behaviours. The later chapters cover current attitudes on such matters as sex determination, gender roles, endocrine effects and the biological background of sexual identity. The historical and cultural part is lovingly documented but a little confusing in outcome; being confined of necessity to the "overt" culture it offers no basis for any opinion about the comparative prevalence of bisexual manifestations—only about the tolerance or otherwise shown towards them and their popularity as an affectation, a scapegoat, or a source of "otherness". Much of the compilation is recognizably and perhaps excusably at second