

**Thermodynamics of Multicomponent Systems**

By Bruce H. Sage. Pp. xii+366. (New York: Reinhold Publishing Corporation; London: Chapman and Hall, Ltd., 1965.) 18.50 dollars; 148s.

IN 1934 there appeared, in *Industrial and Engineering Chemistry*, the first of a long series of papers in which Prof. B. H. Sage and his colleague Prof. W. N. Lacey elucidated the volumetric and thermodynamic behaviour of the hydrocarbon mixtures that are of interest to the petroleum industry. The fiftieth of this series was rightly greeted with an acknowledgment of their great value to the industry by the editor of the journal. Prof. Sage has now given us an account of the interrelations between the properties he has measured and some recipes for practical calculations based on these equations. The notation is laboured, but the results are useful to those concerned with the pumping and separation of petroleum mixtures. Most of the worked examples are from the binary or ternary systems.

However, the book claims to be the first "generalized treatment of multicomponent systems" since the work of Gibbs (1876-78) and Goranson (1930), and this claim implies a comprehensiveness, or at least a balance, which it does not possess. There is, for example, no mention of those two important properties of liquid mixtures, azeotropy and liquid-liquid immiscibility (and examples of both can be found even in the limited field of hydrocarbon mixtures). The treatment of gases makes no mention of the virial expansion which is the one form of equation of state which has an immediate and unambiguous extension to multicomponent systems. There is little mention of work outside the author's own group—almost nothing of the work of any European school, literally nothing of Hildebrand, Scott, Scatchard or Flory, nothing even of the substantial work on fluid mixtures carried out in the Chemical Engineering Departments of Rice, Berkeley and Notre Dame. The considerable appeal of this book is solely to those concerned with petroleum.

J. S. ROWLINSON

**Genetics**

By Prof. Robert C. King. Pp. xiv+450. Second edition. (London and New York: Oxford University Press, 1965.) 68s. net.

THE author states that *Genetics* is designed primarily for elementary undergraduate genetics courses. He also hopes that it will prove useful as a reference work for graduate students and professional biologists. Consequently, an attempt has been made to cover the entire field of genetics and cytogenetics. Most of the traditional aspects of the subject are discussed although quantitative genetics has only sparse treatment. Two chapters, entitled "Genes and Biochemistry" and "Mechanisms of Gene Action", give good coverage to recent work in molecular genetics. However, the second of these chapters could have been improved by removal of the material on gene structure to a separate chapter.

The inclusion of a comprehensive list of questions, problems and answers should prove of value to both students and teachers. The bibliography is very extensive for an introductory text-book and it should prove useful for teachers and specialist readers. The lists would have been of more use to students if qualifying remarks about the level of the reference had been included in parentheses.

The information on genetic systems in micro-organisms suffers from being fragmented. In addition, the genetics of *Escherichia coli* and bacteriophages is inadequately illustrated and the accounts given are probably not sufficient to give the general reader an understanding of the systems exploited in certain experiments. Insufficient emphasis is placed on the evidence for nucleic acids as the genetic material and the information presented is spread throughout several chapters. For example, the classical

Hershey and Chase experiment is added as a discussion problem at the end of a chapter.

In general terms, the book is well written and well illustrated, but the clarity of certain parts would be improved by the addition of extra illustrations. Apart from the criticisms listed, this book gives a sound introduction to many aspects of genetics.

B. W. BAINBRIDGE

**The Nature of Cancer**

By P. M. Sutton. (New Science Series.) Pp. 159. (London: The English Universities Press, Ltd., 1965.) 15s. net.

THE purpose of this little book is to explain to a public "which knows about bacteria and viruses, hormones and operations" as many of the facts as possible about cancer as it affects man. The author begins with cells and tissues and clearly differentiates cancer from other diseases. Normal growth, tumours and cancers are described and classified and the major forms of the disease in man are clinically appraised. It might be thought more usual to follow here with a description of diagnosis, prevention and treatment, but the author interposes two chapters on experimental cancer which are rather confused, out of date and pessimistic: for example, "whilst it cannot be hoped to explain the ultimate action of carcinogens in chemical terms" (p. 98). The final chapter returns to the title theme. The author believes that cancer is the disease caused by loss of differentiation and devotes most space here to a consideration of the role of somatic mutations in aetiology.

The book is illustrated by excellent line-drawings and distinguished by the clarity of its clinical rather than its experimental content.

R. J. C. HARRIS

**Equality and Power**

By R. V. Sampson. (Heinemann Books on Sociology.) Pp. 247. (London: Heinemann Educational Books, Ltd., 1965.) 35s. net.

THIS unusual and original work deserves a large audience. In it the author argues that moral values are absolute and that the same standards of conduct should govern both private and public life. His belief is supported by a detailed analysis of the psychoanalysis of power, the evidence in great part being derived from a study of Freud. Sampson is particularly concerned with the role of women in their relationships to men and in society and, after indicating Freud's own personal difficulties, goes on to show how emotional abnormalities (and lack of love) led to the corrupt use of power in the lives of such well-known national or literary figures as Mr. Barrett (of Wimpole Street), John Stuart-Mill, Samuel Butler, Mr. Dombey, William Dorritt, Ivan Ilych, Babbalanza and Willy Loman (from Arthur Miller's *Death of a Salesman*).

Sampson's analysis of the origin, growth and mis-use of power in individual characters is then transferred to society where, he argues, in political and other spheres claims to secure and use power to obtain national goals are equally morally mis-placed. The theme that "Machiavelli won an honoured place for immorality in statesmanship" and that "few have excelled the British nation in the consistency of their adherence to the principles of Machiavelli" provides some indication of Sampson's approach to both morality and the abuse of power as well as the author's deep-seated belief that the non-recognition of moral standards based on a gospel of love has greatly contributed to immature lives and stunted societies. On the individual and social plane, the author will command much sympathy for a well-argued case compounded of deep conviction and wide scholarship. His rejection of democratic politics based on universal franchise suffers because he puts nothing in its place in which one can live in the world of to-day. Perhaps anarchy will keep for Heaven.

T. H. HAWKINS