

At 156s. all libraries can afford and should have this book, which should be borrowed for bedside reading. I doubt whether individuals even in an affluent society will spend this sum, but since books are still given as prizes in universities and technical colleges, this is useful volume to be kept in mind.

H. M. FINNISTON

<sup>1</sup> See "Is there too much literature?", supplement to *Nature*, 212, 1003 (1966).

## CHEMICAL TECHNOLOGY

### Encyclopedia of Chemical Technology

By Kirk-Othmer. Vol. 6: Complexing Agents to Dextrose and Starch Syrups. Pp. xiv + 932. 338s. Vol. 7: Dialysis to Electron Spin Resonance. Pp. xvi + 903. 338s. Second completely revised edition. (New York and London: Interscience Publishers, a Division of John Wiley and Sons, Inc., 1965.)

VOLUMES 6 and 7 of the second edition of Kirk-Othmer need little introduction, except that one can congratulate the editors on their efforts, on their choice of another unique list of subjects, and on maintaining the usual high standard.

In this modern age every technologist must be conversant with and capable of using the techniques dealt with under the headings "Computers", "Data, Interpretation and Correlation", "Dimensional Analysis" and "Economic Evaluation". All these articles are concise and informative; they include mathematical derivations and often give examples of commercial and industrial applications. For example, the article on "Dimensional Analysis" explains how this technique has been used successfully to simplify experimental and correlation work applied to the power characteristics of simple turbines. On the other hand, the article on "Computers" could have paid more attention to illustrations of commercial application as in road building or power station construction.

To satisfy the needs of industrial technologists there are reviews on "Conveying", "Distillation", "Crystallization", "Diffusion", "Electrodialysis", "Electrodecanation" and "Electrolytic Machining Methods". In all of them emphasis is placed on industrial applications and on automated processes. The article on diffusion is especially geared to the atomic age, and deals adequately with the theoretical and practical problems associated with isotope separations. The technique of electrolytic machining sounds very attractive and promises much for the future.

Three types of corrosion are discussed in these volumes—corrosion by electrolytic solution, corrosion by gaseous environment, and corrosion by liquid metals or fused salts. Much of the work in the last category has been stimulated by problems arising from the use of nuclear reactors. Volumes 6 and 7 also deal with a wide range of commercial chemicals and raw materials of which only a few can be mentioned. There is a long informative review under "Dyestuffs", and an interesting account of the fluctuations of the world trade in them. The use of Zeigler catalysts in the synthesis of the stereo-specific polymers is dealt with under "Dienes", and of equal importance is the article on "Elastomers" which includes the A.S.T.M. definition of rubber now accepted as providing a boundary line between rubbers and plastics. The proposed use of the vulcanized EPT terpolymers (ethylene-propylene-dicyclopentadiene) in the tyre industry in 1968 is interesting. These volumes give detailed accounts of some important raw materials, including the processing, packaging, preservation and general handling of them. In the article on "Drying Agents" special attention is given to the theories and uses of molecular sieves. In food chemistry there are useful articles on "Confectionery" and "Eggs". The article on "Contraceptives" provides detailed accounts of the chemistry of the hormones. The article on "Dental Materials" is particularly informative and deals with the structure and chemistry of ceramic and polymeric materials

used as cements, and the porcelains, elastomers, amalgams and metal organic products used in dentistry.

K. FIELD

## QUANTUM STATISTICS

### The Theory of Quantum Liquids

Vol. 1: Normal Fermi Liquids. By David Pines and Philippo Nozières. Pp. xi + 355. (New York and Amsterdam: W. A. Benjamin, Inc., 1966.) \$15.

### Quantum Field Theoretical Methods in Statistical Physics

Second edition. By A. A. Abrikosov, L. P. Gor'kov and I. Ye. Dzyaloshinskii. Translated from the Russian by D. E. Brown. English translation edited by D. ter Haar. (International Series of Monographs in Natural Philosophy, Vol. 4.) Pp. xii + 365. (London and New York: Pergamon Press, Ltd., 1965.) 70s. net.

THE success of the BCS theory of superconductivity and a growing unrest with a basis of the theory of metals have led to an increased interest, and optimistic hope, in the use of the second quantization formalism for the study of the many body problem. This formalism is a necessary part of quantum field theory, but also provides the most convenient framework for all but the simplest many body problems; yet it has two great drawbacks. First, apart from the simplest problems it becomes very complicated both in the precise way in which physical problems are translated into mathematical problems, and in the sheer algebra involved. Second, it is not at all clear how far we have truly advanced in solving these problems, for both superconductivity and the screening of Coulomb forces are only rigorously understood in certain weak coupling limits. There is no doubt, however, that this language will be the one used in new advances and everyone who wishes to follow the present ideas must learn it.

The book of Pines and Nozières, the first of two, gives an account aimed at the graduate student, the experimentalist of low temperature or solid state physics, and the theorist who is not specialized in the field. It leans heavily on the quasi-particle concept put forward by Landau, and emphasizes physical ideas omitting the full ferocity of the theoretical literature. It is a well written book in which the ideas of many body theory are shown to give a basis for the concepts of solid state physics which, though hallowed by time, are only now in the course of being justified. Many solid state effects are discussed in detail, and at the end of the book a realistic account of the validity of current ideas is given.

The book of Abrikosov, Gor'kov and Dzyaloshinskii is very different. It is a full theoretical treatise. This edition was apparently planned as a first translation, but it was forestalled by an American publisher. With additions and revisions amounting to about one sixth of the original it is now presented as the second edition. This is not a book for experimentalists, but it is well established as a theoretical text in its first edition and is a mine of detailed calculations giving in particular a full account of Soviet work in this field. S. F. EDWARDS

## NUCLEAR SAFETY

### The Safe Transport of Radioactive Materials

Edited by R. Gibson. Pp. xi + 290. (London and New York: Pergamon Press, Ltd., 1966.) 80s. net.

THE 1964 revised edition of the I.A.E.A. *Regulations for the Safe Transport of Radioactive Materials* is a considerable advance over the first, 1961, edition especially in the classification of radionuclides, more detailed criteria for fissile materials and detailed objective standards for