creasing growth of the field and the need for different books for different audiences. One might compare some of the strong points of these books (although admittedly the points are shared by all) by saying that Goodman and Gilman is particularly welcomed by medical students, Drill, by practitioners, and Sollmann, by serious workers in pharmacology, for it is an unequaled source of clear fact and detail. One turns to it automatically when specific information is needed. Although one hesitates to use the word *encyclopedic* because it sometimes suggests to students a forbidding tome, Sollmann is encyclopedic in the good sense and, at the same time, attractive to beginning workers. The device of large type and small type has always helped in this respect. All in all, this eighth edition is a worthy successor to the now almost legendary series of earlier volumes. The general content is the same—a systematic coverage of the field of pharmacology—and hardly needs further description.

It is impossible to close this review without a word about Torald Sollmann, the man. With Sollmann, the old quotation that "no man is the equal of his book" hardly applies, for he is truly the elder statesman of American pharmacologists, the very active chairman of the Council on Drugs of the American Medical Association, and the possessor of a legion of devoted friends.

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Progress in Low Temperature Physics. vol. 2. C. J. Gorter, Ed. North-Holland, Amsterdam; Interscience, New York, 1957. xi + 480 pp. Illus. $10.75.

This is the second, and last, volume of what amounts to a handbook of low-temperature physics. This volume consists of 14 separate articles, grouped in chapters, written by 22 people all of whom are specialists well known to the majority of workers in this field. The accounts are, accordingly, authoritative throughout and cover a considerable diversity of topics.

Authors of review articles (which these chapters are, essentially) are forced to be selective in their choice of material, especially in a swiftly developing and many-sided subject. Their choices are not always, and in fact not often, entirely pleasing to their colleagues. This is very likely to be the case with this book. Thus, some chapters appeared excellent to me, while others (I thought) might well have been deleted.

Specifically, the article by K. R. Atkins on the problems of the mobile helium film is first-rate and a pleasure to read, and it ought to be useful to everybody interested in this rather bizarre phenomenon. The same is true of the article on a very different topic—semiconductors at low temperatures—by V. A. Johnson and K. Lark-Horovitz. This article contains a great deal of information that is very difficult to dig out of the extensive literature. The chapter by D. Shoenberg on the "de Haas–van Alphen" effect contains all the latest thinking on that subject and is excellently presented.

To illustrate the diversity of the work, there is a very good chapter by M. J. Steenland and H. A. Tolhoek on nuclear spin alignment, especially of radioactive nuclei, by means of magnetic cooling techniques. This is a fairly recent and interesting development, since it amalgamates two hitherto unconnected fields of physics—namely, cryogenics and nuclear physics. The book was published before the use of this method to test parity conservation was reported, but the basic ideas are here outlined.

The book includes many other topics, such as theories of liquid helium (J. de Boer), paramagnetic relaxation (C. J. Gorter), solid helium (C. Domb and E. S. Dugdale), transport phenomena in metals at low temperatures (E. H. Sondheimer), liquid helium below 1°K (H. C. Kramers), and half a dozen other topics. It closes with an expert discussion by H. Van Dijk and M. Durieux of the "temperature scale." In principle, the precise determination of the Kelvin temperature of a batch of liquid helium is one of the nastiest measurements imaginable. In practice, it could be carried out easily by any reasonably bright sophomore. This happy paradox is the result of the patient and skilled work which has been going on for many years, mainly at Leiden, relating the Kelvin scale to the saturated vapor pressure. A very usable p versus T table, embodying the latest results, is included, and the whole is condensed to one page, which makes it very handy for photographic reproduction.

The printing leaves something to be desired. In my copy eight pages were blank, and the caption for one figure was several pages farther along.

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Pilot Plants, Models, and Scale-up Methods in Chemical Engineering. Robert E. Johnstone and Meredith W. Thring. McGraw-Hill, New York, 1957. 307 pp. Illus. $9.50.

There has long been needed a rather comprehensive textbook and appraisal of engineering models and scale-up methods. This book, written especially for chemical engineers, summarizes well both the state of knowledge and the applications of dimensional analysis for predicting performance of large-scale operations from laboratory and pilot-plant data. All the important topics of chemical engineering—including reactor kinetics, combustion, and corrosion—are encompassed. Each chapter can be read independently of the others, with little more background than is contained in the first three introductory chapters.

Chapter 5, on differential equations, is exceptionally good and the methods outlined therein on the development of various dimensionless groups give a clearer insight to dimensional analysis than do the usual methods of unit homogeneity of Rayleigh and Buckingham.

In spite of the many dimensionless groups discussed in this book (and in others), I cannot help feeling that there are only three or four such groups which are basic and have physical significance. All others are derivable from these basic groups or are quite synthetic. Moreover, all suffer from rather serious defects. Dimensionless graphs are either extremely sensitive or relatively insensitive. They compound the errors of whatever measurements are involved in the variables employed. Actually, as used by most engineers, dimensionless groups are desensitizing, and many functional relationships derived by their empirical use in engineering data are deceptive. Although the authors have failed to stress these limitations, they have nevertheless taken great pains, in their discussions and examples of applications, to point out the significance of various dimensionless groups. This has been needed, and for this reason and because the book is well written, I am convinced that it should be added to the library of every practicing chemical engineer.

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New Books

New Research Techniques of Neuroanatomy. A symposium sponsored by the National Multiple Sclerosis Society. William F. Windle, Ed. Thomas, Springfield, Ill., 1957. 107 pp. $4.75.

Scientific and Technical Translating. And other aspects of the language problem. United Nations Educational, Scientific and Cultural Organization, Paris, 1957. 282 pp. $4.20.

Soil, the Yearbook of Agriculture, 1957. U.S. Department of Agriculture, Washington, 1957 (order from Supt. of Documents, GPO, Washington 25). 797 pp. $2.25.

Vertebrates of the United States. W. Frank Blair, Albert P. Blair, Pierce Brodkorb, Fred R. Cagle, George A. Moore. McGraw-Hill, New York, 1957. 828 pp. $12.