a great deal which is useful for the production of such low temperatures as may be attained by mechanical means and the book is therefore of interest for research of a more academic nature.

Since the value of a book dealing with a rather specialized subject depends so greatly on the detailed nature of the information presented, the following brief description of contents is given. After a short introduction dealing with general principles involved in gas separation the author reviews in Chapter I the gas mixtures of greatest importance from the industrial point of view. As a preparation for the problems involved in the separation and therefore of primary importance for the design of the separating plant, the equilibrium of vapor-liquid systems (binary and ternary) is treated in Chapter II. While the discussion is presented in an entirely adequate manner some readers will no doubt find it necessary to consult more detailed texts. For instance, although frequent use is made of the phase rule no explicit statement of it is made. This chapter also contains useful equilibrium diagrams for a number of gas mixtures (pp. 44–59). The methods of gas separation and a discussion of the pertinent thermodynamical principles are presented in Chapters III and IV, and in Chapter V refrigeration as applied to gas liquefaction is treated in detail. The remainder of the book is concerned with the separation of special gas mixtures the most important of which is air. Chapters VI to IX are devoted to a discussion of the types of separation plants, the efficiency of various separation methods and the effect of the non-binary character of air, with especial reference to the extraction of rare gases from the atmosphere. The final chapters, X to XII, deal with coke-oven gas, the production of methane and helium and the separation of olefines from cracker gas.

In summary the reviewer feels that this book should be very useful in its field of application and would be more so if greater emphasis had been placed on experimental data.

ATOMS

The World and the Atoms. By C. MOLLER and E. RASMUSSEN, with a foreword by NIELS BOHR. Translated from the second Danish Edition. 193 pages and 40 figures. D. Van Nostrand Company, 1940. $2.75.

THAT "The World and the Atoms" gives to its readers an admirable account of the fascinating discoveries of modern physics and of the important basic concepts to which they have led is in itself a sufficient recommendation of this most enjoyable book. It is perhaps equally noteworthy that the complementary nature of theory and experiment, so essential for the progress of physical science, is more than adequately expressed. The development of atomic physics starting from the discovery of radium and culminating in the contemporary researches into the atomic nucleus is traced in a very logical and understandable manner—with no mathematics more complicated than multiplication. It is unfortunate that the date of writing prevented more than a brief mention of cosmic radiation.

While no serious fault is to be found with the translator's version the substitution of *brass* for *messing* (facing page 78), *sodium* for *natrium* (Fig. 14) and *tungsten* for *wolfram* (Fig. 21) would have been preferable. Fig. 27 contains a misprint in that the last element of the radioactive chain pictured should be an isotope of *lead* and is therefore *stable* rather than *stabbe*.

M. E. ROSE

BARTOL RESEARCH FOUNDATION
OF THE FRANKLIN INSTITUTE,
SWARTHMORE, PA.

SPECIAL ARTICLES

THE PROTECTION OF MICE AGAINST INFECTION WITH AIR-BORNE INFLUENZA VIRUS BY MEANS OF PROPYLENE GLYCOL VAPOR

SINCE our earlier report on the germicidal action of certain glycols dispersed as fine droplets (aerosols),[1] we have found that the vapors of these compounds exert a rapid and highly bactericidal effect on air-suspended bacteria.[2] Our studies show that the lethal action of glycol aerosols is due principally to the liberation of gas by rapid evaporation of the aerosol droplets. When employed in the gaseous form the amounts of glycol required for effective air sterilization are much smaller than when the substance is introduced as an aerosol. Continued accumulation of evidence indicates that propylene glycol is the agent of choice for this method of killing air-borne bacteria because of its high bactericidal activity and low toxicity for the body as compared with other glycols.

In order to test the action of propylene glycol vapor on influenza virus it was first necessary to devise a simple and effective means of recovering this virus

[1] O. H. Robertson, E. Bigg, B. F. Miller and Z. Baker, SCIENCE, 93: 213, 1941.

[2] O. H. Robertson, E. Bigg, B. F. Miller, Z. Baker and T. T. Puck, *Transactions of Assoc. of Amer. Physicians.* In press.