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**The Physical Chemistry of the Silicates.** *Wilhelm Eitel.* The University of Chicago Press, Chicago. First English Edition, 1954. xvii+1592 pp. \$30.00.

Books of this magnitude are rarely attempted by individual authors today. Dr. Eitel points out in his preface that it represents a third, but first English, edition of a work first presented in 1929, but its accomplishment becomes more amazing in view of Dr. Eitel's limited experience in writing English prior to his arrival in the U. S. from Germany at the close of World War II. When considered in light of personal communications, which this reviewer received from Dr. Eitel soon after he came to America, Dr. Eitel's mastery of English is remarkable.

The overall objective of this book is to interrelate the properties of silicates to igneous petrology as well as several important technologies, including process metallurgy and ceramic engineering. In order to accomplish this purpose, it is necessary to consider a large number of silicate compositions over significant ranges of temperature with respect to a knowledge of phases present, their polymorphic inversions, their ability to fuse or interact with other phases, their ability to form crystalline solutions, etc. Illustrative materials consist of 952 charts and diagrams of equilibria of chemical systems, crystal structure models, and experimental apparatus.

The subject matter is divided into five major topics: (A) The states of the silicates, (B) Fusion and polymorphic equilibria in dry silicate systems, (C) Pneumatogenic and hydratogenic silicates, (D) Solid-state reactions and their ceramic use, and (E) Silicate melts as industrial glasses and slags. Each of these topics is subdivided. There are six indexes: Subjects, minerals and rock species, systematic for the special silicate melt equilibria, alphabetical for silicate and related systems, chemical compounds, and authors. The author index contains more than 4500 names, indicating a topic, division, and a paragraph number (rather than a page number) for each citation.

Dr. Eitel has not attempted a critical evaluation in numerous instances where conflicting interpretations have not been resolved. Nevertheless, he has performed a very useful service in sifting out the important contributions from the vast quantity of almost meaningless details to be found in the literature. Early references have been omitted, and although the book covers results obtained during the past fifty years, a large portion of the cited works are later than 1930. Numerous references to papers which were published in 1952 are cited in spite of the date of August 1952 on the preface.

In a work of this scope, minor errors are expectable. The reviewer noticed a few, particularly in some of the references. The typography and format represent the usual high standards of the publisher. Considering the thickness, the binding seems frail. The price of \$30.00 might invoke hesitancy, but for persons actively engaged in research in applied mineralogy or silicate chemistry, this book is unquestionably a worthwhile investment. There is nothing strictly comparable on this subject.

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