NEW BOOKS.

Leitfaden für den Unterricht in der anorganischen Chemie didaktisch bearbeitet. Von Dr. Joachim Sperber. Dritter Teil. Zurich, Verlag von E. Speidel, 1910. 536 pages.

The first part of this general treatise on inorganic chemistry appeared in 1899 and was reviewed by Prof. Henry Fay in This Journal, **22**, 222. The second part appeared in 1901 and was reviewed by Prof. Fay in This Journal, **24**, 197. The present volume bears the date 1910 and constitutes the third and final volume of the work.

The first two volumes dealt primarily with the non-metals and general theories of chemistry. The third volume is essentially a discussion of the metals and their compounds. About forty pages at the beginning of the volume are devoted to the halogen and sulphur compounds of the non-metals and a few pages at the end to the periodic law and the author's theory of valence. The periodic classification is adhered to in the order of the discussion of the metals. The treatment is clear and comprehensive and the volume is deserving the same general approval as was given to the earlier volumes by Prof. Fay. In the "Schlussbemerkung" the author states that because of the increased cost in publication some of the illustrations as well as table of contents had to be omitted. The omission of an index from such a publication needs no comment.

William McPherson.

Physical Chemistry for the Electrical Engineers. By J. Livingston R. Morgan. John Wiley & Sons, 1909. Second edition, revised. $1.50.

It is becoming necessary to offer courses in electrochemistry to electrical engineering students but a considerable knowledge of physical chemistry is a necessary preliminary and as these students are generally lacking in this, Professor Morgan's little book is a welcome supplementary text. The first six chapters (184 pages) are devoted to the properties of gases, solutions, chemical mechanics, equilibrium in electrolytes, etc. The author has followed Ostwald's idea and avoided as much as possible the use of hypotheses and has succeeded in presenting these things concisely but still in an interesting way. Some have questioned the advisability of neglecting our ideas of atoms and molecules since the student is already familiar with this point of view from his beginning chemistry and will come across it in his future contact with things chemical. The objection has some weight; on the other hand the presentation is sufficiently different from what the student might have expected to arouse his interest and attention and this is essential, as otherwise little or nothing is thought out or retained. The essential principles of electrochemistry proper are briefly presented. A more frequent mention of the application of these principles to things which are familiar to the electrical engineer would

add much to the book, particularly should some of the problems be from this standpoint. G. A. HULETT.

Principles of Chemical Geology. By JAMES VINCENT ELSDEN. London and New York: Whittaker & Co., 1910. pp. vi+220. Cloth.

The title of this book is somewhat misleading, for it is not a general treatise on chemical geology. It is really and professedly an attempt to apply the theory of equilibrium to geological problems, and therefore it covers a well-defined but limited field. The specific questions to which modern physico-chemical ideas and principles are applicable are discussed with some detail in an elementary way, with abundant illustrations of their applicability and a wealth of references to literature. Such themes as viscosity, diffusion, surface tension, vapor pressure, eutectics and solid solutions are considered, and their bearing upon the magma and its solidification are clearly treated. The work of men like LeChatelier, Arrhenius, Doelter, Vogt, Ostwald, van't Hoff and Morozewicz is fully discussed, that of van't Hoff upon the Stassfurt salts being given considerable prominence. English and American workers are also extensively cited, showing that the author has gone quite thoroughly over the available literature. There are, here and there, minor errors in purely chemical and mineralogical matters, but they are so few that they do not lessen the value of the book to any serious extent. The volume will certainly be most helpful to many progressive geologists, for magmatic problems are coming more and more into the field of physical chemistry. What happens when molten rock solidifies, or when a bed of rock salt or gypsum is deposited from solution? Questions like these must be handled by modern methods, and the philosophical geologist can no longer be content with the chemistry of thirty years ago.

F. W. CLARKE.

Beiträge zu einer Kolloidchemie des Lebens. VON RAPHAEL ED. LIESEGANG. Dresden: Verlag von Theodor Steinkopff, 1909. 148 pp. Price, 4 mks.

This is a collection of heterogeneous experiments dealing with the formation of precipitation membranes of various phosphates, silver chloride, copper ferrocyanide, etc., in gelatin, which are supposed to, and possibly do in some particulars, parallel the processes of formation of membranes, growth, partial permeability, and resorption, occurring in living cells.

The experiments are not planned apparently with any definite end in view nor is any explanation given of some of the results. An idea of the scope of the experiments, of which there are one to several included under each heading, may be obtained from a partial list of the chapter headings of Part 1, pp. 1–77. "Apparent membrane effects; the passage of circles of diffusion through each other; speed of diffusion; the apparent