evening at the Hotel Colonial. The next annual meeting will be held in Chicago.

Professor Angelo Heilprin is president for the year 1907. The complete list of officers has already been published in SCIENCE.

ALBERT PERRY BRIGHAM,
Secretary

SCIENTIFIC BOOKS

Petrogenesis. By Dr. C. DOELTER. Braunschweig, Friedr. Vieweg and Son. 1906. Pp. xii + 261; 1 plate and 5 figures. 8vo. Paper. 7 M.

This is Volume XIII. of a series of monographs on natural history and mathematics entitled 'Die Wissenschaft.' In it Professor Doelter, of the University of Gratz, presents an outline of the knowledge and theories concerning rocks of all kinds. The comprehensive treatise is put in the form of fourteen chapters, the first ten of which deal with volcanic rocks, the last four with contact metamorphism, the formation of the crystalline schists, sediments, and chemical precipitates. One hundred and fifty pages are devoted to the problems of igneous rocks, fifty-two to those of the crystalline schists.

The method of treatment is to present the views of various geologists or petrographers on different topics, sometimes with comments and criticisms, sometimes without. The citations are many, but from the nature of the task, perhaps, they are not always complete as to number or entirely satisfactory as to substance in some instances. However, there is a great fund of information for the student and an abundance of valuable bibliographic references. The scope of the work is so large that it is not possible to review the book with the thoroughness it deserves without a very considerable expenditure of time and space. And it may be sufficient to point out the contents of the several chapters in a general manner.

The first is devoted to a consideration of the theories and observations concerning the interior of the earth and the problem of vulcanism. The physics of the interior of the earth is discussed and the observations of Barus and Tammann with reference to melting points and pressure are cited. The possible source of molten magmas, and the causes and mechanics of their eruption are considered, including the rôle of vapors and the temperature of lavas.

The second chapter treats of the forms of volcanic rocks as conditioned by their solidification on the surface of the earth or at some depth below it, and also the influence of vapors upon the crystallization. The discussion of laccolithic forms reveals a curious attitude toward the original definition of the term by Gilbert. In connection with the problem of intrusion the views of Kjerulf and of Michel-Lévy are presented, and those in opposition are credited chiefly to Brögger. Daly's theory is also stated.

The third chapter has to do with the structure (texture) of eruptive rocks. The porphyritic texture is discussed at length with special reference to Fouqué and Michel-Lévy's views and to those of Zirkel. A number of petrographers are cited in connection with the texture of phanerocrystalline rocks, chiefly Brögger, Lane, Teall and Vogt. Spherulitic texture receives considerable attention, the views of Rosenbusch and of others being noted. The question of the relation between age and texture is considered, and the textural and constitutional facies of rock bodies are described.

In the fourth chapter the relation between the mineral composition and the chemical composition of igneous rocks is discussed. The view of Lagorio, Vogt, Morozewicz and Iddings are commented on. The work of Osann in correlating chemical analyses of rocks is reviewed, and the methods of expressing the chemical composition of rocks by means of diagrams are described to some extent, especially those of Brögger and Becke.

The fifth chapter deals with the problem of the differentiation of magmas. Various theories are set forth briefly and commented on. The term is also applied to the crystallization of minerals from molten magmas. Experi-

mental work on the crystallization of rock minerals in the laboratory is reviewed and Doelter's own observations on the precipitation of crystals in molten liquids are noted.

The question of the order of the eruption of different kinds of rocks at given centers of volcanic activity is treated in the sixth chapter. The diverse statements of petrographers as to the order in different regions are noted and the conclusion reached that there is no uniform order which obtains for all regions, but that the succession is highly complex.

The seventh chapter deals with inclusions in igneous rocks, their character and origin. Assimilation and corrosion are discussed in chapter eight. First the changes effected on minerals crystallized from magmas, and then the effects on rocks in contact with molten magmas. The laboratory production of rocks by experimental means is described in chapter nine, especially the researches of Fouqué and Michel-Lévy, and those of Morozewicz.

In the tenth chapter the solidification of volcanic magmas is discussed with reference to the minerals produced under different conditions, and also with respect to the order of their separation. Laws affecting the crystallization of compounds from solutions are reviewed, the question of eutectic mixtures is considered, also the effect of undercooling, the melting point of minerals, and the influence of pressure on separation. The production of tuffs and bombs is also discussed. In the eleventh chapter contact metamorphism is described and its causes and processes discussed.

The crystalline schists are treated in one chapter of fifty-two pages. Various theories as to their origin are reviewed, chiefly those based on specific researches upon special regions or particular occurrences. It will be enough to note the captions under which the subject is treated: Eruptive Gneiss, Gneiss as Altered Granite, Diagenesis, Regional Metamorphism, The Chemical Composition of the Rocks, Alteration by Means of Water, Alteration by Means of High Temperature, Injection Hypothesis, Dynamic Metamorphism, Chemical Reactions in Solids, Plasticity of Rocks, Lateral Pressure, Connection between Metamorphism and Dislocation, Law of the Change of Volume, Mineral Composition of Crystalline Schists, Structure and Texture of Schistose Rocks, Origin of Schistosity, Zones of Metamorphism, Objections to a General Application of Dynamic Metamorphism, Formation of Crystalline Schists by Contact Metamorphism, Comparison of Contact Metamorphism and Dynamic Metamorphism.

The thirteenth chapter treats of sediments, their kinds and modes of formation. The major portion of the chapter is devoted to limestone and the formation of dolomite. The last chapter contains a discussion of the production of chemical precipitates, the deposition of rock salt, gypsum and anhydrite. The works of Bischof, van't Hoff and of Ochsenius are those chiefly cited. J. P. Iddings

The Origin and Structure of the Roxbury Conglomerate. By George Rogers Mansfield. Pp. 180, 7 pls. Cambridge, Mass., November, 1906. Bull. of the Museum of Comparative Zoology at Harvard College, Vol. XLIX. Geol. Series, Vol. VIII., No. 4.

This paper, after a rather lengthy introduction, begins with a forty-five-page chapter on the origin of conglomerates, in which are discussed the various types of conglomerate. The discussion is thorough, and the results, drawn principally from the conclusions and opinions of previous writers in different countries, are tabulated. This digest is of general interest, and is a valuable contribution to the subject.

The remainder of the work deals principally with the three Carboniferous basins of Massachusetts and Rhode Island—the Boston Basin, which includes the Roxbury conglomerate; the Norfolk Basin, and the Narragansett Basin. The text is essentially a critical review of previous publications on these areas, especially of the Boston Basin, which has been studied in great detail by Professor W. O. Crosby. Professor Crosby's work in this region has extended over a period of at least thirty years, and no less than sixteen of his publications are included in the author's bibliography. In view of this fact it is noteworthy that, in the final paragraph of