In part II., on petrography, this matter is taken up in greater detail and the conditions controlling the crystallization of quartz discussed. The microlites of feldspar and the metasilicates like the phenocrysts are essentially the products of igneous fusion, but the quartz is assumed to have crystallized under hydrothermal conditions acting at a lower temperature. These opinions are especially significant, coming as they do from one of the foremost French petrographers.

Chapter IV. deals with the most evident and apparent expressions of vulcanism—the great clouds of vapor ladened with fragmental material, the 'burning clouds' (nuées ardentes) which swept down the flanks of Pelée and annihilated Saint Pierre, mud-flows, etc. Several chapters follow in which the different violent eruptions are described and the theory of the 'burning clouds' is discussed. Chapter IX. is an important one on the character and distribution of the fragmental deposits and their subsequent erosion. The first part closes with an account of the various accessory phenomena, as atmospheric electricity, changes in atmospheric pressure, abnormal optical phenomena, etc.

Part II. consists of a systematic petrographical study of the recently erupted rocks in which, it is interesting to note, the author makes frequent use of the Quantitative System recently proposed by Cross, Iddings, Pirsson and Washington, finding it most convenient for purposes of comparison. The mineral composition and texture of the rocks are described, and the conditions already mentioned, which have influenced the consolidation of the magma, are discussed in detail. The older rocks of Martinique and a number from other islands of the Lesser Antilles are compared, and a consideration of their chemical composition leads to the recognition of a well-marked petrographic province.

In part III. Lacroix presents the results of his observations on the products resulting from the burning of Saint Pierre. The effect of intense heat on metals, glass, structural stone-work, etc., was often sufficient to cause complete fusion, leading to the formation of a considerable variety of secondary minerals.

The book bears evidence in places of hasty preparation and there is considerable needless repetition, but, on the whole, it must be recognized as the most complete and masterly presentation that has yet appeared of the facts and problems related to the West Indian eruptions of 1902–3. The promptness with which the final report was published after the close of the field work deserves praise in itself, and too much can not be said of the excellence of the numerous illustrations which, with very few exceptions, are from untouched photographs and are faithful records of the events from soon after the disaster of May 8, 1902, until the autumn of 1904.

Ernest Howe.

Washington, D. C.,
March 22, 1905.

Scientific Journals and Articles.

The February number (volume 11, number 5) of the *Bulletin of the American Mathematical Society* contains the following articles: Report of the Eleventh Annual Meeting of the American Mathematical Society, by F. N. Cole; 'Mathematical Progress in America' (Presidential Address), by T. S. Fiske; Report of the Sectional Meetings of the Heidelberg Congress (Continuation), by E. B. Wilson; Report of the Breslau Meeting of the Deutsche Mathematiker-Vereinigung, by R. E. Wilson; 'The Construction of Conics under Given Conditions,' by M. W. Haskell; Notes; New Publications.

The March number of the *Bulletin* contains the following articles: 'The Present Problems of Geometry,' by Edward Kasner; Report of the Fifty-fourth Annual Meeting of the American Association for the Advancement of Science, by L. G. Weld; 'A Calculus for Geometers' (Review of Humbert's Cours d'Analyse), by E. R. Hedrick; 'Halsted's Rational Geometry' (Review), by S. C. Davisson; 'Tchebychef's Theory of Congruences,' by André Markoff; Notes; New Publications.

The American Naturalist for February opens with an article by J. S. Kingsley, on 'The Bones of the Reptilian Lower Jaw,' showing the presence of an element, the derm-

articulare, which sometimes remains distinct, but more often fuses with the articulare. Other articles are 'Natural and Artificial Parthenogenesis,' by Alexander Petrunkevitch; 'The Angle of Deviation from the Normal Vertical Position at which Stems show the Strongest Geotropic Response,' by Julia A. Haynes (a difficult title for the cataloguer), and 'Note on the Variation in the Bay Flowers of Rudbeckia,' by Raymond Pearl.

The Popular Science Monthly for April contains a most important article, 'The Menace to Niagara,' by John M. Clarke, showing the entire probability that the American Falls will be destroyed if present plans are carried out. Other articles are 'Sunspots and Weather,' by Ernest W. Brown; 'Medical Research, its Place in the University Medical School,' by Theobald Smith; 'The Problem of Immigration,' by Allan McLaughlin; 'Age and Eminence,' by Edwin G. Smith; 'Authority in English Pronunciation,' by Edwin W. Bowen, which shows the part dictionaries play in fixing the pronunciation of words, and, finally, 'The Bermuda Islands and the Bermuda Biological Station for Research,' by Edward L. Mark. In correspondence Olivia R. Fernow discusses the question 'Does Higher Education Unfit Women for Motherhood' in reply to the somewhat hysterical article by Dr. Smith in March. The number completes Volume LXVI. and has the index.

SOCIETIES AND ACADEMIES.

THE NEW YORK ACADEMY OF SCIENCES. SECTION OF ASTRONOMY, PHYSICS AND CHEMISTRY.

THE regular meeting of the section was held on Monday evening, January 8, at Fayerweather Hall, Columbia University.

The following papers were presented:

Experiments Relating to the Conductivity of Powders at High Temperatures: HERSCHEL C. PARKER.

When a conducting powder like graphite is mixed with a non-conducting refractory powder, the resistance increases quite rapidly at first; as the proportion of graphite is decreased, then more slowly, and after a time reaches a critical point where there is no conduction or the graphite is destroyed by arcing.

When the percentage of the conducting powder is low a mechanical separation or 'striation' takes place on packing in the refractory tubes. Besides this an electrolytic separation usually takes place after a time and the conductivity of the mixture is destroyed by arcing.

A very great variety of substances and mixtures were experimented with in the search for a permanent compound of high resistance.

The Magnetic Susceptibility of Water: A. P. WILLS.

Experiments were made with the large electro magnet of Columbia University to determine the magnetic susceptibility of water. With the aid of this magnet, which is one of the largest in existence, Dr. Wills found the coefficient of susceptibility of water to be -0.72×10^{-6}, and also to be independent of the field strength over a range from 4,000 to 16,000 C.G.S. units.

C. C. TROWBRIDGE,
Secretary.

SECTION OF BIOLOGY.

AT the March meeting papers were presented by Mr. L. I. Dublin, of the College of the City of New York; Mr. Frederic A. Lucas, director of the Brooklyn Museum; and Professor F. S. Lee, of Columbia University.

Mr. Dublin described the history of the germ-cells in *Pedicellina americana,* giving special attention to the chromatic changes. The somatic number of chromosomes is twenty-two. These bodies behave, throughout, very much as has been described by many workers on other forms; but in addition there has been observed a peculiar process in connection with the reduction of the chromosomes. These are V-shaped in the somatic cells and in the several generations of oogonia and spermatogonia, with the exception of what appears to be the last. In this the number is still twenty-two, but they are bar-shaped. These divide and, either before or at the telophase, apparently unite end to end in pairs to form eleven new V's, each bivalent as compared with the earlier