prior to the effusion, but at moderate depths; while the formation of the microlites of leucite took place during the effusion. The lapilli which covered Ottajano show very decided chemical differences from these, especially in their higher magnesia and lime and lower alkalies.

In Chapter III. are described the fragments of an earlier date brought up by the last eruption, including lavas, tuffs, intrusive rocks and metamorphosed limestones. In Chapter IV. the effects of autopneumatolysis and metamorphism on these fragments at Vesuvius, and in Chapter V. the similar phenomena at the volcanoes of the Auvergne, Santorini and Martinique are discussed. Many interesting details are here given, which are too numerous for review and for which the original monograph must be consulted.

The final Chapter VI. is devoted to a general discussion and description of the eruptive rocks of Somma and Vesuvius, and is to the petrographer the one of greatest interest and value. A large number of diverse types are described, accompanied by numerous, good analyses by Pisani. Lacroix shows that the variation in composition, both mineralogical and chemical, of the Vesuvian lavas is far greater than has hitherto been thought. In the terms of the prevalent classifications the rocks described are leucite-phonolite, leucite-tephrite, trachyte, phonolite, sanidinite, microsyenite, sommaite (leucite-monzonite) and monzonite, with corresponding chemical differences, the silica, for instance, varying from 47.31 to 58.61 per cent. In terms of the quantitative classification, which, it is of interest to observe, is employed throughout the work in connection with that commonly in use, the subrangs represented are beemerose, procenose (I. 6. 2. 3), miaskose, ciminose, shoshonose, borolanose, braccianose, vesuvose, shonkinose, ottajanose (III. 6. 3. 2), ourose, and an unnamed one (III. 8. 2. 3). It may be noted, however, that, while the mineralogical and chemical complexity of the mass is thus evident, yet that the predominant rocks are leucite-tephrites, belonging to the subrangs borolanose and braccianose of the quantitative classification, the non-leucitic rocks and those belonging to the persalane and salfemane classes being present in comparatively small amounts. From the analytical data presented Lacroix considers that the average magma of Somma-Vesuvius belongs to borolanose (II. 6. 2. 3), the Vesuvian lavas being mostly dopotassic, while the lavas and tuffs of Somma are for the most part sodipotassic. This introduction of the materials of Somma into the calculation explains the divergence from the position of braccianose (II. 7. 2. 2) previously assigned by the reviewer to the Vesuvian magma. In this final chapter is also included a brief discussion of the formation of leucite, the author laying special stress on the physical conditions, while the reviewer has recently (in the *Journal of Geology*) discussed the question chiefly from the chemical side, the results of both being in harmony with each other.

Ten plates of excellent phototypes, illustrating, the microscopic and megascopic modes and textures of the rocks, close the volume, which is a most important contribution to our knowledge of Italian volcanoes, and is an illuminating example of a modern petrographic monograph.

HENRY S. WASHINGTON

*The Royal Society: some account of the "Classified Papers" in the Archives;* with an Index of Authors. Compiled by A. H. CHURCH, D.Sc., F.R.S. Oxford; printed for the author. 1907. Pp. 38. Royal 8vo.

Professor A. H. Church, the distinguished chemist, student of colors, water, gems, and critical author, has published a most exhaustive and interesting account of the "Classified Papers" in the archives of the Royal Society of England. These papers are collected in thirty-nine guard-books, which were made up in 1740 or 1741; a few of the papers were printed, but the greater part are in manuscript. Professor Church gives a comprehensive, clear and incisive account of the formation and character of the early history of that learned institution, known for the past two and a half centuries as "The Royal

Society," in a stately octavo, printed from an unusually neat and clear type. While the first charter of the society was granted July 15, 1662, some of these papers are of earlier date and a few even belong to the time of King James I. It appears that there was a committee of trades connected with Philosophical Society or Assembly, out of which the Royal Society was developed, and some of the more practical papers were contributed to this committee. A few of these, written in 1639, appear in Vol. III.; the documents of still earlier date, in Vol. XXV., may have formed part of the gift made, in 1667, by Mr. H. Howard, of the Arundel Library.

It seems that the appellation "Royal Society" was first employed by John Evelyn in his translation of a work by Gabriel Naudé. This translation, which appeared in 1661, is accompanied by a dedication to Edward, Earl of Clarendon; in this Evelyn writes: "God has Enlightn'd your great Mind with a Fervour so much becoming it in the promoting and encouraging of the Royal Society."

These guard-books may be properly called "classified papers," since the contents are generally arranged according to subject; the chronological order has also been observed in most cases. The collection comprises original papers and also letters or memorials communicated either to the society or to its officers or members; to these are added memoirs and reviews relating to the papers and a few broadsides and prospectuses. A large part of these papers have never been printed, and 2,500 have been indexed as to authors' names, of which there are more than 800; a few, however, are anonymous. Each volume of the guard-books now contains a table of contents and the names of the authors as far as they are known; as the articles are grouped under different subjects in most of the guard-books, a subject-index is not absolutely necessary.

It is impossible in this short note to give any adequate idea of the variety and importance of the papers contained in this collection, to the mathematician, physicist, mineralogist, zoologist, geographer, archeologist, in fact to all scientific workers who are interested in the classics of their particular science. One of the most interesting contributions was a sealed paper by the Hon. Robert Boyle on his "Way of makeing the Phosphorus." There are 103 papers by Robert Hook, 66 by Francis Hauksbee, 84 by Denis Papin and 19 by Sir Robert Moray. Among the other noteworthy names we may mention Isaac Borrow, John Hadley, Sir Hans Sloane, Sir Christopher Wren, Sir Isaac Newton, Giordano Bruno, Andreas Celsius, J. C. A. Helvetius, De Maupertuis, G. E. Rumphius, Prince Rupert, Carolus Linnæus, Athanase Kircher, Cotton Mather, D. G. Fahrenheit, etc.

The guard-books reflect great credit on the thoughtful care and foresight of those who for so great a period have maintained the dignity of the Royal Society and have preserved, not only the manuscripts of the author, but in many cases the entire correspondence on the paper.

Herewith the index to the twenty-five guard-books:

Volume.

I. Arithmetick, Algebra, Geometry, Trigonometry.
II. Surveying, Opticks, Perspective, Sculpture, Painting, Musick, Mechanicks.
III. (1) and (2). Mechanicks, Trades.
IV. (1) and (2). Physiology, Meteorology, Pneumaticks.
V. Journals of the Weather.
VI. Staticks, Hydrostaticks, Hydraulicks, Hydrology.
VII. (1) and (2). Architecture, Ship-Building, Geography, Navigation, Voyages, Travels.
VIII. (1) and (2). Astronomy.
IX. (1) and (2). Mineralogy, Magneticks.
X. (1), (2) and (3). Botany and Agriculture.
XI. (1) and (2). Pharmacy and Chymistry.
XII. (1) and (2). Anatomy and Surgery.
XIII. Monsters; Longevity.
XIV. (1) and (2). Physick.
XV. (1) and (2). Zoology.
XVI. Gramar, Chronology, History and Antiquities.
XVII. Miscellaneous Papers.
XVIII. (1) and (2). Experiments of Papin, Hauksbee and Desaguliers.

XIX. Inquiries and Answers.
XX. Dr. Hook's Papers.
XXI. Halley's Papers.
XXII. (1) and (2). Accounts of Books.
XXIII. (1) and (2). Inoculations.
XXIV. Papers by Collins, Oldenburg and Hook.
XXV. Political: Trade.

GEORGE F. KUNZ

## SCIENTIFIC JOURNALS AND ARTICLES

THE July number (volume 8, No. 3) of the *Transactions of the American Mathematical Society* contains the following papers:

J. W. YOUNG: "General theory of approximation by functions involving a given number of arbitrary parameters."

E. R. HEDRICK: "On derivatives over assemblages."

BEPPO LEVI: "Geometrie proiettive di congruenza e geometrie proiettive finite."

OSWALD VEBLEN: "Collineations in a finite projective geometry."

R. L. MOORE: "Geometry in which the sum of the angles of every triangle is two right angles."

O. VEBLEN and J. H. MACLAGAN-WEDDERBURN: "Non-desarguesian and non-pascalian geometries."

L. E. DICKSON: "Modular theory of group-matrices."

OSKAR BOLZA: "Existence proof for a field of extremals tangent to a given curve."

G. A. BLISS: "A new form of the simplest problem of the calculus of variations."

A. E. YOUNG: "On certain isothermic surfaces."

*The Library Journal* for July contains an article on "The Library and the Museum," by Henry L. Ward, in which he takes the ground that a union of the two is impracticable, that the two differ radically in their methods and administration and that all attempts to unite them have been failures so far as the museum part is concerned.

*Bird-Lore* for July-August contains articles on "A Southern California Aviary," by H. L. Sefton; "A Report on the Nesting Birds in the Vicinity of Riverview Park, Allegheny, Pa., for 1906," by W. G. Pitcairn, comprising 95 nests of 20 species, 43 nests turning out successfully in spite of the small boy. F. H. Herrick contributes the first half of a paper on "Bird Protection in Italy as it impresses the Italian"; apparently it does not on the whole impress him favorably, for he considers that all birds should be killed and eaten, an idea he tries to carry into practise here. W. W. Cooke contributes the fourth paper on "The Migration of Thrushes" which consists mainly of a fine colored plate. There are "Notes on the Starling," predicting that the importation of this bird will be as greatly deplored as that of the English sparrow. There are important articles on the failure of New Jersey to pass a bill prohibiting spring shooting and on the failure of the bill to permit the sale of certain species of foreign game in New York. William Dutcher makes a strong plea for the preservation of the wood duck, showing that unless radical steps are soon taken the bird will be exterminated.

## SOCIETIES AND ACADEMIES

### THE NORTH CAROLINA ACADEMY OF SCIENCE

THE North Carolina Academy of Science held its sixth annual meeting at Chapel Hill, N. C., May 17 and 18, 1907.

The academy was called to order by its president, Collier Cobb, and an address of welcome was extended to the academy by President Francis P. Venable of the university. A response to the address was made by the retiring president, John F. Lanneau, of the Academy of Science.

In the evening the academy met in Gerrard hall, and the presidential address "The Garden, Field and Forest of the Nation" was delivered. Following this address a reception was extended to the visiting members in the Y. M. C. A. building. Saturday, May 18, at 9 A.M. the academy convened for a business meeting. Twenty-one new members were elected. The following officers were elected for the ensuing year:

*President*—T. Gilbert Pearson, of Greensboro, N. C.

*Vice-president*—W. C. Coker, of Chapel Hill.

*Secretary*—E. W. Gudger, of Greensboro.

*Members of the Executive Committee*—Franklin Sherman, Jr., of Raleigh; J. J. Wolfe, of Durham, and John F. Lanneau, of Wake Forest.

The report of the treasurer showed a balance of $122.53.