Stevens Institute of Technology; Miss Virginia Ragsdale, New York City; S. E. Rasor, Ohio State University; A. E. Young, Purdue University; J. E. Wright, Bryn Mawr College. Six applications for membership were received.

Annual reports were received from the treasurer, librarian and secretary. The society continues to hold its own financially. It could accomplish more if larger funds were at its disposal. The library has increased to over 1,300 volumes, and now receives by exchange with the *Bulletin* and *Transactions* the current volumes of nearly every mathematical journal in the world. The membership of the society is now 455, a gain of 54 during the past year. The 'Annual Register' will be issued about the middle of January.

Committees were appointed to arrange for the publication of the course of lectures delivered at the Boston colloquium, September, 1903, and to consider the question of the future financial support of the *Transactions*, which has hitherto been published by the aid of subventions terminating in 1904.

The following papers were read at the annual meeting:

E. V. Huntington: 'A set of independent postulates for the algebra of logic (second paper).'

J. G. Hun: 'On certain invariants of two triangles.'

O. D. Kellogg: 'Note on Cauchy's integral.'

J. I. Hutchinson: 'On certain automorphic functions.'

W. F. Osgood: 'On a gap in the usual presentation of Weierstrass's theory of functions.'

E. V. Huntington: 'Third complete set of postulates for the theory of positive integers.'

E. V. Huntington: 'Second complete set of postulates for the theory of magnitudes or positive real quantities.'

W. B. Fite: 'On some properties of groups whose orders are powers of a prime.'

E. J. Wilczynski: 'On ruled surfaces whose flecnode curve intersects every generator in two coincident points.'

Virgil Snyder: 'Complete enumeration of sextic scrolls having a rectilinear directrix.'

F. Morley: 'On the triplicity of 3-points in a plane.'

C. L. E. Moore: 'Classification of surfaces of singularities in the quadratic spherical complex.'

L. D. Ames: 'On the theorem of analysis situs relating to the division of the plane or of space by a closed curve or surface.'

W. B. Ford: 'On the function defined by a Maclaurin series.'

P. F. Smith: 'Linear transformations of a quadratic form into itself.'

E. B. Wilson: 'Projective and metrical geometry.'

C. H. Sisam: 'On the depiction of the lines of a special linear complex on the points of space.'

Edward Kasner: 'Investigations on isothermal systems.'

About fifty persons attended the meeting. On Monday evening an informal dinner contributed to the pleasures of the occasion.

The next meeting of the society will be held at Columbia University on February 27. The Chicago Section will meet again in April and the San Francisco Section in May.

F. N. Cole,
Secretary.

SCIENTIFIC BOOKS.

The General Principles of Physical Science. By Arthur A. Noyes. New York, Henry Holt & Co. 1902. Pp. vii + 172.

This is the first volume of a work on which the author is engaged, entitled the 'General Principles of Chemistry.' The present volume is introductory and has for its purpose the setting forth of the laws and general principles of physics and chemistry, so far at least as these underlie the broad subject which the author has undertaken.

The present treatment is altogether systematic and not historical, and is intended for readers and students who are making special study of what is now generally known as physical chemistry.

The book contains four chapters: I., 'The Object, the Methods, and the Sub-divisions of Science'; II., 'The Fundamental Con-

cepts of Physical Science'; III., 'The General Principles Relating to Matter,' and IV., 'The General Principles Relating to Energy.' To these are added a good general index.

The basal importance of the subjects with which these chapters have to do is well established and the author has achieved a signal success in the clear and comprehensive manner in which he has presented them to the reader.

For this is no rehash of what has been already well said by various authors on these subjects, but is clearly the result of a close personal inquiry into the underlying concepts of modern science. The reader is thus not infrequently asked to set aside the traditional form in which some concept has been hitherto expressed. The author's independence of thinking is well illustrated in his treatment of compounds and mixtures, kinetic and gravitational energy and the second law of thermodynamics.

Sometimes, however, an impression is left on the reader that the author's restatements of old laws are a little hasty and so lack the absolute singleness of idea or exact precision which should characterize any general statement in physical science.

Thus on page 117 we find Faraday's laws of electrolysis expressed as follows: '*The passage of electricity through an electrolyte is attended at each electrode by a chemical change involving a number of chemical equivalents strictly proportional to the quantity of electricity passed through, and dependent on that alone.*' This is hardly free from possible misunderstanding. A clearer statement of the facts, following the suggestion of the author, would be the following: The passage of electricity through any electrolyte is attended by chemical *changes* which involve the *same* number of chemical equivalents at each electrode, and which are directly proportional to the quantity of electricity passed through and dependent on that alone.

Similarly on page 37 the statement of the law of multiple proportion would be clearer if the words *the same* were replaced by the words *a given,* so that the law would read: 'When one element combines with another in several proportions to form different chemical compounds, the quantities of the one element which in the several compounds are combined with *a given* quantity of the other element, stand to one another in the ratio of small whole numbers.'

The chapter on energy is especially valuable. Throughout, the concept of energy is regarded as fundamental and the concept of force is made secondary. The treatment of the various forms of energy is such as to bring into prominence the factors of a particular form of energy—namely the *intensity* and *quantity* factors.

The first and second laws of thermodynamics or energetics, as our physical chemistry friends are pleased to call them, are presented and discussed with great distinctness.

Credit also should be given the author for his consistent use throughout the book of a particular and distinct symbol or letter to denote a particular and distinct physical quantity. This saves the beginner many pains. Beginners will owe him also much gratitude because he has made such free use of numerical examples to illustrate the applications of the various principles.

It is a pleasure to say that the present introductory volume is a positive addition to the literature of physical science and the students of physical chemistry, especially in America, will await with eagerness the appearance of the volumes which are to follow.

E. H. LOOMIS.

PRINCETON UNIVERSITY,
December, 1903.

SCIENTIFIC JOURNALS AND ARTICLES.

THE December number of the *Bulletin of the American Mathematical Society* contains: Report of the Boston Colloquium of the American Mathematical Society, by F. N. Cole; 'Linear systems of curves upon algebraic surfaces,' by H. S. White; 'An expression of certain known functions as generalized hypergeometric functions,' by E. T. Whittaker; 'On the factoring of large numbers,' by F. N. Cole; 'Note on the p-discriminant of ordinary linear differential equations,' by Arnold Emch; 'Hydrodynamic action at a distance,' by E. B.