ject of immense extent and one that must be treated objectively.

Broadly regarded, physiology and medicine are inseparable. Since the medical man's object is to remedy the various ills to which the human body is liable, every fresh discovery in physiology will sooner or later be serviceable to him in the preservation and repair of that wonderful structure. It is an extreme satisfaction to me that in honoring the memory of a great physiologist and man of science I am able to make use of ideas and facts which from a unique standpoint affording every prospect of success throw light upon the highest and most complicated portion of the animal mechanism.

SCIENTIFIC BOOKS.

Lehrbuch der Anorganischen Chemie. Von Professor Dr. H. ERDMANN, Direktor des anorganisch-chemischen Instituts der königlichen technischen Hochschule zu Berlin. Vierte Auflage (neuntes bis zwölftes Tausend) mit 303 Abbildungen, 95 Tabellen, einer Rechentafel, und sieben färbigen Tafeln. Braunschweig, F. Vieweg und Sohn. 1906. Pp. 796. In Leinwand gebunden M. 17.

A long review of the second edition of this book appeared in SCIENCE in 1901.[1] The present edition has been thoroughly revised, and contains valuable additions to text, to illustrations and to tables.

The weaknesses and the strong points of the book remain practically the same, as both are inherent in the author's scheme. Erdmann believes that a text-book of inorganic chemistry should describe the occurrence, properties, reactions, manufacture and uses of all inorganic elements and compounds, with liberal illustration of instructive experiments, of apparatus and of technical processes. No other one-volume text-book is so complete, so well illustrated and so thoroughly up to date in these respects.

Erdmann does not believe in the introduction of physical chemical theory in the descriptive text, but makes a brief résumé of general chemistry in the 87 pages of the introductory chapter. There are those who will sympathize with Erdmann in this arrangement, others who may be reminded of the eccentric American author who left his book unpunctuated and put several pages of commas, periods, etc., at the end of the book for use as the reader might please. Certainly many phenomena in the field of inorganic chemistry find the clearest explanation by the application of the laws of physical chemistry, and remain obscure if such explanation is not given.

This objection, however, does not lessen the practical value of Erdmann's book, because there is no text-book of inorganic chemistry written from a physical chemical point of view which is comparable with Erdmann even in general descriptive data, still less in technical information. It is, therefore, to be expected that this fourth edition will meet the same cordial reception and large sales as its predecessors. E. R.

Vermehrung und Sexualität bei den Pflanzen. Von E. KÜSTER. Leipzig, B. G. Teubner. 1906. Pp. vi + 120. 38 figures.

In America one is accustomed to look with suspicion upon all books in which an attempt is made to popularize science. All too often this suspicion is justified, for who has not met with books in which scientific accuracy has been sacrificed to the sensationalism demanded by a certain class of the public or where the science is so diluted by allegory or fable as to be unrecognizable. The book before us is, however, of an entirely different type. It is one of a series of popular scientific works ('Aus Natur und Geisteswelt') in which each book is written by a specialist who knows his subject.

The subject of reproduction and sexuality in plants is a difficult one to handle so as to be comprehended by persons who have studied but little or no botany and it is in this connection that the chief criticism can be made, to the effect that it is to be feared that parts of the book will be found too technical to be

[1] SCIENCE, Vol. XIII., pp. 268–70.

understood by such persons, at least with readiness.

Eighteen pages are devoted to vegetative reproduction with a discussion of cuttings, runners, bulbs, tubers, grafting, etc., in the higher plants, and of conidia, swarm-spores and fission in the fungi and algæ. Eighty-seven pages treat of sexual reproduction. The author traces the history of the knowledge of sexuality in plants from the Greek philosophers down to its demonstration by Camerarius, confirmation by Kohlreuter, discovery of the pollen-tube by Amici, observation of sexuality in cryptogams by Hofmeister, Thuret and Pringsheim, and the more recent investigations showing the part played by the nuclei, chromosomes, synapsis, etc., thus bringing the subject down to this year. After this historical and general discussion the different groups of plants are taken up, showing the increasing complexity of the sexual process from the union of two equal cells up to the complicated processes in the higher fungi and algæ, the alternation of generation and development of heterospory in the Archegoniatæ and the double fertilization in the Angiosperms. Under the caption General Questions are taken up sexual affinity, hybrids, polyspermy, parthenogenesis, parthenocarpy, apogamy, apospory, merogony and determination of sex. The final considerations take up the theory of fertilization and the theory of sex, the various views being presented in an unbiased manner as well as the objections to them.

Although professedly designed for those who are not specialists this book should prove valuable for both students and teachers. The references to literature, both old and very recent, although with no pretence to completeness, yet give the most important contributions bearing on the subject. The figures are, for the most part, very good.

Ernst A. Bessey.

SOCIETIES AND ACADEMIES.

THE AMERICAN PHILOSOPHICAL SOCIETY.

A stated meeting was held on Friday evening, November 2, 1906, at 8 o'clock. The following papers were read:

Dr. Alfred C. Haddon, F.R.S., University Lecturer in Ethnology, Cambridge, Eng.: 'The Decorative Art of British New Guinea.' (Illustrated.)

Dr. John W. Harshberger: 'A Grass-killing Slime Mould.'

DISCUSSION AND CORRESPONDENCE.

SOME POINTS IN TEACHING CRYSTALLOGRAPHY.

The writer wishes to call attention to and invite discussion of the following points in the teaching of crystallography as a part of the work in elementary mineralogy.

The best classification even for beginning students is that of the thirty-two crystal classes, based upon symmetry. All ideas of hemihedrism should be dropped as there is no structural connection between the whole and partial forms. The name of the class is the name of the general form. Groth's set of names is the best, but his names for the isometric classes may be replaced by the terms, tetartoidal, gyroidal, diploidal, hextetrahedral and hexoctahedral for classes twenty-eight to thirty-two.

A division of crystals into seven systems is preferable to that of six. Crystals with an axis of three-fold symmetry naturally form one system and those with an axis of six-fold symmetry another system. And this is true whether the three axes of Miller or the four axes of Bravais are used. The writer prefers to treat the orthorhombic system, one of moderate symmetry, first.

It is believed that von Fedorow's method of naming forms (adopted by Groth in his 'Physikalische Kristallographie') is the only logical one. The name of a form depends upon its shape and is independent of how it cuts the axes of reference. A pinacoid consists of two parallel faces whether its symbol is 100, *h*0*l*, *hkl* or what not. A pyramid is three or more like faces meeting in a point and a bipyramid is two such solids placed base to base. Instead of using a name for the particular form, *e. g.*, pinacoid of the first kind, as von Fedorow does, we may simply give the name of the form together with the symbol, *e. g.*, pinacoid (100).