Mineralogy. By EDWARD S. DANA, Professor of Physics and Curator of Mineralogy, Yale University. New York, John Wiley & Sons. New Edition. Cloth. 8vo. Pp. viii +593. Price, $4.00.

The text-book of mineralogy, first issued by Professor E. S. Dana in 1877, has passed through some 17 editions, each a revision of those preceding, the changes hitherto being either corrections or the insertion of supplementary chapters. The edition just issued is essentially a new work, entirely rewritten and considerably enlarged.

The descriptive mineralogy is an abridgement of the sixth edition of the author's System of Mineralogy and needs no comment.

Nearly one-half of the book is devoted to Crystallography and Physical Mineralogy. In crystallography there are especially to be noted the complete replacement of the formerly used Naumann methods of calculation by those of Miller, and the abandonment of the old conception of hemihedrism. The crystals are described under thirty-two symmetry groups, as in Groth, Liebisch and others, and it is perhaps to be regretted that these groups have been renamed for prominent forms, type minerals, or to suggest terms of hemihedrism.

In Physical Mineralogy the optical characters are discussed in considerable detail upon the undulatory theory, no assumption, however, being made as to the elasticity of the ether in crystals, although for convenience the symbols a, b, c, formerly denoting axes of elasticity, are retained as so-called 'ether axes.' Very little space is devoted to apparatus or manipulation. It may be noted also that for the determination of the indices of refraction by total reflection, not only the sections cut normal to the acute bisectrix, as stated, but any section parallel to one of the ether axes a, b or c suffices. It may also be questioned if the stauroscopic methods, p. 221, are in any case either as convenient or more accurate than the microscopic.

Cohesion and Elasticity are concisely discussed, but the space devoted to thermal electrical and magnetic characters, about six pages, is regrettably small.

The work is well printed and illustrated with about 1,000 excellent cuts. An admirable point is the list of selected references at the end of each subject. In every way the work is an improvement upon the last edition.

A. J. M.

## SCIENTIFIC JOURNALS.

THE addresses of Professor George E. Hale, on 'The Functions of Large Telescopes' and of Professor Frank P. Whitman on 'Color Vision,' published in the issues of this JOURNAL for May 13th and September 9th respectively, and the paper by Dr. Charles F. Brush on 'A New Gas,' published on October 14th, have been translated into French and printed as leading articles in recent numbers of the *Revue Scientifique*. Professor E. E. Barnard's address on the 'Development of Astronomical Photography' has been translated into German from the issues of this JOURNAL for September 16th and 23d, and published in the *Naturwissenschaftliche Rundschau* for November 26th and December 2d and 9th.

*Natural Science* will hereafter be published by Mr. Young J. Pentland, 11 Leviot Place, Edinburgh. *Natural Science* has been edited anonymously and this policy will apparently be continued. The current number says: "There will be no change in the policy of the review, no break in continuity, and no lowering of the standard hitherto set before it. But those who wish well to the future of this journal should remember that it lies with them to see that it has a future. Editors cannot edit unless there are contributions of articles, notes and news; publishers cannot publish if every reader reads the copy of a friend or of a library." It may be remarked that publishers and editors are subject to the same conditions in America as in Great Britain.

## SOCIETIES AND ACADEMIES.

### NEW YORK ACADEMY OF SCIENCES—SECTION OF BIOLOGY—MEETING OF NOVEMBER 14.

THE resignation of Professor E. B. Wilson was read and accepted by the Section. Professor Frederic S. Lee was unanimously elected Chairman of the Section.

The following program was then presented:

1. H. F. Osborn. On the presence of a Frontal Horn in *Aceratherium incisivum* Kaup.

2. H. F. Osborn. On some additional characters of *Diplodocus*.

3. W. D. Matthew. On some new characters of *Clænodon* and *Oxyæna*.

4. W. E. Ritter. On the Ascidians collected by the Columbia University Puget Sound Expedition of 1896. Presented by Dr. Dean.

5. J. P. McMurrich. Report on the Hexactiniæ of the same expedition. Presented by Dr. Calkins.

Professor Osborn described the appearance of an hitherto unrecognized frontal horn on the skulls of *Aceratherium incisivum* Kaup; a discovery of importance, as it practically removes *Aceratherium* from the group to which it gives its name and ranges it with rhinoceroses. Professor Osborn suggested that it may possibly be an ancestor of *Elasmotherium*.

In discussing the paper Dr. Wortman criticised the common tendency to create types based on a single character, citing in support of his suggestion the considerable variations to which single individuals of a species are subject, and giving one or two instances where errors have occurred.

In his second paper Professor Osborn described the structure of the vertebræ of *Diplodocus*, bringing out in considerable detail the variations in the sacrum of the herbivorous Dinosaurs.

Dr. Matthew briefly described the characters of the teeth, manus and pes of *Clænodon*, a form belonging to one of the three families (Arctocyonidæ) which gave rise to the present-day carnivora. The structure of the wrist bones in particular brings this form almost within the limits of the carnivora, and Dr. Matthew regards it as a primitive bear which lived on fruits, honey or other soft foods. *Oxyæna*, another typical Creodont, was also described by Dr. Matthew, the principal points brought out being the disproportion of the brain case, limbs and lower jaw.

In the discussion which followed, Professor Osborn showed that while *Clænodon* undoubtedly possesses many precocious bear-like structures there are many difficulties to push aside before it can be considered the direct ancestor of the bear. There are transitional forms, for example, between dogs and bears, as shown in certain types of teeth (*Amphicyon*), while, on the other hand, there is a marked difference in the size of the brain of the Arctocyonidæ and that of the bears, the brain of the former resembling more closely the brain of the marsupials. If the *Amphicyon* evidence is of a sufficient phylogenetic value the bear line must have arisen much later than Dr. Matthew believes. Dr. Lee also questioned the advisability of ascribing particular functions to specialized structures, a criticism which Dr. Matthew met by saying that in this case the relation of structure to function was in the nature only of an hypothesis, an explanation supplemented by Professor Osborn's statement that in all such cases it is necessary to have some working hypothesis, although each hypothesis is considered merely tentative.

At the request of Dr. Dean, Mr. Richard Weil was asked to give the main results of his observations on the development of the *Ossicula auditus* in the Opossum. Mr. Weil finds that both the malleus and incus are derived from the mandibular arch and have no connection with the hyoidean, thus confirming the older German view.

The other papers on the program presented by Dr. Dean and Dr. Calkins were strictly technical and received only brief mention. They will appear in full in the Annals.

Gary N. Calkins,
*Secretary.*

## The Philosophical Society of Washington.

The 409th meeting of the Society was held at 8 p. m., November 26th, at the Cosmos Club. The first paper of the evening was by E. D. Preston on the International Geodetic Association Conference at Stuttgart from October 3d to October 12th. The 2d was by Dr. Cyrus Adler on an International Catalogue of Scientific Literature. The 3d was by Mr. René de Saussure on the Graphical Determination of Stream Lines. A diagram showing an application of the last paper will be presented at the next meeting.

E. D. Preston,
*Secretary.*