that *Desmodus* (called *Desmodon*) is no larger than our Little Red Bat and that bats do not migrate. The use of the name Least Shrew for *Sorex personatus* seems ill-advised, since there are at least two smaller species and several which do not exceed it in size. Aside from these minor criticisms, there is little but good to be said of the book as a whole. Mr. Thompson's illustrations are numerous and in the majority of cases splendidly executed; that they are well up to his own standard is sufficient commendation.

W. H. Osgood.

A Laboratory Guide in Qualitative Chemical Analysis. By H. L. Wells, M.A., Professor of Analytical Chemistry and Metallurgy in the Sheffield School of Yale University. New York, John Wiley & Sons. Pp. 200. $1.50.

A Short Course in Inorganic Qualitative Analysis for Engineering Students. By J. S. C. Wells, Ph.D., Instructor in Analytical Chemistry, Columbia University. New York, John Wiley & Sons.

Both of these books are new, and both are worthy to be picked out from the innumerable laboratory manuals as much above the average.

Professor H. L. Wells' laboratory guide is the most original and one of the best works on the subject, known to the reviewer.

In a 'notice to the student' in the first chapter of the book, the author says: "The object of this course is to introduce the subject of qualitative analysis in such a way as to develop the powers of observation, inductive reasoning and memory, and at the same time to give a knowledge of chemical facts and methods which will be of use in the future study of this and related subjects." The author's method is to have the student make and preserve a solution of a salt of each of the common bases. The student is then told to test the action of hydrochloric acid on each of these solutions; he finds that three yield a precipitate. Five cc. of each of these three is diluted with two volumes of water and again tested with hydrochloric acid; by further dilution and testing with acid, calculating in each case the amount of salt present, the quantitative limit of the reaction is studied. The student then takes in separate beakers a measured amount of each of the three original solutions, and in a fourth beaker a mixture of the three; all four are precipitated by the acid, filtered, and washed with boiling water. By addition of sulphuric acid to the filtrate from the mixed chlorides a precipitate is formed; by adding sulphuric acid to the filtrate from each of the other chlorides the student finds out which of the three constituents of the mixture caused the precipitation. The action of ammonia on the residues in the filters is then studied, and thus the student works out for himself the common scheme of analysis of the first group.

The other groups are worked out in a similar way; at every step the ingenuity of the author in presenting the problem to the student in the best way is worthy of notice.

The reactions of acids are studied in a similar manner. The book contains no tables, no abbreviated schemes, and everything is done to avoid mechanical work and to lead the student to independent thought. Fresenius' plan of analysis is followed, though various new methods are introduced. Constant references to Fresenius' 'Qualitative Analysis' foster the habit of consulting books of reference.

It is the belief of the reviewer that Professor Wells' method is admirable for students who can devote time enough to the subject, and it is to be hoped that teachers who have classes or single students in this position will give his book a trial.

The book of Dr. J. C. S. Wells, of Columbia, is quite different in character from that of the Yale professor. It is a careful and thorough work, designed for the use of those who can give little time to the subject. It endeavors by exceptionally full and clear descriptive text and tables of scheme reactions to teach qualitative analysis in the least time and with the least labor on the part of the student.

The advantages and disadvantages of the scheme-table system are apparent and have often been discussed. To those teachers who prefer the use of tables Dr. Wells' book can be recommended as one of the best of its kind.

Edward Renouf.

A Text-Book of Mineralogy. With an extended Treatise on Crystallography and Physical

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.