form. Carelessness in the proof-reading is noticeable. Frequently letters are dropped out of words, their unceremonious departure being accentuated by the blank spaces left behind. The description of Newton's fluxional notation on page 9 is rendered unintelligible to one not already familiar with it by the omission in several instances of the necessary dots. The spelling on page 35 of Clairaut as "Clairault" is unusual, to say the least. The statement, page 120, that it was in 1872 that a deputy professor was appointed at Oxford to carry on the work relinquished by Sylvester is evidently wrong, since Sylvester was appointed to the Oxford position in 1883. It is too bad that the editors of this book allowed the repetition of the erroneous statement that the name of Sylvester's father was Abraham Joseph Sylvester. As recently stated by several writers, the name "Sylvester" did not belong to the father, but was assumed by an elder brother of the mathematician who had come to the United States, and later by the mathematician himself. The father's name was Abraham Joseph. The editors might also have corrected a mistake thus far almost universal, to the effect that Peaucellier was the first to devise an instrument for drawing a perfect straight line. It is a matter of great historical interest that a Frenchman by the name of Sarrut achieved this several years before Peaucellier, and in a manner quite different. An account of it will be found in the *Comptes Rendus,* Vol. 36, 1853, page 1036. Attention to Sarrut was called in 1905 by G. T. Bennett of Emmanuel College, Cambridge, in an article published in the *Philosophical Transactions,* 6th S., Vol. 9, page 803. Bennett gives interesting historical details, and also noteworthy developments of his own.

FLORIAN CAJORI

COLORADO COLLEGE,
COLORADO SPRINGS, COLO.

*The Whalebone Whales of New England.* By GLOVER M. ALLEN. Memoirs of the Boston Society of Natural History, Vol. 8, No. 2, pp. 107–322, pls. 8–15, text-figs. 1–12. September, 1916.

Dr. Glover M. Allen's "The Whalebone Whales of New England" treats of the three genera and six species of baleen whales "inhabiting the waters off the New England coast," with special reference to their habits, manner of occurrence, economic importance and technical history. Two "keys" are given for their identification, one for stranded specimens that can be approached and examined, the other for identification in life, based on their characteristic actions, the presence or absence of a fin on the back, and the size and form of the spout.

Following a few introductory pages of comment on the classification of whales in general and of the New England species in particular, the author deals at length with each of the living species, with a brief account of the single fossil species, long known from a few vertebræ and other fragmentary remains found at Gay Head, Marthas Vineyard. The North Atlantic right whale (*Eubalæna glacialis*) is of special interest historically on account of its having been the basis of the early New England whale fishery. This phase of the subject is presented in considerable detail (pp. 131–172), with many quaint extracts from early colonial records.

The species treated are: (1) North Atlantic right whale (*Eubalæna glacialis*), (2) common finback (*Balænoptera physalus*), (3) pollack whale (*B. borealis*), (4) blue whale (*B. musculus*), (5) little piked whale (*B. acuto-rostratus*), (6) Atlantic humpback (*Megaptera nodosa*). A methodical and concise account of each is given under appropriate subheadings, beginning with "history and nomenclature," followed by descriptions of their external and osteological characters, habits and food, seasons of occurrence, pursuit and economic products, enemies and parasites. Five of the species are illustrated by full-page plates of the external form, drawn to scale from careful measurements. Outline drawings of skulls are given in another plate, several photographic views of whales in another, and vertebræ and other fossil remains from the Miocene deposits of Gay Head in another. The monograph thus forms a valuable addi-

tion to the literature of the subject, constituting, as it does, the first attempt to treat comprehensively this important part of the marine mammal fauna of New England, and is a highly satisfactory summation of present knowledge of the subject. A bibliography of six pages (about 100 titles) gives references to the technical literature cited in the text, in addition to which are numerous footnote and other references in the text to historical records relating to the distribution and occurrence of the species in New England waters, from early colonial times to the present.

J. A. Allen
American Museum of Natural History

## PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

The eleventh number of Volume 2 of the *Proceedings of the National Academy of Sciences* contains the following articles:

*Path Differences within which Spectrum Interferences are Observable:* Carl Barus, Department of Physics, Brown University. The method of observing interferences in the zeroth, first, second, third, and even fourth order, successively, without essential change of the parts of the apparatus is noteworthy. The present experiments furnish a striking example of the uniform breadth of the strip of spectrum carrying the fringes, quite apart from the dispersion of the spectrum.

*Non-Reversed Spectra of Restricted Coincidence:* Carl Barus, Department of Physics, Brown University. The method, apart from any practical outcome, is worth pursuing because of the data it will furnish of the width of the strip of spectrum carrying interference fringes under any given conditions.

*The Equilibrium between Acids and Bases in Sea Water:* Lawrence J. Henderson and Edwin J. Cohn, Wolcott Gibbs Memorial Laboratory, Harvard University. The ocean, which, because of the presence of free carbonic acid, was originally acid, and which has been becoming more alkaline from the accumulation of basic material, is at present in an epoch where the growing alkalinity is checked by the *buffer* action of acids of approximately the strength of boric acid. These buffers regulate the reaction of sea water in a manner similar to the way in which bicarbonates and phosphates regulate the reaction of blood.

*An Apparent Correspondence between the Chemistry of Igneous Magmas and of Organic Metabolism:* Henry S. Washington, Geophysical Laboratory, Carnegie Institution of Washington. The object is to call attention to what appears to be a congruous relation of two pairs of elements in the organic world; it would appear that iron and sodium are necessary for animal metabolism, while magnesium and potassium are essential to vegetable metabolism.

*The Oaks of America:* William Trelease, Department of Botany, University of Illinois. A summary of a manuscript now prepared for submission to the academy for publication as one of its scientific memoirs. 354 species of oaks, of which about one half are new, are recognized. The relations to fossil oaks are pointed out.

*A Set of Independent Postulates for Cyclic Order:* Edward V. Huntington, Department of Mathematics, Harvard University. Five postulates are given for cyclic order.

*A New Method of Studying Ideational and Allied Forms of Behavior in Man and Other Animals:* Robert M. Yerkes, Psychological Laboratory, Harvard University. A description of the author's method of multiple choices for the deduction of reactive tendencies and the study of their rôle in the attempted solution of certain types of problem. The method involves the presentation to the subject of a problem or series of problems whose rapid and complete solution depends upon ideational processes.

*Electrical Conduction in Dilute Amalgams:* Gilbert N. Lewis and Thomas B. Hine, Department of Chemistry, University of California. The resistance of amalgams of lithium, sodium and potassium is studied at constant pressure and shows extraordinary differences; the resistances at constant average atomic volume are also calculated and found to differ materially from those at constant pressure.