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.

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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.

Ideational Behavior of Monkeys and Apes: Robert M. Yerkes, Psychological Laboratory, Harvard University. The general conclusions which may be deduced are that the ape exhibits various forms of ideational behavior, whereas the reactive tendencies of monkeys are inferior in type.

The Osmotic Pressure and Lowering of the Freezing-Point of Mixtures of Salts with one another and with Non-Electrolytes in Aqueous Solutions: William D. Harkins, R. E. Hall and W. A. Roberts, Kent Chemical Laboratory, University of Chicago. The general result obtained with mixtures already investigated is that the lowering of the freezing-point of the mixture is very nearly that which would be calculated on the basis that each salt produces a lowering of the freezing-point proportional to its own concentration and to the mol-number which it has when present alone in a solution of salt concentration.

Certain General Properties of Functions: Henry Blumberg, Department of Mathematics, University of Nebraska.

Sphenacodon Marsh, A Permocarboniferous Theromorph Reptile from New Mexico: Samuel W. Williston, Walker Museum, University of Chicago. Reconstruction of a fossil reptile found in a bone bed from which some collections were made as early as thirty-eight years ago, but which seems to have been almost forgotten until recently.

On Volume in Biology: Lawrence J. Henderson, Chemical Laboratory of Harvard College. When equilibrium has been established in a heterogeneous system (capillary and gravitational phenomena being absent) the volume of the phases is not relevant to the state of the system, but in nearly all physiological changes the regulation of volume is of great importance.

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NOTES ON METEOROLOGY AND CLIMATOLOGY

TWO POPULAR WEATHER BOOKS

THE scientific book on meteorology, with its numerous tables, plates and figures is too expensive and too bulky, not to mention too technical for light reading. There are three standard American meteorological treatises. Professor W. M. Davis's "Elementary Meteorology"[1] is finely written and illustrated, but on account of advances in meteorology in the past twenty years it needs to be supplemented by Professor W. I. Milham's "Meteorology"[2] or by Dr. W. L. Moore's "Descriptive Meteorology."[3] There is ample room for the small, easily read books on instruments,[4] weather processes, and forecasting. Two such books deserve particular mention: "Our Own Weather," by Edwin C. Martin,[5] and "Reading the Weather," by T. Morris Longstreth.[6] The first is a carefully written, lucid account of weather processes. After a discussion of the general character and circulation of the atmosphere, the author takes as his main theme the cyclones and anticyclones of the United States and their secondary phenomena. At the end is a chapter on weather signs and superstitions. Rarely, there are weak spots. The cause of the deflection of the wind by the rotation of the earth is not "that a body of air travelling from the equator toward the poles carries with it an eastward speed acquired at the equator and exceeding always that which it finds in the parts to which it goes" (p. 23). When any body on the earth's surface is set in motion it is deflected by the disturbance of the equilibrium between gravity and the centrifugal tendency.[7] Elsewhere (p. 33) the author says that the stop in temperature fall with increase in altitude, and the reduction in wind velocity "above the seven-

[1] Boston, 1894, 4to, 355 pp., 106 figs., 6 charts.

[2] New York, 1912, 4to, 549 pp., 157 illustrations, 50 charts.

[3] New York, 1910, 4to, 344 pp., 81 figs., 45 charts.

[4] *Cf.* "Weather and Weather Instruments." Taylor Instrument Companies, Rochester, 1908, 8vo, 175 pp.

[5] New York, 1913, 8vo, 281 pp., 8 cloud plates, 8 maps.

[6] Outing Series 43, 1915, 12mo, 8 cloud plates.

[7] See Wm. Ferrel, "A Popular Treatise on the Winds," New York, 1889, pp. 42–88; or Davis, *op. cit.*, pp. 101 et seq.