cooling must be attributed the principal motive force. The main criticism raised against it is its insufficiency, but George Darwin has shown that as a cause it can be mathematically shown to be able to produce results at least of the same order as those observed. In the speaker's estimation it is probably sufficient, although the heat radiated is a very difficult thing to measure in a reliable way. Our data are all from the continents, and they have not been obtained in sufficient quantity. The oceanic areas are necessarily unobserved.

In discussion Professor Kemp stated that attention had been naturally been drawn to the interior of the earth in the endeavor to explain, first of all, the contrasts of the continental elevations and the oceanic abysses, and secondly, the crumplings, foldings and faults of mountainous regions. Herschel's explanation, while rational and simple on the face of it, is inapplicable because it is the area of sedimentation, subsidence and 'overloading' that later on is upheaved in the mountains, and this apparent contradiction is the great difficulty. He also referred to the measures of rigidity of the crust, to the remarkable localization of the yielding along narrow lines when it did come, and to its great effects and relatively short duration. He asked Professor Woodward also to touch on the slowing up of the revolution of the earth and the consequent readjustment of the spheroid to the loss of centrifugal force, an idea advanced some years ago by W. B. Taylor.

In reply Professor Woodward admitted that the questions were old and very difficult ones, and that for the mountains he had no explanation to advance. He spoke of the mountainous protuberances as measures of the rigidity, and yet this must be qualified by the statement that according to isostasy and to recent pendulum observations they appear to be somewhat lighter under the surface. As to the slowing up of rotation and loss of centrifugal force, the idea was an important and valuable one, but it did not appear to be sufficient to account for the results.

Professor Rees referred to the recent observations on changes in latitude made under his direction, and to certain factors that entered into the calculations which would throw light on the question.

Professor Hallock brought up the recent results of experiments on the gyration of liquids as bearing on the question and proving that a fluid set in rapid rotation continues to gyrate long after the enclosing vessel ceases. The curious results obtained at the Waterville arsenal in the great testing machine were also cited. The attempt was made to burst a cast iron cylinder by forcing into it, through a three-sixteenth of an inch hole, paraffine and tallow. But it was found that both these substances became, under high pressures, more rigid than steel and could not be driven through the hole.

Prof. Britton asked Prof. Woodward if the amount of heat radiated per annum could be quantitatively expressed, and in reply Prof. Woodward said it is computed from very meagre data to be enough to melt a layer of ice 5 to 7 mm. thick over the earth's surface. The chairman, Prof. R. P. Whitfield, in closing the discussion called attention to the fact that the submarine crumpling and upheaval were not well known nor often taken into account, and yet they probably far exceed all that we see on the continents.

The discussion will be continued at the meeting of the Section, February 18.

J. F. KEMP, *Recording Secretary.*

SCIENTIFIC JOURNALS.

AMERICAN JOURNAL OF SCIENCE, FEB.

Relation of Gravity to Continental Elevation: By T. C. MENDENHALL.

Observations upon the Glacial Phenomena of Newfoundland, Labrador and Southern Greenland: By G. F. Wright.

Recurrence of Devonian Fossils in strata of Carboniferous Age: By H. S. Williams.

Constituents of the Cañon Diablo Meteorite: By O. A. Derby.

β - Bromvalerianic Acid: By J. G. Spenzer.

The Inner Gorge Terraces of the Upper Ohio and Beaver Rivers: By R. R. Hice.

The Glacial Land-Forms of the Margins of the Alps: By H. R. Mill.

Distribution of the Echinoderms of Northeastern America: By A. E. Verrill.

Lower Cambrian Rocks in Eastern California: By C. D. Walcott.

Pithecanthropus Erectus, Dubois, from Java: By O. C. Marsh. (With Plate II.)

Scientific Intelligence: Chemistry and Physics; Geology and Mineralogy; Botany; Miscellaneous; Obituary.

AMERICAN CHEMICAL JOURNAL, FEB.

Researches on the Complex Inorganic Acids: By Wolcott Gibbs.

Diazobenzene Aniline Chloride: By J. H. Kastle and B. C. Keiser.

On Imido-Ethers of Carbonic Acid: By Felix Lengfeld and Julius Stieglitz.

On Some Bromine Derivatives of Paraisobutyl Phenol: By F. B. Dains and I. R. Rothrock.

On the Action of Acid Chlorides on the Methyl Ether of Paraisobutyl Phenol: By F. B. Dains.

The Effect of Hydrolysis Upon Reaction-Velocities: By F. L. Kortright.

On the Influence of Magnetism on Chemical Action: By F. A. Wolff, Jr.

Reviews; Notes.

THE AUK, JAN.

A Winter Robin Roost in Missouri, and other Ornithological Notes: By O. Widmann.

On the Nesting of Krider's Hawk (Buteo borealis krideri) in Minnesota: By. P. B. Peabody.

The Nest and Eggs of the Olive Warbler (Dendroica olivacea): By William W. Price.

A Contribution to the Life History of Porzana Cinereiceps Lawrence, with Critical Notes on Some of its Allies: By Charles W. Richmond.

The Terns of Muskeget Island, Massachusetts: By George H. Mackay.

A Swallow Roost at Waterville, Maine: By Abby F. C. Bates.

A New Species of Thryothorus from the Pacific Coast: By A. W. Anthony.

A New Subspecies of Harporhynchus from Lower California: By A. W. Anthony.

The LeConte Thrasher (Harporhynchus lecontei): By C. Hart Merriam. (Plate 1.)

Twelfth Congress of the American Ornithologists' Union: By John H. Sage.

Recent Literature; General Notes; Correspondence; Notes and News.

PSYCHE, FEB.

Rehabilitation of Podisma Latreille: S. H. Scudder.

Two new Species of Entomobrya (Illustrated): F. L. Harvey.

The Tipulid genera Bittacomorpha and Pedicia (Illustrated): F. M. Aldrich.

Gall of Eurytoma sp. on the Cat's-claw Thorn: C. H. Tyler Townsend.

Entomological Notes.

NEW BOOKS.

North American Fauna, No. 8. C. Hart Merriam. Washington, Government Printing Office. 1895. Pp. 258.

Elements of Psychology. James H. Hyslop. New York, Columbia College. 1895. Pp. 131. $1.00.

Lens Work for Amateurs. Henry Orford. New York, Macmillan & Co. 12mo. 80 cts.

Proceedings and Addresses of the Second Annual Conference of the Health Officers in Michigan Held at the State Laboratory of Hygiene, Ann Arbor, Michigan. Lansing, Mich. 1894. Pp. 63.