SCIENCE

FRIDAY, JUNE 8, 1900.

CONTENTS:

MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

*VARIATION AND SOME PHENOMENA CONNECTED WITH REPRODUCTION AND SEX.**

I.

IN the following address an attempt is made to treat the facts of variation and heredity without any theoretical preconceptions. The ground covered has already been made familiar to us by the writings of Darwin, Spencer, Galton, Weismann, Romanes, and others. I have not thought it advisable to discuss the theories of my predecessors, not from a want of appreciation of their value, but because I was anxious to look at the facts themselves and to submit them to an examination which should be as free as possible from all theoretical bias.

Zoology is the science which deals with animals. Knowledge regarding animals is, for convenience of study, classified into several main branches, amongst the most important of which may be mentioned; (1) the study of structure; (2) the study of the functions of the parts or organs; (3) the arrangement of animals in a system of classification; (4) the past history of animals; (5) the relations of animals to their environment; (6) the distribution of animals on the earth's surface. That part of the Science of Zoology which deals

* Address of the president to the Zoological Section of the British Association for the Advancement of Science, Dover, 1899.

a Viscous Liquid when Referred to Cylindrical and Polar Co-ordinates,' by Professor P. E. Doudna, 'The Capricorns, Mammals of an Asiatic Type, Former Inhabitants of the Pike's Peak Region,' by Dr. F. W. Cragin; 'Buchiceras (Sphenodiscus) Belviderensis and its Varieties,' by Dr. F. W. Cragin; 'The Number Concept,' by Dr. F. Cajori.

BOOKS RECEIVED.

Das Tierreich, 9 Lieferung, *Aves-Trochilidae*. ERNST HARTERT. Berlin, R. Friedländer und Sohn. 1900. Pp. ix + 254. Subscription price, 12 mark.

Bird Studies with Camera. FRANK M. CHAPMAN. New York, D. Appleton & Co. 1900. Pp. xiv + 214.

La spéléologie ou science des cavernes. E. A. MARTEL. Paris, Georges Carré & C. Naud. 1900. Pp. 126.

Æther and Matter. JOSEPH LARMOR. Cambridge, The University Press. New York, The Macmillan Company. 1900. Pp. xxviii + 365. 10s.

SCIENTIFIC JOURNALS AND ARTICLES.

THE *American Journal of Science* for June contains the following articles:

Method of Studying the Diffusion (Transpiration) of Air through Water, and on a Method of Barometry. C. BARUS.

Separation and Determination of Mercury as Mercurous Oxalate. C. A. PETERS.

Electrical Resistance of Thin Films Deposited by Cathode Discharge. A. C. LONGDEN.

New Meteorite from Oakley, Logan County, Kansas. H. L. PRESTON.

Observations on Certain Well-Marked Stages in the Evolution of the Testudinate Humerus. G. R. WIELAND.

Chemical Composition of Sulphohalite. S. L. PENFIELD.

Phases of the Dakota Cretaceous in Nebraska. C. N. GOULD.

Geothermal Gradient in Michigan. A. C. LANE.

Production of the X-Rays by a Battery Current. J. TROWBRIDGE.

American Chemical Journal, May, 1900. "Preparation and properties of the so-called 'Nitrogen Iodide,'" by F. D. Chattaway and K. J. P. Orton. Preparation from iodine monochloride and ammonia; 'The action of reducing agents upon nitrogen iodide,' by F. D. Chattaway and H. P. Stevens. Decomposition with formation in every case of hydriodic acid; 'On certain colored substances derived from nitro compounds,' by C. L. Jackson and F. H. Gazzolo; 'The solution-tension of zinc in ethyl alcohol,' by H. C. Jones and A. W. Smith; 'Notes on lecture experiments to illustrate equilibrium and dissociation,' by J. Stieglitz; 'A contribution to the knowledge of tellurium,' by F. D. Crane. Method of purifying tellurium and detecting small quantities of it; 'The constitution of gallein and coeruleïn,' by W. R. Orndorff and C. L. Brewer; 'Permanganic acid by electrolysis,' by H. N. Morse and J. C. Olsen; 'On chlorine heptoxide,' by A. Michael and W. T. Conn.

J. ELLIOTT GILPIN.

SOCIETIES AND ACADEMIES.

SCIENCE CLUB OF THE UNIVERSITY OF WISCONSIN.

AT the meeting of the Science Club of the University of Wisconsin, held May 22d, Mr. J. B. Johnson presented a paper on 'Recently improved Methods of Sewage disposal.' The paper was devoted to a consideration of the principles underlying modern methods of treatment rather than the details of construction of sewage plants. The chemical and the bacteriological methods of sewage disposal were contrasted and the former shown to be too largely an artificial process, since it fails to make use of nature's effective agents—the bacteria—which when afforded suitable conditions change organic wastes into soluble products and finally into the inorganic nitrates and nitrites which constitute so largely the food of plants. The chemical precipitation plants were considered as belonging to a past stage in the development of sanitary science, and wherever installed are now looked upon as an incubus to be got rid of as soon as possible.

The combined septic tank and contact bed method, which was first used at Exeter, England, in 1896, and which is throughout a bacteriological method, Mr. Johnson regards as the most satisfactory solution of the sewage problem. The essential peculiarity of the method is that it affords in the septic tank to which the sewage is first conducted the ideal conditions for the action of the anærobic bacteria whose function