



JOSEPH LOVERING.

SCIENCE

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REPORT ON THE NAVAL OBSERVATORY.

WE print on another page of our present issue the report of the Board of Visitors to the Naval Observatory, made on October 2d. Most astronomers will, we believe, agree with us that the work of the Board has been well done in several vital points. It is true that many details are left to be settled and much friction may be produced in putting the plan into operation. But, in any case, much will have been gained. The good features of the report are these:

We have for the first time what may be called an official admission that the Observatory must be reorganized on a civilian basis, made under such auspices and in such a way as to command attention. In stating the case all disagreeable details are avoided and, so far as possible, conclusions are intimated rather than expressed. Yet every point is so stated that no mistake of interpretation by the careful reader is possible. The optimistic impression always so agreeable to entertain, that, however weak may have been the administration from time to time in the past, it is now all right, is guarded against by stating that the scope of the remarks is not limited to the present time, but covers almost the

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.

in a sense, solid not liquid; but as it is made up of atoms joined into the molecular meshwork only by their mutual chemical affinities, it is possible for various physical agents to interrupt the continuity of the mass and to make it act somewhat in the manner of a liquid, to become subject to surface tension laws, etc. The solidity is not that of cohesion, but only the result of the chemical attractions that tend to hold together the elements in the complex molecular net against forces that might tend to disturb the continuity.

A cell is a continuous net work made of molecules joined in chains; the members of the chains are different within the nucleus from those outside the nucleus, but there is no break in continuity from one region to the other.

Approaching the problem from the physiologist's point of view, the author devotes his discussion chiefly to phenomena of nerve, muscle, and electrical organ. A nerve is conceived as containing rows of living, conductive molecules surrounded by various liquid and emulsive substances. Each component molecule is joined to its fellows in the row by the affinity of some of its atoms. Progressive chemical action between successive molecules in the chain and the environing materials constitutes the change that travels as a nerve impulse.

In muscle similar chains of conducting molecules have connected with them, as additional mechanisms, special contractile molecules, which owe their change of shape to chemical rearrangements.

Electrical organs easily lend themselves to an application of similar diagrammatic formulations.

Strange as it may seem the phenomena of the active flowing of protoplasmic streams in those exceptional water-plants, Stoneworts, are made foundation stones in the author's attempt to realize protoplasm as a solid, continuous, gigantic molecule. His previous valuable contribution to the physiology of these plants (*Studien über die Protoplasmaströmung bei den Characeen*. Jena, Gustav Fischer. 1898) resulted in the discovery of marked agreement in the conductive mechanisms in nerve, muscle and the cells of *Nitella syncarpa*. The motor mechanism in the last, however, he concludes,

is different from that in muscle. Both the constant rotation of the moving layer of protoplasm and the very remarkable separate rotation of separate chlorophyll grains, which the author is sure he has seen, are conceived of as results of successive making and breaking of chemical union along the surface of contact of moving and non-moving protoplasm.

E. A. ANDREWS.

JOHNS HOPKINS UNIVERSITY.

A Dictionary of Birds. By ALFRED NEWTON, assisted by HANS GADOW. Cheap issue, unabridged. London, Adam and Charles Black. 1893-96. Pp. xii + 1088. Price, \$5.00.

Good wine needs no bush and Newton's Dictionary of Birds needs no recommendation, the more that it was fully reviewed in SCIENCE upon its first appearance.

There are, however, many who will welcome this edition, not only for its greatly reduced price, but for its convenient size, since without sacrificing a word of the text the use of thin, but good paper, makes this book a compact volume. Few there are who have Professor Newton's wide acquaintance with the literature of ornithology and the bibliographical references alone are sufficient to make the work a necessity, not only in the library of the working ornithologist, but of the general reader, while the contributions of Dr. Gadow constitute a text-book on the anatomy of birds. Our younger ornithologists will do well to keep this book within reach and consult it often, if only to fully appreciate that scientific facts may be presented in the best literary form.

F. A. L.

BOOKS RECEIVED.

A Treatise on Crystallography. W. J. LEWIS. Cambridge, England, University Press. 1899. Pp. xxii + 612. 14s.

The Strength of Materials. J. A. EWING. Pp. xii + 246. Cambridge, England, University Press. 1899. Pp. xxii + 612. 12s.

Electric Wiring, Fittings, Switches and Lamps. W. PERREN MAYCOCK. London, Whittaker & Co.; New York, The Macmillan Co. 1899. Pp. xv + 446. \$1.75.

Botany for Beginners. ERNEST EVANS. London and New York, The Macmillan Company. 1899. Pp. vi + 286.

Magnetism and Electricity for Beginners. H. E. HADLEY. London and New York, The Macmillan Company. 1899. Pp. viii + 327.

Ascidia. W. A. HERDMAN. Liverpool Marine Biology, Memoirs I. Liverpool, T. Dobb & Co. 1899. Pp. v + 52 and 5 plates. 1s. 6d.

Report of Fur Seal Investigation, 1896-1897. Part III. *Special Papers relating to the Fur Seal and to the Natural History of the Pribilof Islands.* DAVID STARR JORDAN. Washington, Government Printing Office. 1899. Pp. xii + 629.

On the Building and Ornamental Stones of Wisconsin. ERNEST ROBERTSON BUCKLEY. Madison, Wis., Published by the State. 1898. Pp. xxvii + 544.

SCIENTIFIC JOURNALS AND ARTICLES.

The Journal of Geology for July-August contains the following articles:

'A new Analcite Rock from Lake Superior,' by A. P. Coleman. On the north shore of Lake Superior in the vicinity of Heron Bay, Dr. Coleman recently discovered a series of dikes, one of which proved to be an analcite rock. It has some peculiarities of texture, contains about 52 per cent. silica, and is related to basic syenites. The name Heronite is suggested. A complete analysis is given.

'Corundiferous Nepheline Syenite from Eastern Ontario,' by A. P. Coleman. Dr. Coleman gives some additional notes and facts about this peculiar rock.

'The Effect of Sea-Barriers upon Ultimate Drainage,' by J. F. Newsom. This very interesting and suggestive paper shows how the barrier beaches and their attendant sounds may, when the coast line is elevated, cause the main artery of the resulting drainage to run parallel with them, and at right angles to the subordinate tributaries.

'Season and Time-elements in Sand-plain formation,' by Myron L. Fuller. From a close study and very ingenious interpretation of the Barrington sand-plain and its attendant clays, on Narragansett Bay, R. I., and with auxiliary inferences about the effects of the seasons on the discharge of a glacier, the author makes a computation of the time required to yield the ob-

served phenomena. The results check up very well with general criteria, and the paper is an interesting attempt to give quantitative definition to otherwise hazy themes.

'Petrographical Province of Essex Co., Mass,' VI., 'General Discussion and Conclusions,' by H. S. Washington. In this the concluding installment of the series of papers contributed by Dr. Washington to recent numbers of the *Journal of Geology*, the author generalizes regarding the peculiar chemical features and mineralogy of the Essex County rocks. He also discusses their bearings on the general question of magmatic differentiation. Dr. Washington concludes that differentiation occurred and that it was laccolithic rather than abysmal.

'A Peculiar Devonian Deposit in Northeastern Illinois,' by Stuart Weller. A small triangular mass of rock containing Devonian fossils has been uncovered in a quarry of Niagara limestone at Elmhurst, Ill. It appears to have been a hole in the limestone when the latter formed the sea bottom in Devonian time, and to have been a resort of fish whose remains have been preserved.

'Descriptions of New Species of *Diplodus* teeth from the Devonian of Northeastern Illinois,' by C. R. Eastman. The paper describes the fish, the discovery of whose remains is detailed in the previous paper.

'*Dipterus* in the American Middle Devonian,' by J. S. Udden. This short paper describes and figures a *Dipterus* tooth recently found in the limestones at Fairport, Muscatine Co., Iowa.

Under the 'Studies for Students,' Stuart Weller gives an excellent sketch of a 'Century's Progress in Paleontology.'

The number closes with editorials and reviews.

THE October number of the *Bulletin of the American Mathematical Society* contains a Report of the recent Summer Meeting of the Society, by the Acting Secretary, Professor Thomas F. Holgate; the 'Report on the Recent Progress in the Theory of Linear Groups,' presented before Section A, of the American Association, at the Columbus Meeting, by Professor L. E. Dickson; several 'Shorter Notices'; 'Notes'; and 'New Publications.'