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THE NAVY'S OCEANOGRAPHIC PROGRAM¹

CONTENTS

<i>The American Association for the Advancement of Science:</i>	
<i>The Navy's Oceanographic Program:</i> DR. AUSTIN H. CLARK	269
<i>The Report of the Committee on Freedom of Teaching in Science:</i> PROFESSOR S. J. HOLMES	276
<i>The Second Annual Association Prize:</i> B. E. L.	277
<i>Scientific Events:</i>	
<i>International Annual Tables; The Third Asiatic Expedition of the American Museum; Plans of the New York Academy of Medicine; The Jungle Laboratory of Tropical Biology</i>	279
<i>Scientific Notes and News</i>	281
<i>University and Educational Notes</i>	284
<i>Discussion and Correspondence:</i>	
<i>Alms-house Paupers in the United States:</i> PERCY L. CLARK, JR., PROFESSOR RAYMOND PEARL. <i>An Apparently Overlooked Source Book of Biological History:</i> GORDON ALEXANDER. <i>A Perpetual Calendar:</i> A. L. CANDY. <i>Quotation Wrongly Credited:</i> PROFESSOR FRED NEWTON SCOTT	284
<i>Scientific Books:</i>	
<i>Meisel's Bibliography of American Natural History:</i> PROFESSOR CHARLES A. KOFOID	287
<i>Laboratory Apparatus and Methods:</i>	
<i>A Simple Circulation Pump for Gases:</i> PROFESSOR A. W. C. MENZIES, E. M. COLLINS AND P. L. TYSON	288
<i>Special Articles:</i>	
<i>Propagation of Electromagnetic Waves over the Earth:</i> H. W. NICHOLS AND J. C. SCHELLENG. <i>Carbohydrate Storage in Corn:</i> LOIS LAMPE AND MARION T. MEYERS	288
<i>The American Association for the Advancement of Science:</i>	
<i>Organizations Related to both Zoology and Botany at the Washington Meeting</i>	291
<i>Anthropological Societies at the Washington Meeting</i>	293
<i>The American Psychological Association at Washington</i>	294
<i>Science News</i>	x

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THERE is no line of investigation in which so many different forms of science play a part as in the study of the sea.

What is known as oceanography contemplates investigation of the waves and tides and currents and of all the physical and chemical properties of water, both pure and with various substances in solution or suspension. It also includes the study of the erosion of the shore lines and the change in bottom contours as well as of the piling up of sediments, organic and inorganic, on the ocean bottom and of the resulting alteration in the isostatic balance. It further covers the investigation of the evaporation from the surface of the water, and of the circulation of the air above it. And an important part of oceanography is the study of the plants and animals of the sea, of the relationships between them and of the relationships of both to the physical and chemical features, fixed or variable, of the medium in which they live. Oceanographic observations are of value only if we know the exact spot where they were taken. The localities are determined by recourse to applied astronomy and various forms of mathematics.

IMPORTANCE OF THE STUDY OF OCEANOGRAPHY

From the sea each year we draw an enormous quantity of food, mostly in the form of fish, shellfish, crabs and lobsters. In order to conserve these food resources and further to develop them we must know just how these creatures live, what they feed upon, their habits and the habits of their parasites and enemies, and their relation to salinity and temperature.

Other peoples use sea plants and animals far more extensively than we. Millions of their population find a livelihood in reaping harvests of sea organisms unused by us, and millions more on land profit by their labors.

Each year the rivers of the world carry to the sea millions of tons of mud taken from the surface of the land, and millions of tons of salts in solution in their waters. By this continuous process an enormous total weight of soil and salts is being constantly removed from the land areas. The soil, in the form of mud and sand, is dumped upon the ocean bottom, while the dissolved salts increase the weight of ocean water both by their own added weight and by gradually di-

¹ Read at the General Session of the American Association for the Advancement of Science on December 30, 1924.

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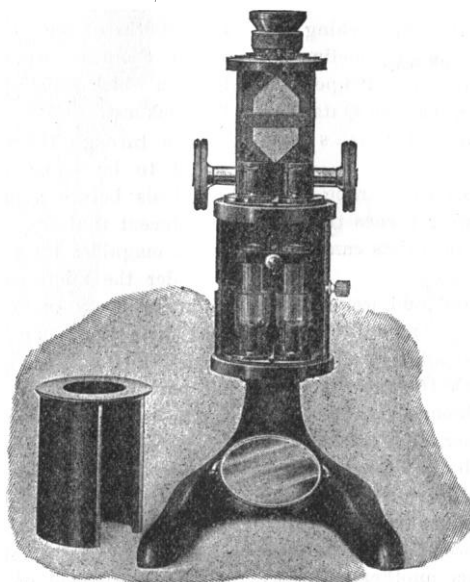
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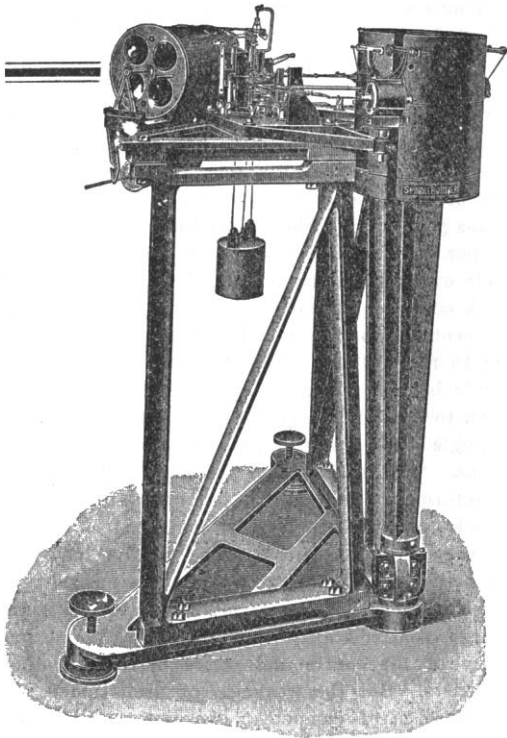
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