

SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE
OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION
FOR THE ADVANCEMENT OF SCIENCE.

FRIDAY, SEPTEMBER 4, 1908

CONTENTS

<i>The Teaching of Mathematics to Students of Engineering:—</i>	
General Discussion: PROFESSOR CALVIN M. WOODWARD; PROFESSOR B. F. GROAT; PRESIDENT C. S. HOWE; PROFESSOR CLARENCE A. WALDO; PROFESSOR C. B. WILLIAMS; PROFESSOR J. B. WEBB; PROFESSOR H. T. EDDY; PROFESSOR S. M. BARTON; PROFESSOR ARTHUR E. HAYNES; PROFESSOR ARTHUR S. HATHAWAY; PROFESSOR EDWARD V. HUNTINGTON; PROFESSOR DONALD F. CAMPBELL	289
<i>The International Geographical Congress ...</i>	299
<i>Report of the British Fisheries Committee...</i>	300
<i>Scientific Notes and News</i>	301
<i>University and Educational News</i>	305
<i>The College of Engineering of the University of Illinois</i>	306
<i>Discussion and Correspondence:—</i>	
Wild Jamaica Cotton: F. FLETCHER	307
<i>Quotations:—</i>	
As to University Administration	308
<i>Scientific Books:—</i>	
Gray on the Labyrinth of Animals: PROFESSOR C. R. BARDEEN. Hammarsten's Physiological Chemistry: PROFESSOR LAFAYETTE B. MENDEL. Eastman on the Devonian Fishes of the New York Formations: L. HUSSAKOF. Ruthven's Variations and Genetic Relationships of the Garter Snakes: ARTHUR ERWIN BROWN	309
<i>Scientific Journals and Articles</i>	315
<i>The Liquefaction of Helium</i>	316
<i>Special Articles:—</i>	
A New Group of Permian Amphibians: PROFESSOR S. W. WILLISTON. Combinations of Alternative and Blending Inheritance: FRANK E. LUTZ. Distribution of Diabase in Massachusetts: PROFESSOR B. K. EMERSON. A Simple Atomometer: DR. BURTON EDWARD LIVINGSTON	316

THE TEACHING OF MATHEMATICS TO STUDENTS OF ENGINEERING¹

WHAT IS NEEDED IN THE TEACHING OF MATHEMATICS TO STUDENTS OF ENGINEERING? (a) RANGE OF SUBJECTS; (b) EXTENT IN THE VARIOUS SUBJECTS; (c) METHODS OF PRESENTATION; (d) CHIEF AIMS.

By CALVIN M. WOODWARD, Professor of Mathematics and Applied Mechanics, and Dean of the School of Engineering and Architecture, Washington University.

I want to emphasize the point which Mr. Scott has just touched on, and that is that we often attempt too early to teach the subjects that require mature and reflecting minds. I want to tell you a story, a true biography of some one you all know of. He went through, in the city of New York, the whole range of mathematics, including analytic geometry and calculus. He learned his formulæ and definitions and "passed" in some manner, but, he told me, he did not know anything about them. He believed he was a dunce, and whenever he was required to make an intelligible demonstration, he could not do it; his teachers and his parents concluded that he was a dunce in mathematics, and could

¹ General discussion following the presentation of four formal papers (see SCIENCE, July 17, 24 and 31, 1908), and of the eight prepared discussions (see SCIENCE, August 7 and 28, 1908). Presented before Sections D and A of the American Association for the Advancement of Science and the Chicago Section of the American Mathematical Society, at the Chicago meeting, December 31, 1907.

MSS. intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y., or during the present summer to Wood's Hole, Mass.