

THE council of the Royal Society has recommended the following: Dr. Edward Frankland Armstrong, Sir Jagadis Chunder Bose, Dr. Robert Broom, Professor Edward Provan Cathcart, Mr. Alfred Chaston Chapman, Dr. Arthur Price Chattock, Mr. Arthur William Hill, Dr. Cargill Gilston Knott, Professor Frederick Alexander Lindemann, Dr. Francis Hugh Adam Marshall, Dr. Thomas Ralph Merton, Dr. Robert Cyril Layton Perkins, Professor Henry Crozier Plummer, Professor Robert Robinson, and Professor John William Watson Stephens.

AT the annual meeting of the Optical Society, London, Mr. R. S. Whipple was elected to the presidency; the vice-presidents are: Professor F. J. Cheshire, Sir Herbert Jackson, and Mr. H. F. Purser.

PROFESSOR B. A. HOUSSAY, of the University of Buenos Aires, has been elected corresponding member of the Société de Pathologie exotique at Paris in token of appreciation for his extensive research on snake venom and on scorpion and spider poisons.

DR. CHALMERS MITCHELL, the English zoologist, under the auspices of the London *Times*, undertook to make a flight from Cairo to the Cape with special reference to scientific observations, leaving Cairo in a Vickers-Vimy machine with a crew of four pilots and mechanics on February 6. A forced descent after delays by engine troubles at Tabora, in the Tanganyika territory damaged the machine so that the flight could not be continued.

MR. CARL L. HUBBS, assistant curator of ichthyology and herpetology in the Field Museum of Natural History, has resigned to accept the position of curator of fishes in the Museum of Zoology, University of Michigan.

ASSISTANT PROFESSOR GERALD L. WENDT, of the department of chemistry at the University of Chicago, has been appointed associate editor of the *Journal of the Radiological Society of North America*.

FRANK H. REED, Ph.D. (Chicago, '17), has been made supervisor of Industrial Research for the Butterworth-Judson Corporation of Newark, New Jersey.

DR. E. P. WIGHTMAN, recently of Parke Davis and Co., of Detroit, has accepted a position as research chemist with the Eastman Kodak Co., Rochester, N. Y.

LIEUTENANT SCHACHNE ISAACS, formerly instructor in psychology at the University of Cincinnati, and at present psychologist in the Air Service, Medical Research Laboratory, Mitchell Field, Long Island, has been awarded the fellowship in psychology offered by the Society for American Fellowships in French universities. This enables the holder to do graduate work in the French universities for two years. The purpose of the society is to develop an appreciation among American scholars of French achievements in science and learning.

DR. CHARLES R. STOCKARD, professor of anatomy at Cornell University Medical School, New York City, read a paper on "Growth Rate and its Influence on Structural Perfection and Mental Reactions" before the Philadelphia Psychiatric Society, on March 12.

A SPECIAL meeting of the College of Physicians of Philadelphia was held March 19, as a memorial to Dr. Horatio C. Wood. Dr. George E. de Schweinitz read a memoir to Dr. Wood. "Recollections of a Pioneer in Pharmacology in the United States," was read by Dr. Hobart A. Hare; "An Appreciation," by Dr. Francis X. Dercum, and "Reminiscences, Chiefly Neurological and Medico-Legal," by Dr. Charles K. Mills.

DR. GEORGE D. ALLEN, instructor in zoology in the University of Minnesota, died from pneumonia on March 11.

DR. K. A. J. MACKENZIE, dean of the medical department of the University of Oregon, a surgeon of national reputation, is dead at Portland, Ore., from heart disease superinduced by influenza.

UNIVERSITY AND EDUCATIONAL NEWS

THE University of Michigan has received an anonymous gift of one million dollars.

Rentals amounting to \$2,367,000 will go to the university under the terms of a lease arranged by Levi L. Barbour, the Detroit manufacturer, with the stipulation that the money shall be used for educating women of the Far East.

CORNELL UNIVERSITY has received a gift of \$100,000 for a new dormitory, to be named for the donors' parents, from W. G. Mennen and his sister, Mrs. Emma Mennon Williams, of Detroit.

BATES COLLEGE is to receive \$500,000 from the fund to be raised by the Northern Baptist Convention.

ON recommendation of the medical faculty of Cornell University, women who are students in medicine may hereafter take the first year's work at the Medical College in New York City.

PROFESSOR WALTER EDWARD MCCOURT, head of the department of geology of Washington University, has been appointed dean of the schools of engineering and architecture of Cornell University. He will assume the duties of his new position at once. The appointment was made to fill the vacancy caused by the resignation of Professor A. S. Langsdorf.

PROFESSOR E. T. BARTHOLOMEW, of the department of botany of the University of Wisconsin has accepted a research professorship in the Graduate School of Tropical Agriculture at Riverside, Cal., in connection with the University of California. His special work will be the investigation of the diseases of lemons and other citrus fruits.

SIR ARCHIBALD E. GARROD has been appointed to be regius professor of medicine in the University of Oxford in succession to the late Sir William Osler.

DISCUSSION AND CORRESPONDENCE

MODERN INTERPRETATION OF DIFFERENTIALS

TO THE EDITOR OF SCIENCE: Without attempting to discuss the historical questions involved, I wish to point out that the theory of

"differentials" given by Professor A. S. Hathaway in SCIENCE for February 13, 1920, would prove highly misleading to the modern student.

Professor Hathaway defines $\Delta'y$ as $N\Delta y$, where N is some multiplier and Δy a simple increment, and then defines dy as the limit of $\Delta'y$ as Δy approaches zero. The inevitable consequence of such a definition is that $dy = 0$, which is obviously futile.

In view of the continual recrudescence of such fallacies (with or without a historical background), it may be worth while to repeat here the modern interpretation of the differential, though this may be found correctly stated in any good text-book of calculus.

Consider the graph of a function $y = f(x)$, with the tangent line drawn at the point $x = x_1$, $y = y_1$. Give x an arbitrary increment

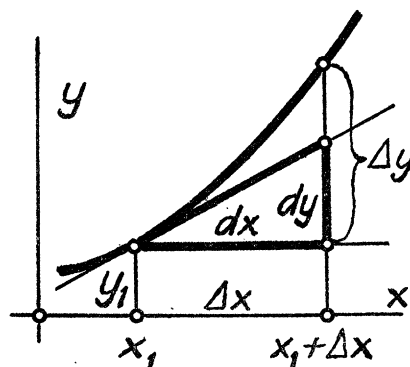


FIG. 1.

which, since x is the independent variable, may be denoted indifferently by Δx or dx . Corresponding to any such increment in x we have the *increment* of y , called Δy , extending up to the curve, and the *differential* of y , called dy , extending up to the tangent. Now when Δx (or dx) is made to approach zero, the ratio dy/dx remains constant, being the slope of the tangent line, while the ratio $\Delta y/\Delta x$ is a variable, approaching the slope of the tangent as a limit. *But the limit of Δy taken by itself is zero, and the limit of dy taken by itself is also zero.*

There are thus two very good reasons why