The American Association for the Advancement of Science:
Magnitudes Again: Dr. Frederick H. Seares 1

Scientific Events:
The Virgin Port Orford Cedar Tract Reservation; Award to Dr. Bowie; Lectureship in Honor of Dr. Julius Stieglitz; Intellectual Freedom; Officers of the American Association for the Advancement of Science 8

Scientific Notes and News 11

Discussion:
Tuberculosis, Leprosy and Other Diseases Caused by Acid-fast Bacteria; Dr. Wm. Charles White. Methemoglobin Reduction by Glutathione or Cysteine; Dr. Densie B. Morrison and Edward F. Williams, Jr. The Crystalline Character of Living Material: Dr. W. D. Francis. Pollen and Hay-fever: Dr. Douglas H. Campbell 14

Quotations:
Science's Magna Charta. The Problem of the Scientist 16

Special Articles:
An Ultracentrifuged Study of Catalase: Dr. Kurt G. Stern and Dr. Ralph W. G. Wyckoff. The Essentialness of Manganese for the Normal Development of Bone: Dr. W. D. Gallup and Dr. L. C. Norris. Studies in the Physiology of the Thymus: J. Gershon-Cohen and Others 18

Scientific Apparatus and Laboratory Methods:
A Bleaching and Clearing Method for Plant Tissues: Dr. G. Ledyard Stebbins, Jr. A Substitute for White Ink for Use on Shellacked Kymograph Tracings: Dr. W. J. R. Camp 21

Index to Volume LXXXVI 1

Science News 10

SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. McKenney Cattell and published every Friday by

THE SCIENCE PRESS
New York City: Grand Central Terminal
Lancaster, Pa. Garrison, N. Y.
Annual Subscription, $6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary, in the Smithsonian Institution Building, Washington, D. C.

MAGNITUDES AGAIN

By Dr. Frederick H. Seares
Mt. Wilson Observatory, Pasadena, Calif.

(1) A Yardstick without Substance

An assemblage of astronomers scarcely needs reminding that stellar magnitude is the measuring stick with which we sound the depths of space. Upon this unit, in some way or other, depend our distances of all the more remote objects in the heavens and, indeed, the dimensions of the universe itself, as far as we know it. Triangulation, the perspective-sharpening of star streams and the backward sweep of stars which reflects our own forward motion through space locate our nearer neighbors; but we quickly pass the useful limit of such methods and thereafter must deal with distances so great that no change in the position of the observer produces any answering shift in the faraway star. The principle of measurement is exhausted, and a new one must be found.

1 Address of the retiring vice-president and chairman of the section on astronomy, American Association for the Advancement of Science, Indianapolis, December 28, 1937.

You all know how this need has been met: The intrinsic brightness of an object being known—how we find that item is of no concern here—we observe its apparent brightness, which is only intrinsic brightness dimmed by distance, and apply the faithful inverse-square law. Magnitude is, of course, only a convenient numerical expression of the brightness. A sound and satisfying principle, you say, which meets our need admirably. It oversteps ordinary limits of distance and demands only that the object send us enough light to tell us what it is, and thus enable us to say how bright it is intrinsically.

As astronomers you know that in practice matters are not quite so simple as this expression of the essence of the problem would imply; but I have ignored difficulties in order to emphasize once more that stellar magnitude, our customary measure of brightness, takes rank as an observational datum of major importance.