

# SCIENCE

VOL. 77

FRIDAY, APRIL 28, 1933

No. 2000

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SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. McKEEN 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.

## FROM THE PONDERABLE TO THE IMPONDERABLE<sup>1</sup>

By Professor OTTO HAHN

DIRECTOR KAISER WILHELM INSTITUTE FOR CHEMISTRY, BERLIN-DAHLEM, NON-RESIDENT LECTURER  
IN CHEMISTRY AT CORNELL UNIVERSITY ON THE GEORGE FISHER BAKER FOUNDATION

CHEMISTRY has for its purpose the study of the composition of our material world. Its first task is to determine the simple basic substances—the chemical elements—out of which all other substances are made, and artificially to produce new kinds of substances from these same elements. After its problem had been thus recognized and defined, thanks chiefly to Robert Boyle, chemistry could be spoken of as a “science,” striving, in contrast to the direction of earlier efforts, towards an ideal objective through unprejudiced researches. The prerequisite for these researches was the recognition of the fact that the weight of a chemical compound is equal to the sum of the weights of its constituents. We owe to the French chemist Lavoisier the recognition of the full significance and the ingenious application of this law. We have him to thank for introducing the well-

known balance as a reliable guide in chemical work, whereby Lavoisier became the true founder of modern chemistry whose victorious march began in the nineteenth century and has continued at a steadily increasing tempo.

To be sure, Lavoisier’s immortal services were poorly rewarded by his contemporaries; in 1794, during the confusion of the French Revolution, the Revolutionary Tribunal sent him to the guillotine.

My topic is “From the Ponderable to the Imponderable” in chemistry, in physics, and I might also add, in biology. How far can we extend the limits of our qualitative and quantitative tests of chemical compounds? Are there methods of investigation that are reliable at and beyond the present limits of our balances? What are the lower limits?

As a science develops, its methods are improved and its aids become more and more refined. The

<sup>1</sup> Introductory public lecture.

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