

SCIENCE

VOL. 82

FRIDAY, OCTOBER 18, 1935

No. 2129

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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.

THE WAY FORWARD IN CHEMISTRY¹

By WILLIAM ALBERT NOYES

UNIVERSITY OF ILLINOIS

SOME years ago Professor Lewis published an article on "Two-way Time," based on the principle of relativity. Instead of the older idea that time progresses only in one direction—forward—he expressed the thought that time is an inseparable whole. In terms of relativity time is a fourth dimension correlated to the three dimensions of space.

I shall not attempt to discuss the mathematical aspects of this question. I am quite incompetent to do that. I wish to emphasize the fact that the future is of far greater interest to us than the past and should have a greater influence on our conduct. I shall speak of the past this afternoon only as it has a relation to the future.

I think I may be pardoned for a reminiscence. When I graduated from Grinnell College, somewhat

¹ An address delivered at San Francisco on August 19, 1935, on receiving the Priestley Medal of the American Chemical Society.

more than fifty years ago, it was customary for graduates to give short "orations" on commencement day. I chose for my topic "The Unity of Force." It should have been "The Unity of Energy," but the mistake in nomenclature may perhaps be excused in a young bachelor of that period. My thought was that all forms of energy consist in the motion of material substances, sometimes taking the form of the motion of large bodies, at other times the motion of atoms or molecules, but, whatever its form, capable of being transformed in some definite manner into the sort of motion expressed in some other form of energy. My thought at the time was that there are two fundamental entities in the universe, matter and energy.

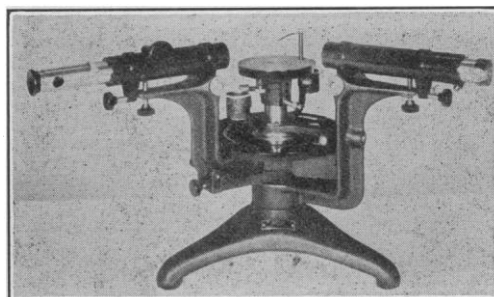
The twentieth century has broadened and simplified our concept. We now think of a single entity which we may call matter or energy, since each may be transformed into the other.

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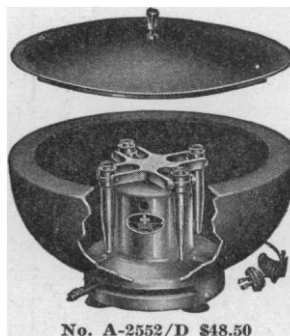
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