

SCIENCE

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CONTENTS

The Balance, the Steelyard and the Concept of Force: DR. WILLARD J. FISHER 427

The Scientific Members of the British Educational Mission 433

William John Keep 437

Scientific Events:—

Science and Industry in Tasmania; Manganiferous Ore in Oregon; Exhibit of Minerals useful in War; Library of the Edgewood Arsenal Laboratory; Endowment of Engineering Research 438

Scientific Notes and News 442

University and Educational News 441

Discussion and Correspondence:—

The Scientific Name of the Passenger Pigeon: HARRY C. OBERHOLSER. *Alleged Rediscovery of the Passenger Pigeon:* JOHN M. CLARKE, S. M. RASMUSSEN. *Do we want a Great Private Institution for Inventors like the Institute of France for Artists?* DAVID FAIRCHILD. *Circular Frequency:* PROFESSOR ARTHUR TABER JONES 445

Scientific Books:—

Armsby on the Conservation of Food Energy: PROFESSOR GRAHAM LUSK 447

The Flora of North Dakota: O. A. STEVENS. 448

Special Articles:—

Pear Blight Wind Borne: PROFESSOR F. L. STEVENS, W. A. RUTH, C. S. SPOONER..... 443

THE BALANCE, THE STEELYARD AND THE CONCEPT OF FORCE

THE primitive philosophy of *Animism*, "the doctrine that a great part, if not the whole, of the inanimate kingdom, as well as all animated beings, are endowed with reason, intelligence and volition, identical with that of man," still to a degree sticks in mechanics, in the concept of force. Schopenhauer is quoted as saying:

That the essence of forces in inorganic nature is identical with the will in us, every one believes with full certainty and as a demonstrated truth, who seriously considers it.

R. Eisler says:

Force is a concept which gets its content originally from the capacity of the ego in general by means of its will to bring about something, to overcome a resistance, and is then immediately superposed upon the objects of the external world. . . . Since the ego finds limits to its activity in the external world, feels itself hindered by objects, it inevitably interprets the hindrance as the expression and activity of a sort of will-power analogous to itself which things exert against it and by virtue of which they can or do influence other things. . . .

E. Mach says that the concept of force is a survival of fetishism; Kirchhoff, in the famous prefix to his *Mechanics*, acknowledges the value of the older view in the development of the science, and its usefulness in elementary teaching, but takes for himself this higher ground:

I propose as the problem of mechanics, to describe the motions which occur in nature, and, forsooth, to describe them completely and in the simplest way. I will further add that it should deal only with this, to state what the phenomena are, not to determine their causes.

For him the term force "forms only a means of simplifying the forms of expression, *i. e.*, to express in brief phrases equations which with-