

*Dimensional Analysis.* By P. W. Bridgman, New Haven, Yale University Press, 1922. ii 112 pp.

The substance of this book was given as a series of five lectures delivered at Harvard University in the spring of 1920. It treats of the *principle of similarity* used so effectively by the late Lord Rayleigh. A physical equation, according to the usual view, must express an equality between magnitudes of the same character, i. e., of the same dimensions. Nevertheless the author writes on page 42 the equation  $v + s = gt + \frac{1}{2}gt^2$  where  $s$  is a length and  $v$  a velocity. But a complex equation of this type requires a special definition of the  $+$  sign and we cannot agree with the statement that "it is in itself a refutation of the intuitional method of proof of the principle of similarity." There is a useful chapter on the theory of model experiments and a collection of thirty-two examples. We feel that the book would benefit by expansion. Thus brief statements such as "Freedom from viscosity and complete turbulence of motion are seen by the analysis to be the same thing" (p. 85) are difficult to understand.

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*Denken und Darstellung; Logik und Werte; Dingliches und Menschliches in Mathematik und Naturwissenschaften.* Von E. Study. Braunschweig, Friedrich Vieweg und Sohn, 1921. 43 pp.

This pamphlet is interesting and valuable as expressing the views of a leading mathematical investigator on the ideals of mathematical teaching, study, and research. It is a polemic against the too formal notions of M. Pasch, who apparently regards the logical minuteness which is the final achievement of the analyst as the chief and almost the sole criterion of the value of a piece of mathematical work and as the goal to be striven for in mathematical education. Study rightly emphasises that this painstaking logical detail is merely a means for the avoidance of error, not an engine for the discovery of truth, that imagination is the first virtue of the mathematician, and that logical consistency alone is but sterile. He strongly dissents from Pasch when the latter separates a finer mathematics in which the utmost of logical precision is requisite from a coarser mathematics in which a moderate amount of fallacy is permissible. He demands strict logic everywhere, but a logic combined with imagination, not bound in the straight jacket of a dead syllogistic form. He says much that is worth reading about the bases of an evaluation of pieces of research, together with the ideals which should govern mathematical publication. The book stands beside those of Poincaré as one of the best expositions of how mathematical work is actually done, by a man whose great services to mathematics enable him to speak with authority.

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