to deduce the probability law (1) from the so-called principle of the arithmetic mean,—as the "most probable value." The argument referred to is that which first sets up

$$F(z) = \varphi(z - x_1)\varphi(z - x_2) \cdots \varphi(z - x_n)dy_1dy_2 \cdots dy_n$$

as the probability that, with $z$ as the true value, the measurements $x_1, x_2, \cdots, x_n$, *will be* made; then attempts to regard this same expression as also proportional—or even equal—to the probability that $z$ is the true value, the measurements $x_1, x_2, \cdots, x_n$, *having been* made; and then sets $dF/dz = 0$.

UNIVERSITY OF TEXAS,
*December*, 1912.

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## SHORTER NOTICES.

*Die partiellen Differential-Gleichungen der mathematischen Physik.* Nach Riemann's Vorlesungen in fünfter Auflage bearbeitet von HEINRICH WEBER. Zweiter Band. Braunschweig, Vieweg und Sohn, 1912. xiv+575 pp. Unbound 15 marks, bound 16.80 marks.

THE first volume of the fifth edition of this classic work was reviewed in this BULLETIN, volume 18, page 87, and the fourth edition in volume 8, page 81. Little need be added to these. The most noteworthy addition to the present volume is the entire section 18, devoted to relativity. This section contains thirty pages. The introduction points out the nature of time and that relativity is not really concerned with time but with the measure of time, or rather with the connection between time and space quantity. The succeeding sections are sufficiently described by their titles: time and space in the stationary and the moving world; normal form of the transformation of axes; constant velocity of light; significance of the Lorentz transformation; the fundamental electromagnetic equations for bodies at rest; the fundamental electromagnetic equations for moving bodies; invariancy of the equations; explicit form of the equations; transformation of the force and the displacement; the Michelson-Morley experiment; application of the relativity theory to the Michelson-

Morley experiment. One might suggest that, aside from its interest in physics, there is no more reason to include the theory of relativity here than any other theory of the possible groups of transformations that the differential equations of physics will admit. A larger consideration of such groups would indeed not be out of place. The theory of integral equations would seem to be of a much greater practical value to the working physicist in solving differential equations, yet the space devoted to that is very meager indeed. The promised developments are only a few pages in the section on vibrating membranes, in which the problem is reduced to one of integral equations. Substantially no idea is given of the methods of integral equations, the nearest approach being Green's functions for this case.

The article upon propagation of waves in a gas is preceded by a new section on thermodynamics. As it occupies only four pages, it gives but a few theorems. However, all the article has been re-written, in order to present the matter more clearly from the point of view of the previous edition. The twenty-second and the twenty-third divisions have been combined into a single one. A few minor changes occur.

JAMES BYRNIE SHAW.

*Theorie der Elektrizität.* Erster Band: *Einführung in die Maxwellsche Theorie der Elektrizität.* Von Dr. A. FÖPPL, vierte, umgearbeitete Auflage herausgegeben von Dr. M. ABRAHAM. Leipzig und Berlin, Teubner, 1912. xviii+410 pp. 11 Marks.

THE second edition of this volume was reviewed in this BULLETIN, volume 11, page 383. The third edition has not been accessible to the reviewer, consequently he cannot make a complete comparison between the two. In the present edition the vector applications to mechanics have been cut to a minimum; ponderomotive and fictive tensions have been treated more extensively; the theory of electric waves has been made to include the skin-effect, and some consideration of wireless telegraphy; and the electrodynamics of moving bodies is developed as far as can be done without bringing in the atomistic theories that belong to the second volume,—however, sufficient is given for the application to the induction phenomena of electrotechnics. The definition of the vector