panum, is a mathematical consequence of its asymmetry which I have never denied. But I hold that these tones are not the *strong* difference tones heard so commonly.

It must be regretted that the exceedingly interesting and important investigations published by Emile ter Kuile in Pflüger's Archiv for 1900 are not recorded by the author. Ter Kuile's theory is fundamentally identical with the reviewer's, though different in detail. The author himself does not offer any new suggestions which might lead to progress in the physiological theory of tone perception.

Zur Theorie der Tonbeziehungen. RICHARD HOHENEMSER. Zeitschrift für Psych. u. Phys. d. Sinnesorgane, Bd. 26, 1901. Pp. 61-104.

This paper is a good exposition of the theory of Lipps, which tries to explain the psychological effects of tone combinations by assuming that a sensation of tone is *unconsciously* a series of rhythmical sensations, and by referring to the æsthetic effects of *conscious rhythm*. The author briefly rejects (and here every psychologist will agree with him) the musical theories of Helmholtz and Wundt ('overtones') and that of Riemann ('Klangvertretung'). He states that only two explanations of the musical effects are then left: Stumpf's explanation by 'fusion,' and Lipps's by 'unconscious rhythm.' He criticizes Stumpf's theory and shows that it leaves a great many important facts unexplained. Then he defends Lipps's theory against the criticism of Stumpf and applies it to a number of facts to which Stumpf's theory cannot be applied. Anything essentially new, however, is not to be found in the paper.

The reviewer confesses that he sympathizes with Lipps's theory to some extent, but is unable to understand how the musical facts can be *explained* by calling them unconscious rhythms, while admittedly the æsthetic laws of these 'rhythms' are different from those of conscious rhythms. In this respect Stumpf's criticism of this theory is as valid as ever. While Lipps's theory can hardly be regarded as an explanation, its value seems to consist in the fact that it prepares the ground for a real explanation in the future, which must be sought—most probably—in a correlation of the æsthetic effects and the chemical processes (with numerical relations) in the nervous organs. As a preparation for a future explanation Lipps's theory is doubtless more promising than that of Stumpf.

MAX MEYER.

UNIVERSITY OF MISSOURI.