REMARKS ON A PAPER OF DR. TAUTZ.

BY

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After reading the paper of Dr. Tautz »Über die Existenz von Eigenfunktionen einer reellen Variabeln bei linearen homogenen Differentialgleichungen zweiter Ordnung und Randbedingung mit komplexen Koeffizienten; Entwicklung willkürlicher Funktionen und Anwendung auf partielle Differentialgleichungen» which appeared in the Acta Mathematica, 56 (1930), pp. 23—148, we feel that it is desirable to record briefly certain historical and mathematical comments on the subject-matter of his paper. It is our opinion that Dr. Tautz has indicated in too sparing a fashion the results established since Birkhoff's fundamental memoirs on expansion problems and has thus conveyed to the general reader an erroneous impression concerning the recent development and present status of the theory of such problems. On this account we wish to present our own interpretation of the facts, with appropriate emphasis upon the points at which we are unable to adopt the views expressed or implied by Dr. Tautz.

We commence with a brief list of papers to which we shall refer subsequently by number. This list is arranged in chronological order, according to dates of publication.

(1) Birkhoff,   Transactions of the American Mathematical Society, 9 (1908),
          pp. 219—231.
(2) Birkhoff,   ibid., pp. 373—395.
(3) Tamarkin, Rendiconti del Circolo Matematico di Palermo, 34 (1912),
          pp. 345—382.
(4) Birkhoff,   ibid., 36 (1913), pp. 115—126.