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enormous number of diverse and seemingly unrelated topics between the covers of one book. In doing so he has expressed the complications of a field which draws on so many branches of physical knowledge without getting lost in detail. For a specialist in one aspect of the missile field this is a good survey of most of the remainder of the subject.

The Orchestra of the Language. By Ernest M. Robson. 206 pp. Thomas Yoseloff, Publisher, New York, 1958. \$5.50. Reviewed by J. R. Pierce, Bell Telephone Laboratories.

SCIENCE helps us to solve some problems but it doesn't always help us with the things we want most to do. The scientifically naïve believe that that old black magic of science must be up to anything, by gum. The very naïve sometimes believe that they have used science in solving important problems which scientists have overlooked. Mr. Robson, who appears to be an honest and well-meaning man, has read a lot about acoustics, and he believes that he has expressed numerically a good deal about the power of language.

His book presents a few indisputable but by no means new ideas: that the different phonemes of English have different qualities, that some vowels and syllables tend to be louder than others, and that some vowels sound higher or shriller than others. All of this we can arrive at through a very little speaking and listening.

Robson then proceeds to assign a numerical *striking power* to phonemes, and to compute the striking power of syllables. It appears that striking power is expressed in db, and (in Table I) I compare Robson's computed striking power with peak sound levels in each syllable for two sentences spoken by two subjects. The quantity in parentheses opposite the first syllable is striking power or level of the first syllable, and the subsequent numbers in a column are increase or decrease from syllable to syllable.

TABLE I

Word	Robson	Subject 1	Subject 2
When	(33)	(29)	(15)
li-	+8	+4	+10
lacs	-2	-7	+6
last	0	+4	-1
in	-11	-4	-17
the	-10	+2	-1
door	+27	+4	+18
yard	-2	-3	+2
bloomed	-10	+4	-6
Hump	(37)	(28)	(17)
ty	-10	-1	+1
Dump	+6	+3	+12
ty	-6	-2	-14
sat	+6	+2	+14
on	-10	-3	+1
a	-7	+1	-2
wall	+24	0	+4

Clearly, Robson doesn't always predict changes in the right direction. His numbers are misleading. While we can measure an *average* loudness of speech sounds for many speakers and many contexts, these average values are not a reliable guide to the loudness of the speech sounds in a particular utterance by a particular speaker.

Robson assigns *altitone* values to vowels. The numerical measure isn't explained, but in a number of cases it appears to correspond roughly to a hundredth of the second formant frequency. However, at least three formant frequencies are important in vowels, and Robson's altitone may be some sort of mixture.

Robson prescribes some rules for writing; he proposes that vocal power should move in the same direction as the events that it describes (which sounds reasonable, but is it so?), and that the power and tone patterns should be similar in direction (but, how do we know this?).

The book is full of exhortation and example with comments that are often sensible, but most of which could have been made without the acoustical paraphernalia. The book does not give any experimental verification of its quantitative claims or of its rules. Part 2 of the book gives tables of "phonetic values" of words, and Part 3 consists of 26 pages of unfortunate lyrics which run the gamut of language from drooling, gooey continuants to the pit pat pit of tripping plosives. One acquainted with acoustics will find a good deal of factual material scattered through the text, but this is not very clearly or coherently presented.

This book was quoted at length in a literary journal. Year in and year out the general public gets a mighty queer and terribly unfortunate idea of science by following the general press.

Theory of Beams: The Application of the Laplace Transformation Method to Engineering Problems. By T. Iwinski. Translated from Polish by E. P. Bernat. 85 pp. Pergamon Press, London & New York, 1958. \$3.50. Reviewed by Peter L. Balise, University of Washington.

ALTHOUGH Laplace developed transforms nearly one hundred and fifty years ago, and the engineer Oliver Heaviside used a form of operational calculus around 1890, this powerful method for solving differential equations is not generally employed in engineering. Servomechanisms, electric circuits, and more recently automatic controls, are commonly analyzed by study of the transformed equations, but operational calculus is only being introduced in vibrations and is rarely used in beam theory. One would expect a slower application to beam theory since here the independent variable is distance, whereas the Laplace transform most naturally expresses the behavior of a system which varies with time.

Professor Iwinski's book explains in detail how the Laplace transformation may be used to find the elastic curve of beams. Essentially, the transformed deflection

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