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A Synthetic Tone-Mixer

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of the past events, "They tell me that such and such a thing happened, etc."

COE COLLEGE,
CEDAR RAPIDS, IOWA.

TECHNIQUE FOR RECORDING TIME INTERVALS UPON PAPER RIBBON

J. D. ALEXANDER

The recording of time intervals of one-hundredth second duration upon paper ribbon is possible by the use of a comparatively inexpensive set-up.

The set-up consists of a semi-flexible needle attached to the vibrating prong of an electrically driven 100 d.v. tuning fork. The needle is adjusted to vibrate against a stationary cork anvil and a paper ribbon is drawn over the anvil between two revolving drums. The needle perforates the paper ribbon 100 times per second. The tuning fork is operated by three dry cells and the power for revolving the drums which move the paper ribbon is supplied by a one-eighth H. P. electric motor.

This set-up has been perfected and used in making a study of the time element in athletics at the State University of Iowa. A second needle is operated by special contact switches and is operated to make a second series of perforations which are measured in terms of the perforations made by the tuning fork.

STATE UNIVERSITY OF IOWA,
IOWA CITY, IOWA.

A SYNTHETIC TONE-MIXER

JOSEPH TIFFIN

A device designed to demonstrate the phenomenon of "tone-mixing" will be exhibited and described. By means of this apparatus a vibrato may be synthetically produced with the number of pulses per second, extent of frequency fluctuation, and intensity relationship under control. The manner in which each of these variables influences the perceived tone can thus be determined. It is also possible to reproduce a vibrato whose rate, extent, and intensity relationship are identical with those of artistic singing.

One factor at a time can then be varied and the relative importance of the several elements in the artistic tone determined. The device is also very convenient for demonstrating in the classroom the principle of *sonance*.¹

STATE UNIVERSITY OF IOWA,
IOWA CITY, IOWA.

A COMPARISON IN ACADEMIC ACHIEVEMENT OF
THE STUDENTS IN THE UPPER QUARTILE WITH
THOSE IN THE LOWER QUARTILE AS
MEASURED BY APTITUDE TESTS

J. E. EVANS

Of the 464 freshmen included in this study fifty-five were in the lower quartile and 109 in the upper. The tests used for the study were the I. S. C. Aptitude Test and the Engineering Information Test.

The fifty-five students in the lower quartile made 196 failures during the first three terms, while the 109 students made 169 failures in the same time.

Fifty-nine per cent of the failures in the lower group were in Mathematics, English, and Chemistry. Seventy-two per cent of the failures of the better group were in Mathematics, Physical Education, and English.

Forty per cent of the low group were dropped from school by the scholarship committee, as against seven per cent of the better group. Forty-one per cent of the low group left of their own accord while thirty-four per cent of the better group left of their own cause.

Of the fifty-five students no one made a term average of more than eighty-nine, and not one of the group could keep his average up to or above eighty-two each of the seven terms he was in college. In the fall of 1928 only nine of the fifty-five students were left in college, and two of these made an average grade below seventy-five per cent which is the passing grade. Sixty-three per cent of the upper group were left in school.

¹As introduced by Metfessel: "Sonance as a Form of Tonal Fusion," *Psych. Rev.*, 1926: 33: 459-464.