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AN ANALYSIS OF THE BERGER RHYTHM, WITH
SPECIAL REFERENCE TO THE DURATION AND
AMPLITUDE OF THE INDIVIDUAL WAVE,¹

JOHN R. KNOTT

The rhythmical electrical potential waves recorded from the human brain have been classified by their discoverer, Berger,² into two types: alpha-waves, and beta-waves. This classification is made on the basis of the duration and amplitude of the waves. Waves having a duration of about .10 sec. and an amplitude of about 20 microvolts fall into the category of alpha-waves. Waves having a duration of about .04 sec. and an amplitude of about 10 microvolts make up the beta-waves. In general, the beta-wave is formed on the sides of the larger and more predominant alpha-wave.

In this study, we have analyzed individual potential waves, mostly consecutive, from 9 out of 100 available records. Our criterion of a wave was that it looked like a wave, unequivocally. Bi- and tri-modal waves were read as one wave, if the fall in potential did not exceed 50 per cent of the total peak voltage.

The duration of a wave was determined by reading from trough to trough in hundredths of a second. Amplitude in peak microvoltage was read from trough to crest.

We recorded under two conditions: silence and speech. Records were in all cases taken from the left hemisphere, using needle electrodes inserted through the scalp, one over the visual, the other over the precentral area.

Under conditions of silence, the mean duration was $.098 \pm .027$ sec. N was 1301. The mean amplitude was 20.77 ± 10.52 microvolts. N was 1162. During speech, the mean duration was $.094 \pm .028$ sec. N was 455. The mean amplitude was 20.97 ± 12.05 microvolts. N was 390.

The shape of the distributions of duration is unimodal, and is the same for silence and speech. The distribution of amplitudes is comparable to that of duration.

On the basis of these data, it does not appear feasible to differentiate types of waves on the basis of such quantitative measurements as those used here. There are not definite modal types as determined by our methods of treatment of the data.

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¹ This research is from the laboratory of Professor Lee Edward Travis.

² Ueber das Elektroencephalogramm des Menschen, J. f. Psychol. u. Neurol., 40: