ON THE RELATIONSHIP BETWEEN THE SINGLE FLASH ERG AND THE ERG ELICITED BY MORE COMPLEX STIMULI

by

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With 13 Figures

Quite a number of facts have been assembled about the human ERG. If some of these data could be interrelated, preferably in a relationship of cause and effect, electroretinography would advance gradually to a science proper.

In this discussion we have tried to explain some complex stimuli responses in terms of only three fundamental characteristics.

All experiments concern the initially dark adapted eye and in all instances the eye was stimulated by a blue light, with a dominant wave-
length of 460 μm. The result of such a blue stimulus, if presented in a flash of not too high an intensity, is a simple, monophasic b-wave, commonly attributed to the rod system.

The ERG potential being a function of time we will call any response \( R(\tau) \). The response to a flash is called \( R_{\text{fl}}(\tau) \) and it can be shown experimentally that \( R_{\text{fl}}(\tau) \) always maintains the same shape independent of the energy content of the flash. The latter quality determines only the amplitude of the response.

Arbitrarily choosing a unit-energy \((E = 1)\), we define its flash response as the “unit-response” \( u(\tau) \) (Fig. 1). Any blue flash of arbitrary energy content \( E \) (now expressed in the normalized energy unit (N.E.U.)) pro-

![Figure 2](image)

Any flash-response can be described as \( k \) times the unit-response. \( k \) is a non-linear function of the flash-energy \( E \).