Electrical stimulation of the residual auditory nerve fibres in a post-lingually deaf patient was effected by ten electrodes implanted 1.5 mm apart in the scala tympani. Biphasic current pulses with each phase fixed at 180 μs were used.

Psychophysical results obtained by activating one electrode at a time showed the following characteristics: (a) loudness was found to increase with both current level and repetition rate; (b) pitch increased with repetition rate; (c) pitch and sharpness increased in the apical to basal direction in accordance with the tonotopic organisation of the cochlea; (d) dissimilarity measures obtained by triadic comparisons provided evidence that the sensations produced by repetition rate and electrode position are perceptually separable; (e) for short-duration stimuli the discrimination performance for electrode trajectories was much better than for repetition rate trajectories.

For simultaneous activation of two electrodes, triadic comparisons showed that two perceptual components, one related to the more basal electrode and the other to the more apical one, could be discerned.
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