SUMMARY

The functional relationships between activities of neurons in the FEF of a primate and various parameters of eye movement were investigated by combined unit recording and electrical stimulation through a microelectrode in chronically implanted, unanesthetized pig-tail monkey, Macaca nemestrina, seated in a primate chair with head restrained. Approximately one-third of the total 180 units recorded showed consistent relationships of their patterns of spike discharge with eye movements. About 80% of these units were related to saccadic while the remaining 20% to smooth pursuit eye movements. Two lines of evidence, that 60% of the units which were related to eye movement discharged a train of impulses preceding the onset of the movement, and the electrical stimulation of FEF produced exclusively a bilateral conjugated saccade, indicate that the FEF also participates in the events which lead to the initiation of saccadic eye movements.

Only the latency to the onset of eye movements showed some consistent relationship with the number of spikes in the train preceding the movement while the other parameters e.g. duration, peak amplitude and relative angular velocity showed very little variation with the patterns of spike discharge. The data indicate that the neurons of the FEF do not function as the pattern generator, but rather function as a time-delay trigger mechanism for a saccadic eye movement to occur at certain time sequence in a series of complex, coordinated motor behavior.

Electrical stimulation of various area of the FEF with the same

stimulus voltage and frequency produced different amplitude of eye deviation from the neutral position, It was suggested that precision control of amplitude of eye deviation to a new intended position was achieved by activation of certain topographically distributed column of FEF neurons via similarly distributed neurons in the superior colliculus.

BIOGRAPHY

NAME: Prayode Boonsinsukh

DATE OF BIRTH: January 10th, 1945.

PLACE OF BIRTH: Bangkok, Thailand.

INSTITUTIONS ATTENDED:

1. Krungthep Vidhaya Middle School
   February, 1962-Certificate of Mathayom VI
2. Pre-University School.
   February, 1963-Certificate of Mathayom VIII
3. Chulalongkorn University and University of Medical Sciences.
   School of Physiotherapy, Faculty of Medicine
   April, 1967-Bachelor of Science in Physiotherapy.
4. The United Sheffield Hospitals School of Physiotherapy.
   February, 1969-Certificate of post graduate study.
5. Nottingham School of Physiotherapy
   January, 1969-Certificate of teacher training in Physiotherapy.