COMPUTER TECHNOLOGY

PROCEEDINGS

DECUS Conference - Neurophysiology and Psychophysiology Session

The papers and discussion to follow were presented at the 1969 Spring Meetings of the Digital Equipment Computer Users Society (DECUS) held at Wakefield, Mass. The symposium is reproduced here through the cooperation of the Society, A. J. Cossette, Executive Secretary.

FOREWORD

This symposium was directed at exploring applications of LINC-class computers (classic LINC, LINC-8, MICRO-LINC, PDP-12) in several diverse areas of neurophysiology and psychophysiology. Users of these small laboratory computers still encounter students and colleagues trained in university centers on large-scale machines who react to the LINC as a "toy" or as a "cute little logic box." That the LINC is much more than this is a tribute to the ingenuity and genius of Wesley Clark and his colleagues who developed the LINC concept at M.I.T. in 1961, to Mary Allen Wilkes who has developed the very approachable, interactive LAP assembly languages, and to manufacturers such as DEC who had maintained most features of the original design while increasing certain capabilities, lowering cost, and providing field maintenance. Papers by Severo Ornstein, a member of the original LINC group, and Richard Clayton, product engineer for the LINC-8 and PDP-12 at

DEC, document the birth and evolution of the LINC concept.

The LINC was not intended as a replacement for the large-scale computer but was designed as a flexible laboratory tool, a sophisticated super-oscilloscope, if you like, which would not require the user to become a "computernik." Because its capabilities are clearly limited, it encourages many scientists to think twice about computer approaches to a problem, especially if the problem was conceptualized as requiring the capabilities of a dedicated UNIVAC 1108. It is my own experience that the resulting LINC solutions are significantly more imaginative, economical, and heuristic, emphasizing the use of the computer as an interactive real-time experimental tool, rather than as an off-line analysis device. The generality of this experience is documented in papers discussing varied LINC applications by William R. Goff, William H. Sheriff, and Charles F. Stroebel. The paper on "LINC Applications to Quantitative Analysis of Parkinson's

Disease," by Anthony Sances, Jr., was not available for publication. Regrettably, time did not permit reports of other LINC applications from the approximately 250 extant LINC installations.

The panel discussion following the formal reports was joined by Mary Allen Wilkes from the Computer Laboratory at Washington University (St. Louis) and by Dr. Frederick Hiltz (Cornell University, Ithaca). Their comments on LINC software and comparisons of the LINC with process-control class computers were especially valuable. Richard Clayton and Edward Kramer of DEC presented a PDP-12 demonstration at the close of the symposium.

As chairman, I express my thanks to the participants, as well as to Susan Bascom of DEC, who ably handled arrangements, and to Dorothea McIntyre of the Institute of Living for her excellent work in preparing the manuscript.

Charles F. Stroebel
Chairman