passes through the Polaroid filter, or some alteration of the dichroism of the macular pigment molecules under intense light. Certainly this experiment gives no clue as to the process causing the obtained quadratic trend; rather, it indicates that intermediate light levels appear to produce the entopic Haidinger's brush target with maximal clarity.

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An approach to operating systems for computer-controlled behavioral research

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Strategies for controlling psychological experiments with computers have ranged from unique programs written for each new experiment to the use of high-level compiler languages requiring very little interaction with the E and little or no knowledge of the working of the machine. An alternative strategy which

has rarely been implemented involves the machine language programming of a few short subroutines into an operating system which controls S-environment interactions and handles all general data accumulating and processing functions.

An example of the application of this strategy is provided by OSCAR, an Operating System for Computerized Animal Research (Kuch & Platt, 1972; available from the Digital Equipment Computer User's Society, Maynard, Massachusetts, DECUS No. 8-529) for use with Digital Equipment Corporation PDP/8 computers. OSCAR monitors experimental stations, stores and outputs data, and interacts with the operator through the computer terminal. The E must supply four machine language subroutines: (1) to get the experimental variables from the operator, (2) to initialize the station and start the experiment, (3) to run the experiment, and (4) to output stored data at the command of the operator. These routines may be of any size for a particular experiment, up to 17 computer pages total in a 4K system, but generally range from 2 to 5 pages.

This approach to the programming of psychological experiments has obvious savings in time and effort over the unique program strategy. Relatively little programming is required, and all general functions are already preprogrammed. On the other hand, a system like OSCAR is a great deal more flexible than many of the

compiler languages currently available for psychological research. For example, three of the popular compilers are based on a finite state transition model of psychological experimentation. Paradigms that do not readily fit the finite state model cannot be easily implemented with these compilers. As a specific case in point, experiments using historic contingencies of reinforcement [e.g., a percentile reinforcement schedule where a record of the S's most recent behavior must be stored and continually updated (Alleman & Platt, in press)] would require vastly inefficient programming or a major modification of the compiler. OSCAR can handle this complex paradigm or, with only three pages of user programming, can duplicate most of the functions of a finite state compiler. The compiler does have the advantage of not requiring knowledge of machine language programming; so the E must decide whether the generality and flexibility of the operating system approach warrants the greater expenditure in programming.

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