*RECORDING RESPONDING
IN THE UNDERGRADUATE LABORATORY COURSE*

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There are numerous occasions when it is desirable to have undergraduates record responses per unit time in their laboratory exercises (*e.g.*, observing activity levels, utilizing free operant techniques, *etc.*), and the following procedure has been found to be a flexible, simple, and inexpensive solution. Each student (*E*) has a lamp mounted where he can see it while observing an organism, and these lamps are then flashed at regular intervals by a centrally-located timing mechanism. The students are given data sheets ruled into rows and columns, and are instructed to make a specific mark for each of the responses to be observed. Whenever one of these responses occurs, the appropriate mark is made on the data sheet, and whenever the timing light flashes, the student moves down one row on the sheet. From these records, the number of each of the responses which occurred in each of the time intervals can be ascertained.

For the convenience of the instructor, all students should use the same symbol system (*e.g.*, unreinforced Response A = tally mark, reinforced Response A = check mark, *etc.*). During CRF or ratio schedules, the student need only indicate the occurrence of each type of response and move his pencil down one row whenever the timing light flashes. Of course, if an interval should pass without one of the to-be-recorded responses occurring, the appropriate space is left blank. When interval schedules are employed, the data sheets are marked in advance to indicate where reinforcements are to be programmed. Should the animal fail to respond for one or more intervals when the time comes for the next re-

sponse to be reinforced, a dash for each such "no-response" interval is recorded. We have found it convenient to leave alternate columns blank so that a space is readily available for these dashes. (The dash marks may be thought of as periods during which the reinforcement circuit is locked up awaiting the occurrence of the next response.)

For typical laboratory exercises, this procedure has two major advantages over the use of more complex systems. In the first place, it allows each student to work with his own set-up, whereas the employment of most recording instruments leads to grouping students around equipment, a situation which almost always promotes unequal participation on the part of members of the group. Moreover, typical recording devices are difficult to adapt to the simultaneous recording of two or more responses, while the undergraduate is quite capable of recording the occurrences of several different responses. For example, the students can condition (to varying degrees, if desired) two or three distinct responses, and then observe the frequencies of each during extinction. An exercise of this type raises almost insurmountable recording problems if it is to be done "automatically".

We have tried a variety of devices and found the plastic-encased neon lamp (Drake Model 110 "Flushlite") to be rugged, reliable and inexpensive. No estimate of the life expectancy of these units is yet available as none have failed in four years of use. They have been flashed probably more than a half million times so far.