

turned out to be an idiot—just so it's been published. One thing you don't have to worry about is punctuation; trust your committee to put in any commas you have omitted and to delete most of those you have used; it salves their consciences for failing to understand or not caring about what you have to say.

General Principles. Be sure that the organization of your thesis follows established, accepted, orthodox, conventional, recognized, approved, hallowed precedents. Whenever questions of form arise it is safest to check with the graduate school, though this may require a lot of hiking. Never, never do anything new, even to improve clarity of presentation, unless you can cite an established, accepted, orthodox, conventional, recognized, approved, hallowed precedent. Always keep in mind the basic purpose of the thesis: to satisfy the graduate school. Unequivocal presentation of data is far more important than unequivocal data. But most important of all is that the margins are correct.

A. W. JAMES

*Department of Biology,
Canisius College, Buffalo, New York*

Performance of Retarded Children

Zigler and his co-workers have amassed considerable and impressive evidence demonstrating that a large portion of what has been described as "rigidity" on the part of the mental retardate may be due to such motivating factors as social deprivation ("Familial mental retardation: a continuing dilemma," 20 Jan., p. 292). However, we feel that he has minimized certain other motivating factors which influence the behavior of the noninstitutionalized retardate. Specifically, we refer to the feelings of inadequacy which are inevitably generated as a result of the noninstitutionalized retardate's daily experiences with the normal child. Indeed, in this sense, the noninstitutionalized retardate probably is under more environmental pressure than his institutionalized counterpart.

In an unpublished study (1) we have compared the performances of normal children and institutionalized and non-institutionalized retardates under various rewards. The noninstitutionalized retardate was found to perform for a significantly longer period of time and

at a faster rate than either of the other two groups under "social" reinforcement (presence of the examiner and verbal encouragement). Thus, we feel that "success deprivation" may be as important an influence on the behavior of noninstitutionalized retardates as social deprivation is on the behavior of institutionalized retardates.

J. ROBERT NOONAN

JOHN R. BARRY

*Department of Psychology,
University of Georgia, Athens 30601*

Reference

1. J. R. Noonan and J. R. Barry, *J. Educ. Res.*, in press.

Attention Research in 1896

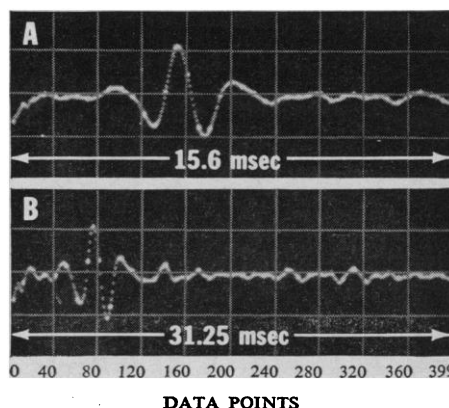
Hess and Polt in two papers published in *Science* [132, 349 (1960); 143, 1190 (1964)] have demonstrated an effect of cognitive variables on the size of the pupillary opening. Great interest has been generated by their findings that interesting visual stimuli and mental arithmetic produce pupillary dilatation. The availability of a subtle indicator of attention holds promise in a number of fields ranging from psychophysics to personality.

Recently, while surveying literature on early work on attention, I came across an anticipation of cognitive pupillometry in a paper by Heinrich, *Zeitschrift für Psychologie und Physiologie der Sinnesorgane* 9, 343 (1896). He measured pupillary diameter with an ophthalmograph while the subject tried to identify a letter on a card which was fixated centrally and at varying angles into the peripheral field. Pupillary diameter tended to increase with peripheral vision; this is attributed to the greater attentive effort required for peripheral vision. Heinrich also anticipated the work of Hess and Polt on the effect of mental arithmetic on pupillary size. He found that difficult mental multiplication was accompanied by a marked increase in pupil diameter, 39 percent in the case of one subject and 100 percent for another subject. Heinrich made use of the data to refute Helmholtz's contention that attention need not be correlated with changes in the sense organ.

PAUL BAKAN

*Department of Psychology,
Michigan State University,
Lansing 48823*

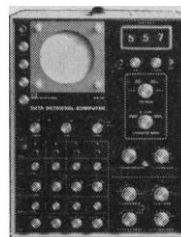
Our signal averager uses all its data points for better resolution.



More usable data points. In a signal averager, resolution is a function of the number of data points that can be placed within a region of interest. Resolution can, therefore, be a problem in any signal averager with a minimum dwell-time per data point of longer than the 39 μ sec. of our Model 7100 Data Retrieval Computer (15.6 msec. for 400 data points, display A, above). Many other signal averagers have a minimum dwell-time per data point as long as 78 μ sec. (31.25 msec. for 400 data points, display B, above). Our signal averager, the DRC, uses *all* of its data points for signals that occur within as little as 15.6 msec. Result: the DRC gives you *better* resolution.

Pre- and post-analysis interval control. Another way to improve resolution is to average only *meaningful* signals. The DRC provides wide-range control of both pre- and post-analysis delay intervals. No data points are wasted on signals occurring between stimulus and response or during recovery after response.

Performance plus versatility. The DRC also has an input sensitivity of 20 millivolts—requiring no pre-amplification for many applications. Besides transient-averaging, the DRC will perform time- and interval-histogram analysis, *without* add-on modules. Now, all of the DRC's performance and versatility is available at a new, lower price:



**The Model 7100
Data Retrieval Computer.**

*For more information
on the DRC and its
exciting new price,
consult your local
Nuclear-Chicago sales
engineer. Or write to us.*



**NUCLEAR-CHICAGO
CORPORATION**

349 E. Howard Ave., Des Plaines, Ill. 60018 U.S.A.
Donker Curtiusstraat 7, Amsterdam W.