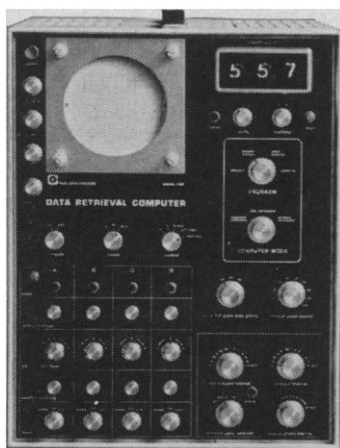


What price signal averaging?

Here's a quick look at the real expense—in data as well as dollars—of signal-averaging devices, including our averager, the Model 7100 Data Retrieval Computer.



Will you pay for less than excellent resolution?

You will in any signal averager that has a minimum dwell-time per data point of more than 39 microseconds. Resolution, after all, is a function of the number of data points that can be placed within a region of interest. Our Model 7100 Data Retrieval Computer (DRC) uses *all* 400 of its data points for signals occurring within as little as 15.6 milliseconds. The DRC, therefore, gives much better resolution than averagers that use only a fraction of their data points to represent the signal of interest.

Will you pay for less than total versatility?

You will in any averager that doesn't have the built-in capability—without add-on options—for interval- and time-histogram analysis, as well as transient-averaging. The DRC will operate in *any* of these three modes, which are selected on a front-panel switch.

Will you pay for less than maximum input sensitivity?

You will in an averager that needs a pre-amplifier to accept low-amplitude input signals. The DRC has 20-millivolt input sensitivity. So, most of the time, the DRC requires *no* added pre-amps.

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Detroit Fluoride Conference

In his article, "Fluoridation: A meeting in Detroit raises some questions" (23 Sept., p. 1499), Greenberg focused attention on some important aspects of the continuing controversy over water fluoridation, not the least of which is the urgent need for top-level scientific symposia on the physiological properties of fluoride at which all sides are adequately and competently represented. He correctly pointed out that the newly formed American (name now changed to International) Society for Fluoride Research must still prove itself worthy of being considered a proper scientific organization for this or any other legitimate purpose.

With respect to the "curious" timing of the recent conference, it is pertinent to note that such a meeting was actually proposed over a year ago, long before there was even any intimation that there would be a referendum on fluoridation in Detroit this fall. However, owing to the problem of raising funds, final plans could not be made until late spring. My letters of invitation were composed and signed by me as a member of the program committee. At least a half dozen of those scientists who attended the conference were invited personally by Waldbott. Several others who came in response to his invitation would probably be considered "pro-fluoridationists."

The comments about Waldbott and his new book neglected to indicate that since 1955 he has published detailed clinical reports of reversible ill effects from fluoridated drinking water. These have appeared in such distinguished medical journals as *Acta Medica Scandinavica*, *International Archives of Allergy* and *Applied Immunology*, *Acta Allergologica*, *Confinia Neurologica*, *Deutsche Medizinische Wochenschrift*, *Hautarzt*, *Nordisk Medicin*, and others. Without this fact being stated, many readers might gain the impression that touring the country "proclaiming an association between fluorine and an immense catalog of misfortunes" is Dr. Waldbott's sole activity concerning the medical aspects of fluoride.

Actually, for anyone who is thoroughly familiar with Waldbott's clinical findings, it is clear that they present evidence for reproducible toxic effects from fluoride in drinking water, which has been disputed but not refuted. Those findings certainly appear to be as valid, say, as those of Ignaz Semmelweis who charged that unsani-

tary delivery room instruments and procedures were the primary cause of childbed fever. The weight of prevailing medical opinion was against Semmelweis, but that did not prove him wrong! After all, a physician does have a duty to his profession and to society to report any previously unnoticed side effects from an accepted medical practice. He is considered derelict if he does not do so, and justly so.

By the same token, was it not a little presumptuous to imply that the conference in Detroit would probably produce "little but scientific-sounding scare stories" without having knowledge of the actual content of the papers that were to be presented and discussed? Science cannot be expected to make advances if it can operate only in a climate of conformity to viewpoints that rest on older, rather than newer, data.

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Graduate Training in Astronomy

From 1930 to early 1957, I was active in training graduate students in astronomy at Harvard. From 1957 until last April, I was in Australia, establishing a graduate school of astronomy at the Australian National University, and I am now head of the department of astronomy at the University of Arizona. During my absence abroad, I visited the United States several times to attend meetings of the American Astronomical Society and kept closely in touch with graduate schools of astronomy at several universities. Last spring when I returned, I was impressed by the great increase in the number of graduate students. Further, it seemed to me that, while many new universities have entered the graduate training picture, the admission standards appear to have been lowered, and that there are, at the end of the first and second years, fewer dropouts now than there were 10 to 20 years ago. Moreover, the quality of the education does not seem as high as it was formerly. I have found also that many graduate students do not seem to be putting forth their maximum effort. The 1966 student is not so fully committed to his training for a future career as was the graduate student of the early and middle fifties.

The number of fellowships for gradu-