LETTERS

Student labs or none?

The series of articles in PHYSICS TODAY for March dealing with introductory physics courses were informative and fascinating. I find one point, perhaps just a detail, a little bothersome.

The Physical Science for Nonscientists staff tells us on page 61, "Experimental experience is central to physical science. It should be central to any course in physical science."

Hulsizer informs us, on page 57, "There are no laboratories connected with introductory courses at MIT." This is qualified slightly by mention of a project laboratory which, however, would not have to be taken in physics.

I do not know what to conclude from these observations. Has the PSNS overstated the case for laboratory work? Does MIT think that experimental experience is central to physical science? Is laboratory work essential to nonscience students but deferable until a later time by those intending to become scientists?

Enos R. Wicher
Harvey Mudd College

Testing and teaching

Let me congratulate you on your excellent editorial, "What Happened to Mark Hopkins and the Log?" in the March 1967 issue of PHYSICS TODAY. By asking, "Can you ask a student, for purposes of learning, to bare his ignorance to the teacher who next day will be testing him to find out what he knows?" you have shown the inherent incompatibility of putting teaching and testing functions of education in the same individual, however perfect he may be.

After recognition of the problem has been made, the solution should not be far. As a matter of fact, in many parts of the world including Europe and Great Britain, the educational system clearly separates these two functions. Teaching is a subjective matter, but testing should be as objective as possible. For example, one should reasonably expect a uniform standard from the high-school and junior-college graduates from a regional unit, which could be as large as a state or as small as a city. This uniformity is being accomplished by delegating the authority of testing and final grading to a central board of examination. It carries out the grading function using the same teachers on a random basis, and the complete tabulation of grades is done at the central office. This procedure provides a screening method based on objective tests rather than personal and human prejudices.

I personally feel that with the changing times, we should now introduce such a uniform standard in American education. The above system of objective test is the rule rather than the exception in many parts of the world.

R. C. Nigam
Los Angeles

Beating logs into computers

The March issue of PHYSICS TODAY was particularly interesting. Of special interest was your editorial, "What Happened to Mark Hopkins and the Log?" because we have been devising possible models for education in 1980. You may be interested to know that with new education concepts the log may again become an important factor in education.

In our work on modification of teaching for the AB, we have been considering putting all course work, including physics, on programed learning devices and, more particularly, using inexpensive printed material with only a sliding window. It now appears feasible to program all course material in this way. Data show that a person completing such a course probably will do much better than one attending classes as they are held today. It is most encouraging that the course work can probably be completed in two or three years instead of the usual four. We feel now that one year, presumably after all the course work is completed, should be spent at a college or university.

BY PRINCETON GAMMA-TECH.

Ge(Li) beans

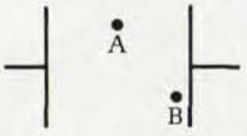
SOMETHING TO CHEW ON.

Time resolution

Whether your Ge(Li) detector is planar or coaxial, of whatever cross-section, there is a fundamental spread in the pulse risetime. This is basic to the nature of a p-i-n device.

Gamma-rays produce ionizing events throughout the active volume of the detector. The collection time of the carriers produced will depend upon the position of each ionizing event. As a result, there must be a spread in the pulse risetimes.

To illustrate. Say that a gamma-ray is absorbed (via photoelectric effect, etc.) at point A, generating electron-hole pairs in the vicinity of A. The risetime of the signal is the time for the carriers to be swept from point A to either collecting electrode.



However, a gamma-ray may instead be absorbed at point B, close to one of the collecting electrodes. Then the risetime will be the time for the carrier which must reach the more distant electrode to be swept all the way across the depletion layer.

Clearly, in an ideal planar diode, this effect will account for a variation in risetime of about a factor two. *This fundamental effect is the largest source of risetime variation in Ge(Li) detectors.* Risetime variation is the major limiting factor in time resolution.

Crossover timing (such as is done with scintillation counters) is *not* the answer. To get good resolution with a Ge(Li) detector, use careful leading edge timing.

For details on this and other topics, please write or call. And send for a copy of our GUIDE TO THE USE OF Ge(Li) DETECTORS.

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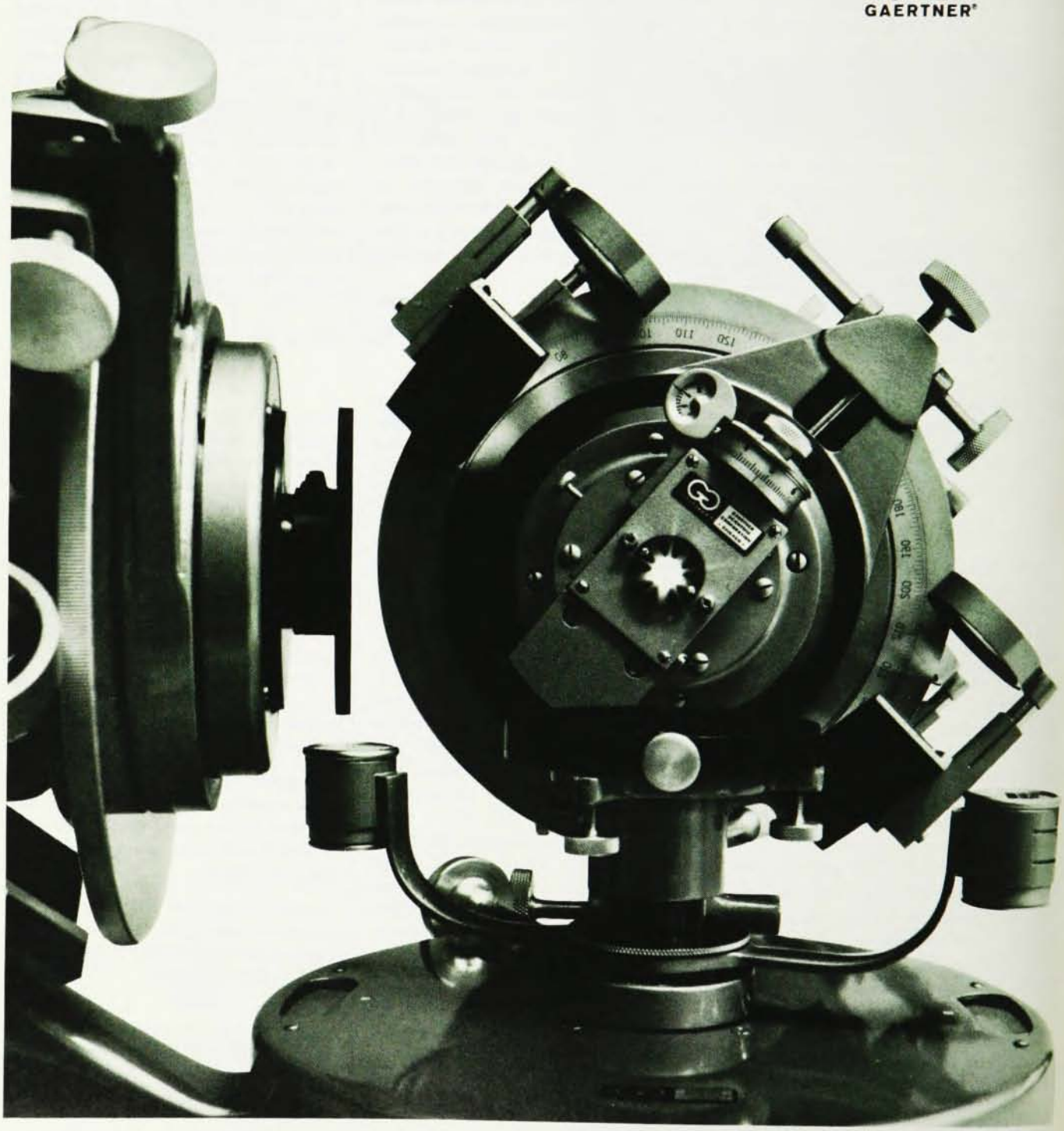

This last year will be used primarily for laboratory work, seminars and case studies.

In our graduate school of business administration all of our courses are taught by the case-study method. Here we have an "end-of-the-log" relationship between students and professor. The student studies a business situation before coming to class and discusses it with half a dozen other students. In class the professor puts individual students and groups of students into various roles in the situation, leads them through different thought patterns and develops various alternative decisions. By the end of the semester, the students have assimilated much of the professor's teaching and, more important, have developed their own thought patterns.

Maurice Nelles
Graduate School of Business Administration, University of Virginia

Contract chasing and rheology

Two comments I have recently received seem too pertinent to be restricted and should be interesting to PHYSICS TODAY readers. They are from a well known physicist who was long employed by industry on the North American continent. He has lately retired to the Riviera. Only names are omitted; all else is in context:

"You told me about Dr X running for contracts for his university—I am sorry for him. It seems that the life of a professor is getting more miserable. Apparently it is not the question any longer of publish or perish but rather of having the work sponsored."

His remarks on rheology have application to science in general:

"From the literature I have come to the conclusion that rheologists can be divided into two classes: the practical rheologists who observe the things that can not be explained and theoretical rheologists who explain the things that can not be observed. This is the main reason why the society still exists and has regular meetings."

William R. Willets
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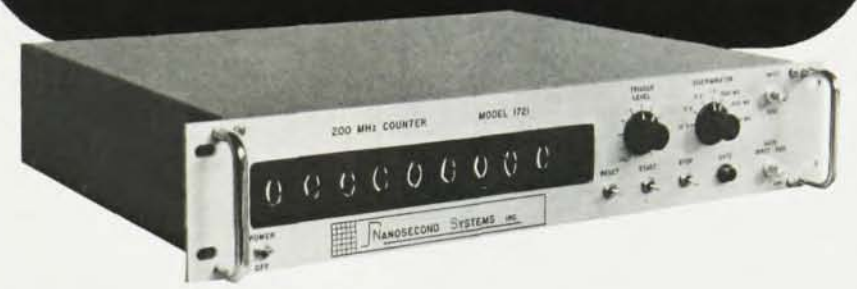

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