letters

hydrogenous substances also; and they explained their results as having been due essentially to a Compton effect.[4] After the announcement by Chadwick, Joliot stated that he had not been aware of Rutherford's Bakerian lecture; but he felt it was natural and just that the discovery of the neutron should be made by a person working in the same laboratory where its existence had been predicted a dozen years previously. In any event, due to the content of the article by Chadwick on his discovery of the neutron, it would be an error of omission not to cite the pioneering and thought-provoking work of Bothe and Becker. I agree entirely with Brown that their experiment should be reported precisely as the observation of radiation more energetic than gamma rays from radium, as was done, which does not necessarily imply neutrons.

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JOHN S. LAUGHLIN
Cornell University Medical College
11/83 *New York, New York*

Numerical inaccuracies

We appreciate the enthusiastic review that our book "Building Scientific Apparatus" received in the October 1983 issue of PHYSICS TODAY but would like to point out an inaccuracy in the review that might mislead some of your readers. Of the book's 483 pages, only about 170 pages are devoted to the chapter on optics, and there is only a nine-page listing of manufacturers at the end of the chapter. Although this chapter is fairly comprehensive—it covers sources, detectors and optical instruments—it does not stretch to the over 270 pages and over 100 pages of manufacturers' listings reported in the review.

CHRISTOPHER C. DAVIS
JOHN H. MOORE
MICHAEL A. COPLAN
University of Maryland
10/83 *College Park, Maryland*

Dissemination penalties

I read in Washington Reports (October, page 43):

> ... the rule calls for criminal sanctions to be imposed by the DOE secretary without judicial review when unauthorized dissemination is discovered. The penalties seem severe: up to $100 000 in fines and 20 years in prison.

Can this be correct? Surely the secretary can do no more than institute criminal proceedings, and send the matter to the Justice Department. If this report is correct, our whole legal system must be in jeopardy.

T. M. SANDERS
The University of Michigan
10/83 *Ann Arbor, Michigan*

The rule proposed by the Department of Energy that would restrict the unauthorized dissemination of nuclear information is now undergoing revision by government lawyers. According to DOE authorities, the revised version still enables the Secretary of Energy to impose stiff fines and prison sentences on violators, as indicated in our account, but allows for appeals to the department and, if this fails, to the Federal courts—an expensive and protracted exercise. The revised rule should be announced some time this month. —IG

Neutron spectrometry

The article on "Nuclear Spectroscopy" by Fay Ajzenberg-Selove and Ernest Warburton in November (page 20) modestly overlooks the two-volume work with that title edited by Fay Ajzenberg-Selove herself, and published by Academic Press in 1960.

Comparing the content of the recent article with that of the earlier work reveals some differences of emphasis, a notable once being the fact that Part II of the earlier work is devoted to "Neutron Spectroscopy," to which no reference is made in the PHYSICS TODAY article. Lest it be thought that neutrons are taking a back seat because they may seem to be of lesser interest today than twenty-five years ago, a few remarks about developments in the interim are in order.

Three points of distinctive interest about neutron spectrometry (I prefer that term to the term "spectroscopy," with its historically obsolete root *skopos*, or "watcher") relate to the physical theory, experimental physics technique and to applications of nuclear data. Each is touched on very briefly in the following remarks.

The role of neutron-induced and neutron-producing reactions has been decisive in establishing the composition of nuclear matter and the optical model. Many details of the latter are still being studied carefully with neutron probes in many laboratories, and it would be invidious to single out as an example of the progress being made the work of any single laboratory or individual.

In the area of experimental technique, neutron physics has played a noteworthy role in establishing fast pulsing and timing techniques as a formidable tool of experimental inquiry, not only in nuclear physics but in experimental science generally. In the 1950s, it pioneered the leap from microseconds to nanoseconds. While the time frontier is now in the range of femtoseconds and the leadership has been assumed by workers in other fields, neutron spectrometry still benefits from advances in timing technology, improvements in shielding and in such developments as beam swingers, which greatly facilitate studies of the angular properties of neutron scattering and neutron-emitting reactions.

In the area of applications, the needs for technical data to support the development of safe and efficient nuclear reactors are still with us. And of particular current interest is an intense, international effort in the use of fast neutrons for the treatment of cancer. This program creates a need for neutron spectrometric methods on a daily basis to assure the reproducibility of neutron dosage in the administration of neutron treatment (L. Cransberg, "Neutron Spectrometry and Neutron Therapy," Physics in Medicine and Biology **24**, No. 6, 1979.) And it creates a very strong need for additional neutron data to permit accurate planning of medical treatment with neutrons.

LAWRENCE CRANBERG
11/83 *Austin, Texas*

Profession of teaching

For the better part of a year now, there have been so many reviews of our educational systems that you would have to be a speed reader to keep up with all of them. It is evident that most of the reviewers consider science and mathematics education to be of the highest priority. As a physics teacher for twenty-three years, I would wholeheartedly agree.

However, several of these reviewers have made a suggestion similar to Lewis Branscomb's in September (page 9). He has suggested that scientists from industry be recruited to teach high-school science. I find this disturbing, but it may actually give a hint to the crux of the entire educational malaise. To suggest that a scientist can enter a high-school classroom and do a good job, reflects on our society's lack of esteem for the teaching profession. Such a suggestion implies that teaching is not considered a profession, but rather a task that anyone can undertake with good will and knowledge. It is one small step forward from, "Those who can, do; those who can't teach."

But teaching is a profession! It is an