

## LETTERS

### "Reactor Captains"

I wish to comment from my background as a member and chairman of the General Advisory Committee to the U.S. Atomic Energy Commission in the early 1960's. At that time the committee considered the human organizational aspect for safe operation of nuclear reactors and recommended the concept of "reactor captains," somewhat analogous in role to the captain of a ship. We were concerned lest reactor operations be left in the hands of operators with insufficient depth of knowledge and sense of responsibility and that unnecessary mistakes or carelessness might then occur, as apparently did at Three Mile Island.

The essential elements of the "reactor captain" concept include an appropriate professional education providing real understanding of the complexities of a nuclear reactor with government examinations and licensing, and clearly recognized responsibility with the corresponding full authority for the safe operation of the reactor. This concept also implies subordinate but comparably trained and licensed reactor officers, an accurate "log" of the condition and operation of the reactor, and so forth.

I still believe that this concept is appropriate, indeed necessary, and urge its renewed consideration.

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### Oceanographic Research:

#### Sailing Vessels

In his review (18 May, p. 753) of Susan Schlee's book *On Almost Any Wind* (1), Dale C. Krause says that the notable sailing vessel *Atlantis*, built in 1931 for the Woods Hole Oceanographic Institution, was "the first American ship specially designed for oceanographic research." (Schlee did not say that.)

In 1907 *Alexander Agassiz* was designed and built in San Diego "especially for the purposes of" the West Coast marine station that was the forerunner of Scripps Institution of Oceanography. The 85-foot *Agassiz* was also a sailing vessel, with twin gasoline engines. She was built for use in the 12,000-square-mile area from Point Conception to the Mexican border and seaward to about 120 miles, which region included depths

to 1100 fathoms. She was outfitted with "apparatus" designed in some cases by the hardy researchers of the oceanic areas of northern Europe: dredges, trawls, closing nets, current meters, and so forth (1). *Alexander Agassiz* served the institution for 10 years.

Identifying the first American ship designed for oceanographic research is complicated by the matter of defining such early research. Considerable effort went into designing two U.S. Navy "exploring vessels" for the U.S. Exploring Expedition of 1838-1842, but the ships were found to be too slow and so did not take part. In 1838 the Coast Survey schooner *Nautilus* was built specifically for surveying. So was the steamer *Blake* in 1874. Surveying was one of the oceanographic arts in those days, and a great deal of significant oceanography was carried out from *Blake*—some of it by *Alexander Agassiz*. In 1879 the coal-burning steamer *Fish Hawk*, complete with a floating fish hatchery, was built for the U.S. Fish Commission, headed by Spencer F. Baird. She was found quite suitable for dredging and trawling, at least in coastal waters (2).

A qualified claim can be made that *Alexander Agassiz* was the first American ship designed for oceanographic research by a nongovernmental institution. However, *Atlantis* certainly left a greater legacy to American oceanography.

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#### References and Notes

1. W. E. Ritter, *Univ. California Publ. Zool.* 9, 175 (1912).
2. S. B. Nelson, *Oceanographic Ships Fore and Aft* (Government Printing Office, Washington, D.C., 1971), pp. 10-19.

### College Entrance Standards

City College has been defamed, this time in the editorial (p. 1199) in the 23 March issue of *Science* entitled "Can meritocracy in academe be saved?," written by John D. Palmer of the Department of Zoology of the University of Massachusetts in Amherst. In the interest of City College, and of truth, I would like to put the facts in perspective.

Palmer states that "the once great City College of New York, which for 54 years produced more graduates who went on to earn doctorates than all but one other American college, dropped all entrance standards in 1969." The first part of this sentence is correct. The second part is false.

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in public higher education, was adopted by City University, of which City College is a part, in 1970. And that policy, admission to City College and the other senior colleges of City University, required students to have a high school grade average higher than 80 percent, or to be in the upper half of the graduating class; otherwise students were admitted only to one of the community colleges of City University. This is a far cry from "dropping all entrance standards."

Recent studies by the Office of Institutional Research at City College show that academic *exit* standards at City College have not been lowered as a result of the open access policy. This conclusion is supported by some interesting statistics: (i) City College premed students rank 10 percent above the national average in acceptance to medical schools; (ii) City College engineering graduates enter the professions with salaries that are well above the national average; (iii) 100 percent of City's Nursing School graduates are employed; (iv) all graduates of our School for Biomedical Education are accepted into the third year of medical school after 4 years at City College—having passed Part I of the National Medical Boards; and (v) City College graduates constitute the largest percentage of architecture candidates who pass the Design and Site Planning Section of New York State National Licensing examination. High school averages of entering freshmen at City College have been on the *increase* since 1976. And, the mean grade point average at City College of New York *declined* between the years of 1966 and 1976. It is true that substantial numbers of City College's well-educated graduates entered the college in need of remediation and encouragement. But this is simply testimony to the fact that the American dream of upward mobility continues to be a reality at City College.

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Palmer states that "The Superintendent of Schools for Hawaii announced that a diploma should be given on attendance—only." Nothing could be farther from the truth.

The fact is that Hawaii's Department of Education has taken steps to ensure that the high school diploma represents demonstrated achievement. We have developed and adopted expectations for student performance from the primary grades on through high school, and graduation requirements have been upgraded

to include demonstrated mastery of 15 identified essential competencies and an additional year each in science and mathematics.

When I became Superintendent of Education in January 1976, Hawaii's schools were, like others throughout the country, subject to increasing public criticism for an apparent lack of standards, as reflected in declining standardized test scores. Explanations advanced nationally for the decline in test scores undoubtedly were relevant to us, and I acknowledged that there may have been instances where students who attended class regularly, behaved themselves, and appeared to be trying were passed on from grade to grade and finally graduated without evidence that they had really learned anything in school. To acknowledge what *is*, however, is not to say what *should be*.

The decline in scores on the Stanford Achievement Test was halted statewide last year, and gains began to appear, but this is not our main goal. Instead, we are moving into a competency-based curriculum and developing criterion-referenced tests for various grade levels which eventually should enable us to report to the public exactly how well each student demonstrates achievement of the desired objectives.

While I take strong exception to the facts presented by Palmer, I concur with his view that "the most important task ahead for all educators is that of reinstating standards and reestablishing credibility with the public," and beyond that, of challenging every student to academic achievement commensurate with his or her ability.

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Palmer's editorial rightfully deplores the falling academic standards in American higher education. It seems unlikely that the massive forces of social egalitarianism, which are responsible in part at least for this degradation, will abate in the near future. However, the editorial may point toward a partial solution to the problem of restoring the public's confidence in college credentials and diplomas. Why not confer more than one kind of diploma: one to certify attendance, the others to certify academic achievement?

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The point of my editorial was that educators are not doing their jobs properly and that the public is fully aware of their shortcomings. In attempting to make this point I cited some examples, two of which precipitated the above comments. Note that neither of the "rebuttals" focuses on my issue; they are, instead, mainly defenses of a college, and a school system and its superintendent. This being the case, the present discussion is somewhat unfortunate since it may tend to divert attention away from the important point of my editorial.

City College President Marshak argues that the entrance standards were not dropped as far as I indicated, and that the exit standards were not lowered at all. I hope the latter is true, but I wonder if it could have been in a place where politics so clearly dictated educational policy. The "open access" standards outlined above by Marshak do not sound too bad but, in fact, the quality of the new entering freshman class was but a scrim of previous ones. The precipitous decline resulted from two causes: (i) some students who did not meet the new requirement were admitted anyway (1) and (ii) the New York high school system *graduates* many illiterate students. The following summary of some of the changes that occurred will give a flavor of what the first few years under the new entrance standard were like.

The English Department had to hire 21 additional full-time faculty to teach basic writing (in fact, 70 percent of the teaching effort of the department had to be directed toward the teaching of fundamental writing), nearly 90 percent of City College's first-year students took some form of remedial instruction (1), and the City University of New York (CUNY) system as a whole had to spend an additional \$30 million on remediation (2). Over the next 6 years, the CUNY budget jumped 55 percent, to a total of \$585 million in 1975, and this increase appears to have been stimulus for the establishment of a new, tougher entrance standard: now an "eighth-grade level in both reading and math" would be required for entrance (2). Many of the better students and faculty left City College. Thus one of the best colleges in the country had been converted into an illusory, surrogate elementary school. Clearly, the 1970 entrance standards were far lower than Marshak admits above; and I suggest it was not I who "defamed" City College and its parent system, it was their Board of Education, the administration, and the others who lacked a sufficient conviction to academic excellence to withstand out-

side political pressures. A very informative and telling account of this era, entitled "How to kill a college" (1), was written by Theodore L. Gross, City College's dean of humanities.

Superintendent Clark's "rebuttal" leads the reader away from my claim; he focuses mainly on the improved student performance in Hawaii. This change is laudable. I am also pleased by the comments in his last paragraph because, unless the press previously misquoted him, his educational philosophy has improved too. The following is a direct quote from a United Press International story entitled "School chief OKs illiterates" (3):

Charles G. Clark, Hawaii's new school superintendent, contends students who cannot read should be awarded high school diplomas anyway.

Clark says a diploma should be based on attendance and not on academic achievement. He says some students "will never learn to read in spite of everything that has been done for them" and they should not be "punished" for their failures.

But all of the above is just a digression from the point of my original editorial. I chose to mention City College's drop in standards, its subsequent ascent to eighth-grade entrance requirements, and Clark's educational philosophy simply because they are blatant contradictions of the ideals of our profession. Actions and attitudes like these are all too common in modern education and are widely reported by the press. The result is a justified disillusionment in us by the public. While touting our accomplishments—as Marshak and Clark do above—may be one way to help return the respect we have lost, it is a far cry from remediation that our profession now requires. And that was the thrust of my original message: Let us return integrity to pedagogy, meritocracy to academe, and thus again produce educated men and women.

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### References

1. T. L. Gross, *Sat. Rev.*, 4 February 1978, p. 12.
2. *Time* 106, 40 (29 December 1975).
3. *Cape Cod Standard-Times*, 28 May 1976.

**Errata:** In the issue of 13 April, in the News and Comment article, "Low-level radiation: A high-level concern" (p. 155), *Health Physics* was incorrectly referred to as the *Journal of Health Physics*. It was also stated that Oak Ridge Associated Universities runs Oak Ridge National Laboratory. In fact, the laboratory is run by the Union Carbide Corporation. In that same issue, in the Research News article, "Low-level radiation: Just how bad is it?" (p. 160), the name of the *American Journal of Public Health* was transmogrified to the *American Journal of Health Physics* the second time the journal was mentioned.