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Teaching and Research

Recent stories in the media suggest that teaching and research are antithetical, that research plays too prominent a part in academic promotions, and that teaching is badly underemphasized. There is an element of truth in these statements, but they also ignore deeper and more important relationships.

Research experience is a crucial component of hiring and promotion at a research university because it is the emphasis on research that distinguishes such a university from a liberal arts college. Most research professors are conscientious, care about their students, and offer them the excitement of contact with those creating the history of science as well as describing it. Although mass education precludes Thoreau's ideal of one student and one professor sitting on a log together, the research pioneer with a classroom of students or undergraduates doing research in his or her laboratory comes as close to that ideal as is possible in a big university. Some professors, however, neglect teaching for research, and that poses a problem.

Most research universities reward exceptional teaching, but the greatest recognition is normally given for accomplishments in research. Part of the reason is the difficulty of evaluating teaching. A highly demanding, tough-grading professor is usually appreciated by top students who want to be challenged, but disliked by those whose records are less impressive. The more lenient professor gets overall ratings that are usually high, but there is a sense of disillusionment on the part of the best students, exactly those for whom the system should present the greatest challenges. Thus, a university trying to promote professors primarily on the basis of teaching qualities would have to confront these ambiguities. Research ability is more easily evaluated because of more quantitative measures such as grant support, invitations to seminars and symposia, prizes, and so forth. Liberal arts colleges can usually do a good job of rating and rewarding teaching ability because of their smaller size and greater emphasis on teaching, but even they find encouragement of research interests helps teaching quality.

As modern science moves faster, two centrifugal forces are exerted on professors: one is the time needed to keep up with the profession; the other is the time needed to teach. Attendance at meetings increases expertise, but decreases participation in the community of scholars at one's own institution. The training of new scientists requires outstanding teaching at the research university as well as the liberal arts college. Although scientists are usually "made" in the elementary schools, and the recent emphasis on the importance of that factor by the National Science Foundation, the American Chemical Society, and AAAS (see *News & Comment*, 7 December 1990, p. 1327) is absolutely correct, scientists can be "lost" by poor teaching at the college and graduate school levels. The solution is not to separate teaching and research, but to recognize that the combination is difficult but vital. The title of professor should be given only to those who profess, and it is perhaps time for universities to reserve it for those willing to be an earnest part of the community of scholars. Professors reluctant to teach can be called "distinguished research investigators," or something else, but if they are not interested in teaching, it may be that we should recognize that they are not professors. High school science teachers are frequently criticized for emphasizing method at the expense of content, but university professors, who are strong on content, probably need to pay more attention to method. Appropriate staff support is also needed to demonstrate that the university honors with substance those who contribute to its mission.

Distinguished professors should be lured, rewarded, and retained by offers of good salaries, laboratory space, recognition, and administrative support, but not by the bonus of "no teaching." Most universities are doing their best to require high teaching standards, and most professors are acutely sensitive to bad ratings from students. Thus the dichotomy between teaching and research is not as great as some would assert.

The pace of modern science makes it increasingly difficult to be a great researcher and a great teacher. Yet many are described in just those terms. Those who say we can separate teaching and research simply do not understand the system, but those who say the problem will disappear with benign neglect are not fulfilling their responsibilities. Department chairmen and university administrators would probably have an easier time dealing with Thoreau than with the modern fast-moving research professor, but the future of science says they have no other choice.—DANIEL E. KOSHLAND, JR.

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