

THE FACULTY IS TEACHING

A professor invites the critics to think again

by George S. Hammond

The American press is currently playing a new dirge concerning education in this country. This year's theme concerns the plight of students deserted by professors, who have turned from the classroom to research or to missions in Washington. Editorial writers, columnists, and authors of popular magazine articles are unanimous in their judgment that faculties have ceased teaching.

For the past 17 years I have been professoring, first at Iowa State University and now at Caltech. Like most people who have spent more than six months at the same job, I consider myself something of an expert in the field.

The hue and cry about making professors stay home, and making them keep their minds on teaching instead of research when they are at home, is largely a red herring. Most professors go to Washington only as part of an occasional family vacation, and most of them do little or no consulting. Research is a different matter and there is, undeniably, an increasing emphasis on research and other forms of creative scholarship. (I believe that such increased activity is indispensable to the nation's changing social, political, and economic climate, but this is not the time to defend that position.)

One critic (John Fischer, in "Is There a Teacher on the Faculty," in *Harper's Magazine*, February 1965) has said: "So long as research alone pays off, in cash and fame, the temptation to scamp on teaching is almost irresistible."

This allegation is an unfounded slander. By the same reasoning, our lives should be so full of "almost irresistible" temptations that we would all be utterly depraved. There is no indication that the

professorial clan is more than normally susceptible to temptation. The rewards of research may make it possible for a few very good men to abandon teaching if they choose to do so, but most members of this tiny group do not stop teaching, and some are brilliant teachers.

The best course I ever attended was taught by Paul Bartlett, who was, and still is, one of the world's foremost innovators in the field of physical organic chemistry. He still teaches the same course at Harvard, although the course content is almost unrecognizable after 20 years of progress in the field. At the present time, one of the key undergraduate courses in the chemistry department at Caltech is taught by John D. Roberts, who not only maintains a preeminent position as a research chemist but also finds time to be chairman of the Division of Chemistry and Chemical Engineering and to serve on national advisory committees.

Men like these are largely responsible for the current popular image of the itinerant university professor. Actually, their only problem is that they are too valuable in everything that they do! To put the lid on them by doubling their teaching loads and keeping them home to meet all their classes would damage other important parts of our national effort. Society always asks its most able men to carve themselves into little pieces, then complains because the whole man cannot be found in every piece.

Not all professors are Bartletts or Roberts's. There are always too few men of such caliber. However, I believe that there are a remarkably large number of college and university faculty members who do a variety of jobs reasonably well. Not all are success-

ful, and some end up doing a poor job in teaching, research, or both. But usually such men are replaced before they acquire tenure, if a more promising candidate can be found.

A popular bit of mythology is the belief that only research accomplishment counts toward promotion to tenure. At both Iowa State and Caltech there are tenure faculty members whose contributions are almost exclusively in the teaching program. At both institutions there are full professors whose principal claim to fame is successful research; they do little or no teaching. In each of these schools the research group is the larger of the two, but the two groups *together* form only a minority of the faculties.

These examples seem to be typical of the country's major institutions. Award of a tenure appointment on the basis of either teaching or research alone is a luxury that no institution can afford very often. To earn such an appointment on the basis of research alone, a young man must be extraordinarily productive and his work must be of genuinely high quality; volume alone is not enough. To obtain tenure on the basis of teaching alone requires equally brilliant classroom performance.

The mechanics of the academic system

Most people are ignorant of the mechanics of the academic system, and general misconception has probably been increased by a recent article ("President Under the Gun," *Life*, January 15, 1965) implying that college presidents play a leading role in judging faculty performance. In most first-class institutions, recommendations concerning new appointments and promotions originate with the tenured members of departments and are relayed by way of the department chairmen and higher administrative officials to the governing body of the institution. Presidents and deans seldom raise objections based upon their own evaluation of the competence of candidates. The administration may raise questions concerning the man's performance in teaching and research or may question the wisdom of very rapid promotion, but such questions are usually intended as guidelines to general institutional policy and are intended to serve as a subtle brake on departments that might otherwise plan unlimited expansion.

Thus, the principal responsibility for recommending promotion lies with those who are in the best position to judge both a man's research and his teaching. Such judgment is certainly fallible because it can be influenced by personal feelings; and to some extent it should be. A man must be an extraordinarily good teacher or researcher if he is to be

an over-all asset to a department in which he is an outstandingly poor citizen. Moreover, most of us don't pretend to understand the work of all our colleagues thoroughly and one is often forced to make educated guesses concerning the real value of either their research or their teaching. Since even a man's departmental colleagues may have some doubt in their evaluation, they are likely to seize upon any facet of performance that seems to be clearly definitive. If a man has no published work to show for five or six years of research the decision is easy, and a *superficial* account of the action will indicate that only research was taken into consideration.

No university department will knowingly abandon its teaching functions. The image of a department is created not only by research publications but also by the professional performance of students from that department. A good departmental image is precious since it largely determines the caliber of incoming graduate students, helps lure strong new faculty members, and lends strength to requests for research funds from external sources. Furthermore, the status of the department within the university community rests, in part, on the caliber of instruction provided for students majoring in other departments. In the long run, any department that is notably remiss in general instruction will suffer. Finally, since professors are usually people who take pride in their work, the desire to do a decent job of teaching provides strong motivation, regardless of current criticism.

Teaching performance

Thus teaching performance receives more than casual attention in discussions concerning appointments and promotions. After all, the discussants realize that if they recommend promotion of a miserable teacher, they will have to assume correspondingly greater teaching responsibility themselves. Careful weighing of important, and sometimes conflicting, factors usually leads to as wise a decision as could be expected under any system. This is likely to be true even in departments where the members can seldom reach a consensus on any other subject. Academic perquisites, although often criticized by the general public, carry with them grave responsibilities that are generally taken seriously by faculty members. Over-all, I believe that faculty evaluation of the job done by younger colleagues within the department is usually severe but reasonably just.

Understanding the mechanics of promotion is important since about the only member of the aca-

democratic community who now enjoys public sympathy is the struggling *young* Mr. Chips who gets the sack because he has no time for research ("A Teacher Sweats It Out," *Life*, January 22, 1965). Careful scrutiny usually shows that the unfortunate young instructor is a fine fellow, a good but not truly inspired teacher, and a man who has ideas about research that never quite come to fruition. The senior members of the department hate to let him go, but after long debate they decide that he does not have as much promise as one of the several dozen other young men looking for instructorships in the department. If he were a brilliant teacher and had produced a modicum of good research, he would probably have been promoted, as was his peer who is only a tolerable teacher with a sensational research record. Currently, there is a tendency to weigh research performance a little more heavily than teaching in the difficult borderline case of a man who teaches fairly well, and does fairly good research. This bias is partly faddism, but it also makes sense for other reasons. Acceptable teaching requires less creativity than acceptable research, although superlative performance in either field demands outstanding originality.

Many outsiders fear that when a faculty member receives tenure he will become lazy and incompetent. There may be such cases, but I personally have never seen one and have heard of only a very few. Certainly the entrenched loafer is not a major menace to higher education. Some men who have pushed hard to obtain tenure subsequently appear to have fired most of their creative ammunition in the big assault. Such men are seldom lazy, or they would never have made the grade in the first place, and sometimes, as the fervor for research wanes, they become real teaching stalwarts of their departments. They may also, sooner or later, undertake administrative work with the same kind of vigor displayed in research during their earlier years as instructors and assistant professors.

The panaceas

The sidewalk academicians are forever discovering new gimmicks that would surely cure educational maladies, if only the academic community were not too conservative to accept innovation. Unfortunately, most of the panaceas are as old as the hills and have either been found to have limited usefulness or to be impractical for widespread application.

One of the "new" academic procedures frequently recommended is the establishment of student-rating systems. Such schemes have been cropping

up for years on many campuses, and I have been rated as a teacher by extensive student-rating forms at both Iowa State and Caltech—the first time at least ten years ago. The results have always been interesting. One member of a class of home economics students found my lectures quite lively but was disturbed by the rip in the back of my brown sports jacket. The one clear conclusion that I have drawn from the critical surveys is that classes are collections of individuals. Methods that are pleasing to some will bore others. A discussion that seems crystal clear to one will seem obscure to another. On the whole, student ratings are helpful, but they provide no magic formulas for success.

With respect to actual teaching procedures and curriculum content, professors are cut to no set pattern. Some are hopelessly conservative and others are recklessly liberal. Here at Caltech, a hotbed of research prize winners and honorary citizens of Washington, academic instruction is a continual subject for conversation and changes constantly appear. This year, after weeks of study and debate, the faculty voted to try giving freshmen only *pass* and *fail* grades in a two-year experiment. Simultaneously a new system for advising freshmen was instituted; consequently 16 senior faculty members are now advising small groups (10-20) of freshmen.

Recently Richard Feynman, one of the world's best theoretical physicists, spent two years of intensive work in redoing the freshman and sophomore physics courses. Some students found the product brilliant while others considered it terrible. However, they all had the experience of seeing Feynman in action and none considered him dull or the course conservative.

External examiners

I was especially amused by a suggestion of John Fischer's in his *Harper's* editorial. He has heard that Swarthmore augments its honors programs by using external examiners, and he accuses the academic fraternity of cowardice for not making general use of this means of indirect self-examination.

The principal barrier to widespread implementation of such a plan is neither money nor academic conservatism; it is the *demand on the time and efforts of the external examiners*. Consider the number of man-hours that would be required to conduct an oral examination with an external examiner for every graduating college senior in the country. The examinations would necessarily be spread over several months and would involve thousands of people. The amount of travel by professors to Washington would be dwarfed by comparison with the annual

migratory movements of academic examiners.

To carp and quibble is easier than to make fruitful suggestions for the solution of difficult problems. The real stimulus to write is found in the blatant attempt of critics to stir the supporting public to rebellion. Taxpayers, private donors, parents and students are encouraged to revolt. A revolution may be needed but the one advocated may do serious damage to American education. The most talented members of the academic community, those who are spread too thin, are the very ones who are in the best position to say, "To hell with it!" and forsake the academic world entirely. Although academic salaries have risen sharply in recent years, the top men in the field can still gain financially by moving to non-academic positions. Any significant number of desertions in this direction would create a new and terrifying status symbol for young academicians. Fortunately, the threat of desertion has been with us for a long time and still the academic community has survived and flourished.

Surprisingly, the current caricature of professors may be a welcome change from the bizarre images held up to the public over the past few decades. It is a relief to be cast as a conscienceless entrepreneur rather than as an ineffectual idiot. At least, the modern-day professor is credited with doing something; he may not be teaching but he is doing research and traveling to Washington.

I have seen many good teachers and much fine teaching. I have also encountered mediocre teaching and poor teaching. In fact, I have dispensed all three brands of pedagogy myself. There have been days when I felt certain that what I have said to my classes has seldom been said better and there have been other days when I have known full well that both I and my students should have stayed in bed. Furthermore, some of the best-received lectures have been among the poorest, since it is relatively easy to give a smooth recitation of cut-and-dried material.

The professor's problem

Performance seems to be necessarily uneven if it is ever to be really good. A professor is presented with an almost unmanageable problem. If he stops to examine a point in real detail, and especially if he concludes that the matter cannot be settled on the spot, he may give a few students real insight into a working field of scholarship. On the other hand, to most of the students in any class it will be evident that: (a) the professor doesn't know all (any?) answers, and (b) the class isn't covering "ground" very rapidly (this being important because one of

the chief purposes of most students in attending class is preparation for the next examination).

I do not indict students. Students have neither the time nor the intellectual stamina to make every class a great educational experience. What a student needs is fine, introspective lectures for just those times when he is in exactly the right mood to receive them. The rest of the time he really needs facts and generalizations in neat little packages.

A successful educational program in a college or university demands a great deal from teachers and asks even more from students. Consequently, most students will have really done very well if each year they enjoy a major learning experience in one or two courses. If they have also done their chores well enough in other courses to earn respectable grades on examinations, they will be the university's premium products.

Facing the facts

The facts are straightforward, but faculty, students, parents, and editors find them hard to swallow. Students and faculty are especially vulnerable because their personal ambitions are thwarted. A student who has once experienced real satisfaction in listening to a lecture usually feels shortchanged because all others do not appear to be of like quality. A professor who has seen one student blossom under his tutelage is frustrated because all of the others do not respond similarly. A natural protective reaction is for each party to blame the incompetence of the other, and nothing is easier since both students and faculty are in situations requiring continued demonstration of both competence and incompetence.

Higher education in the United States is in a state of turmoil and many of us feel that we are presenting an enormously complex play before a terrifyingly large audience. Since the action is not scheduled, we must often perform without rehearsal. I am pleased that the audience is watching so closely, because I believe that they will get their money's worth. I only hope that they will see enough of the stage to appreciate the magnificence of the action while tolerating some of the bumbling.

Our system of higher education is typically American, a young giant, often awkward and often wrong, but possessing marvelous strength and vitality. Perhaps its greatest deficiency is a lack of grace and self assurance, but even these qualities can be found if one searches hard enough. At the present accounting, the system has a prodigious record of accomplishment in both extending knowledge and transferring it to new generations.