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Letters

Teaching and Research

Impressed by what Caplow and McGee bring out in their book *The Academic Market Place* [see *Science* **129**, 357 (1959)], Victor G. Fourman deplores the deemphasis on teaching ability and the concomitant stress on publication in the academic evaluation of college professors. With this aspect of Fourman's argument I most heartily agree. Unless he be frankly engaged as a research professor, no member of a college or university faculty should be advanced on the basis of publications alone.

However, in all the literature I have seen on this troublesome subject there is little or no mention of what seems to me the really critical thing in the whole question of teaching versus research—the one valid reason why department heads, deans, and presidents may be justified in demanding that a faculty man publish. Unless a college teacher is actively engaged in grappling with the unknown somewhere on the forefront of knowledge, he will not bring into the classroom the point of view, the frame of mind, the mode of attack, the general air of the investigator, and these qualities are just what is essential if a teacher is to show, in the presence of the student, by various forms of example, how to go about dealing with the problems in his subject.

These remarks are directed mainly at the problem of college teaching—teaching in the undergraduate world. Graduate work deserving of the name is concerned with educating the student in the ways of original investigation, and to put a noninvestigator in charge of such work is indeed asking the blind to lead the blind. But even here the investigator should be a good teacher, not necessarily in the way that his colleagues in the undergraduate field are good teachers—and in fact there is often a difference—but a good teacher nevertheless.

Now it is publication that is nearly always emphasized in this picture and, unfortunately, not always research; this is one vice of which Fourman justly complains. Quality of publication should of course take first place in any individual evaluation, for the prime value of publication itself, in this context, is the evidence it affords that the author is really an investigator. Over and above all the cant and hypocrisy that have, regrettably, invested much discussion of the matter, the valid case is after all rather simple: A man can hardly go very far in sound research without finding out something new, and when he does he owes it to his fellow scholars to make known the results of his work.

And there is also the negative side of the picture. If a teacher does no more than read and absorb the literature on his subject (this he must do as minimal preparation) it is highly likely that in the course of a few years he will go stale in his own thinking.

And finally, all this must probably be qualified by the truism that in a broad field like college teaching all kinds of genius are needed. Many years of association with many kinds of teachers have brought me to realize that there probably are some people who can stimulate students in certain desirable ways without doing any kind of research. But for the reasons given above, in view of the essential fact that the main thing college can do for a student is to show him how to learn and how to think, such teachers should be the exception and not the rule. Men and women who can do a good job of both teaching and research are probably not as rare as many would have us believe.

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I should like to express my strong approval of the article on "Government sponsorship of scientific research" by L. V. Berkner [*Science* **129**, 817 (1959)].

Like many members of the scientific community I have had grave doubts about the wisdom of setting up a federal department of science headed by an officer of cabinet rank. Increasingly, however, I have become convinced that such a department is practically a necessity, if science is to play the role that it must play in any vigorous society today. Berkner's article provides the most powerful argument that I have seen in favor of such action, and to me the argument seems practically unanswerable.

As regards the scope of such a department I should go along with Berkner's argument almost entirely except that I should like to see the National Science Foundation included in the proposed department. It is true that its inclusion would modify the structure, and expand the responsibilities, of the department, as envisaged by Berkner. I believe, on the other hand, that the National Science Foundation would probably flourish more vigorously and obtain more adequate support if it were a part of a federal department of science. The foundation has hitherto been almost a stepchild of the government. Its functions are of enormous importance; it should be the government agency with prime responsibility for the promotion of fundamental scientific research in this coun-

(*Continued on page 1369*)