LETTERS

Tung Tsang taken to task

It is important that there be an immediate reply to the letter from Mr. Tung Tsang (*Physics Today*, March 1965, p. 60). His letter displays total ignorance of the four-year liberal arts college.

First, the liberal arts college is interested first and foremost in good teaching. No such college of any merit would accept on its faculty anyone who would regard his position there merely as a means of support for research. Second, the faculty member in such a college works far more than 25 hours per week. Not only should he spend more than two hours of preparation for each class hour, but his office door is generally open to his students who should and do partake liberally of his time. Third, the faculty member in the liberal arts college takes a responsibility for the administration of the college by his work on faculty committees. My own work week is more like 60 hours than 25. I find it very difficult to keep abreast of important developments in physics, and use summers and spare time to do *modest* research.

Indeed, Mr. Tsang will have to try a good deal harder to disprove Einstein's conjecture. Einstein's own accomplishments appear to be the greatest obstacles in Mr. Tsang's path.

Robert David Turoff
San Francisco State College

Dr. Tung Tsang comments that the total research output of small college teachers "has been negligible either in quality or quantity". As professors in a small college where the research quality and quantity per professor is modest but not negligible, we resent this statement. We feel it is harmful for three reasons: (1) such statements make it more difficult for small colleges to obtain funds with which they can improve themselves, (2) such statements make it harder to get good students to come to small colleges, and (3) such statements scare potential staff members away. Admittedly, no small college teacher has done work of the quality of Einstein, but then what large university research worker has either? It would also be interesting to know, for example, what percentage of the Fellows of the American Physical Society have bachelor degree origins at small colleges. Our own guess is that the percentage would be sizable. This, in itself, is an indirect contribution to research. Finally, if the people at the large institutions like Dr. Tsang's feel that the research output of small colleges is negligible, we have a constructive suggestion. Why don't they select some of the small colleges that are really trying and help them? One relatively inexpensive way to do this would be to send out a lecturer and advisor once or twice a year.

J. D. Patterson
J. E. Houston
C. B. Lowe
Robert G. Morris
South Dakota School of Mines and Technology

Tung Tsang is certainly entitled to his opinion with regard to the quality and quantity of research amongst small college teachers. Many people would disagree with him and that, of course, is their privilege also. The disturbing feature of his letter is the reporting of wholly unsupported data in his statement, "Here [in small-college teaching] a typical person (say a PhD with two years of teaching experience) is not required to do any research, works about 8 months per year, and about 25 hours per week during these 8 months, makes about $8000 per year (enough for the average family)."

His reporting that small college teachers work about 8 months per year and about 25 hours per week during these 8 months is a serious indictment of the integrity of all who teach in a small college. Perhap Tsang has conducted an exhaustive survey from which he has gleaned his data. If so, it would certainly be helpful if his survey and its results would be published in the normal manner, rather than to have his data published without supporting evidence.

In my years of teaching I have had occasion to meet with teachers from many schools and varied disciplines. Not one person with whom I have spoken has had a work week as low as 25 hours nor a work year as low as 8 months. Perhaps my associates and acquaintances have represented fluctuations from the mean. It would seem odd, however, that these fluctuations should always be so strongly positive.

I will not comment on Tsang's criticism of research at small colleges. Others have already said better things than I could say. For one such reference I mention an editorial by J. Howard McMillen.*

David T. Nelson
Luther College
Decorah, Iowa

I believe that Tung Tsang raised an interesting question. Although his remarks about the work hours of professors in small colleges verge on being ludicrous, the more far-reaching question of why there is not a wider spread participation in scientific progress by the "learned public", as opposed to the core of professional researchers, is both timely and pertinent.

To discuss the question, I propose to place research in three categories. These are experimental, theoretical with application to a rapidly advancing field, and research generating fresh outlooks or ideas to established fields of science. My thesis is that only individuals associated with large research-oriented institutions can conduct research in the first two categories. (Modern experimental techniques are too sophisticated and require too much capital for the necessary equipment to be purchased, maintained, and operated by individuals or by small nonresearch-oriented institutions. The advancement of a rapidly evolving theoretical viewpoint requires a practiced operator of modern mathematics. New results are cus-

*J. Howard McMillen, Am. J. Phys. **29**, 272 (1961).

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tomarily communicated directly to other workers through seminars long before they are disseminated by more general means, etc., etc.)

This leaves only items in category three as amenable to approach by the learned public. The problem here is at the end point. The scientific journals are operated by and for people in the first two categories. An isolated individual writing a paper that does not conform to the presently accepted mode of thought or presentation would almost surely never have his paper accepted for publication. If he belongs to the American Physical Society, he is assured only of the privilege of giving a ten-minute talk at a general meeting, which might be very far away from his home. These talks are often given under adverse circumstances and have no resulting detailed publication. The extent to which this problem exists is difficult to measure, but exist it does. Perhaps one of the reasons for its existence is the established policies of our technical societies and their publications.

Dale M. Grimes
University of Michigan

Tsang in his letter says "An almost ideal 'practical occupation' is small-college teaching." I agree with him, but certainly not for the reasons which he has outlined. He says that a small-college teacher "is not required to do any research, works about 8 months per year and about 25 hours per week during these 8 months." This has not been my experience nor the experience of any of my colleagues who are in small-college teaching. A study on our campus made last year indicates that many of our small-college professors worked more than 50 hours per week. Our school year here is 9 months, not 8 months. In addition, although we are not required to do any research in order to fulfill tenure regulations, research is very helpful in securing promotion in rank.

I am writing this note in order to counteract invalid impressions which are obtained by college boards of trustees and state legislators who use remarks by Tsang and others of similar beliefs as if such offhand remarks were good data. These boards and legislators obtain the impression that college teachers are underworked and overpaid, whereas the opposite is the most usual case.

Frederick P. Cranston, Jr.
Humboldt State College
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McCue's parable

With reference to the "parable" (allegory?) of J. J. G. McCue (*Physics Today*, March 1965, p. 58), I have thought a bit about what the professor might have done instead of what he did, and the possible reactions of his Hunza friends.

Had the day been clear he might have let them see the great building as a whole and then let them see the view from its top. Unfortunately, his visitors might have compared the building to their own majestic peaks, to its disadvantage. They might even have found the view from its top uninspiring in comparison with their own daily vistas. Had he spent his day inside the building, conducting them from room to identical room in which the inhabitants seemed to have little interest in each other, along rigidly delineated vertical paths filled with people rushing along to their destinations, the Hunzas might have been somewhat less than envious. They might even have wondered why this city was so arranged that to go to, say, the Chrysler city, the inhabitants had to come all the way down to ground level. While it may be absurd to take the view that they might have been at least as interested in what they were shown as they would have been in seeing the large pile of bricks above the ground, I think that maybe they may really have gained more "understanding" of the building, as it was.

With the curricular changes which are variously proposed, I am sometimes reminded of the fable concerning the dog who dropped his bone into the pool of water in an effort to snatch the one he saw reflected there. To me an "old-fashioned" ten-dollar gold piece is certainly at least as desirable as a modern ten-dollar note. To avoid misoneism we do not have to become converts to neophilism.

E. Scott Barr
University, Ala.