Letters

ACE Report: Further Inequalities in the Academic Ratings

Belonging, as I do, to one of the low-man-on-the-poll departments, I cannot, unlike Wasserburg in his incisive and comprehensive letter (5 August, p. 575), disclaim bitterness in respect to the American Council on Education's pamphlet, "An Assessment of Quality in Graduate Education." Nevertheless, some reply from one of the underdogs is imperative, both in support of Wasserburg and in our own best interest.

The "Assessment" is a detailed and carefully constructed edifice, but it is based upon several sampling premises that are only half true: namely, (i) that the sampled population will distinguish between quantity and quality, allowing for the fact that the small department can have but few research programs; (ii) that people in the same profession, but not in the same field, are qualified to judge the quality of work with which they are not familiar; and (iii) that these opinions, when assigned numerical values and correlated according to statistical scholarship, will produce a rank order that is meaningful.

Nobody needs to be told that Harvard, Caltech, and California (Berkeley) are great. What does need to be publicized is the nature of the special training a student can get at smaller institutions of quality, of which my own is not least. We happen not to be active in high energy experimental physics, and we thereby forego the professional publicity value attached to that popular field, but among several others, we have at least two outstanding research programs worth a student's consideration: ultrasonics and the liquid state, for one, and strange particles from outer space, for another. We are a productive research department: from June 1964 to June 1966 we published 37 papers in those standard journals that have a referee system, not to mention 14 more letters, conference reports, and chapters in books. I am sure there are many more institutions like ours and many other disciplines in which similar conditions hold, and which have been done the same injustice by the inherent bias in the sampling methods of the "Assessment." There is an ineluctable confusion between quality and quantity in the responses to the poll: only the big balanced departments make high marks.

One outraged suggestion stemming from this injustice is that we should make an advertising appropriation in next year's department budget, so that physicists outside our specialties who are approached by the polltakers will at least know we are active. The ACE would be doing a real service if it helped in spreading such facts to the students of the incoming generation and were less concerned with uncontrolled opinion.

As a job of statistical manipulation, the "Assessment" is indeed done well, but it nevertheless reminds me of the Johnsonian dictum about women preaching and dogs walking on their hind legs, which I paraphrase slightly: "What is surprising is not that it is done well, but that it is done at all." Five years hence, if such a survey is again proposed, it should either be vetoed or so modified as to avoid the undeniable damage that its predecessor will have done among staff and students to morale, recruitment, and financial support.

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Let the Great Smokies Escape High-Speed Roads

Carter's article on the proposed transmountain road through the Great Smokies (News and Comment, 1 July, p. 38) gave an excellent summary of the critical problem facing this area. Having hiked and camped in the Smokies on several occasions, I would like to present some additional information.

1) This is the last large publicly owned wilderness area east of the Mississippi. Once gone, it can never be replaced.

2) The Wilderness Act was not intended to chop our national parks into small segments with interconnecting high-speed roads.

3) The proposed road threatens a scenic area of the Appalachian Trail which in itself is being considered for national park status. Moreover, the proposed wilderness plan sponsored by the National Park Service fails to protect three famous trout streams: Hazel, Eagle, and Forney creeks.

May I urge support for the proposal outlined by the Smoky Mountains Hiking Club which would provide adequate protection for the entire park.

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Science Needs No Diplomatic "Guidance"

At first glance, Langer's report on a peace questionnaire being sent to American scientists by a scientific commission of the Soviet Peace Committee (News and Comment, 15 July, p. 276) appears straight forward, but closer inspection shows it to be an uncritical dissemination of official views to the naive American scientists who might otherwise be misled into cooperating. Presumably this guidance is appropriate because, to quote your correspondent, "it is the business of the diplomats to take a position" on this questionnaire. Why? Certainly, the free speech injunctions of our Constitution make clear that public discussion or interchange is an area where government must not meddle and I see no way in which the international nature of the public interchange alters this restriction. The idea that diplomats should guide scientists as to what matters are suitable for interchange is directly opposed to the international character of science and the normal attitudes of scientists. If a questionnaire on peace action is "verboten," what about a questionnaire on population limitation or on problems of automation and economics or on action toward world law? What would be the fate of an effort by United States scien-

tists to ask questions of their Russian or Chinese colleagues on similar issues?

Alongside these issues of principle, the *Science* report suggests a certain disconcerting arrogance. The quote "if they could get the Post Office to tear up all the copies entering the country" suggests that American scientists are not even to be trusted to read things that the State Department does not like, let alone make up their own minds as to how to deal with the material. If this is offensive to American scientists, the gratuitous assumptions as to the motivations of the Soviet scientists must be equally offensive. How can one expect growth of respect and amity between peoples on the basis of this approach?

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Langer states: "At the State Department no one takes the questionnaire too seriously . . .," and "the intervention of the State Department has probably made its effective utilization impossible." I am amazed at the apparent failure of everyone to see this clever communist propaganda trap. There are five vital questions whose answers will be known only to the "Soviet Peace Committee" and those above it in the Soviet hierarchy. (i) How many questionnaires were sent out? (ii) Who received them? (iii) How many recipients answered the questions? (iv) Who answered the questions? (v) How were the questions answered?

No matter how many questionnaires were received in this country, or elsewhere, and no matter how many were answered, or how they were answered, "The Soviet Peace Committee" can say that they sent the questionnaires to 10,000 scientists in the United States, that they received 9,000 replies and that 90 percent of their respondents were bitterly opposed to war in any form, nuclear warfare in particular, and that they were being obliged to work for such nefarious projects against their will. In short, the "Committee" can broadcast any story that happens to fill their purpose and no one can disprove it. Hordes of naive persons will accept the statements as factual, and the "intervention of the State Department" will have accomplished nothing!

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Additional Safety Measures for Electrophoresis Power Supplies

In addition to the safety precautions described by Spencer *et al.* [*Science* **152**, 1722 (1966)] there are two additional design features which can be built into electrophoresis power supplies to make them safer.

1) Full floating output. This requires an isolating transformer between the a-c input and the rectifier section of the power supply. The transformer forms a high insulation barrier between the ground and the output, so that if the experimenter accidentally touches a live output circuit, no current will flow even when the experimenter is grounded. The only way to receive a shock with a floating circuit is to touch both the positive lead and the negative lead simultaneously. Of course, if the transformer insulation should fail, the output circuit may become grounded, but this type of failure is much less likely than insulation failure in a lead wire or failure to connect separate grounding wires properly.

2) Both leads in the same cable. With this construction any insulation failure is most likely to occur between the two leads, burning out the power supply itself—an automatic fail-safe feature.

Power supplies built with these two safety features have been available commercially for years. It is surprising to me that more manufacturers have not adopted these principles.

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Miracles Beget Miracles

I could not agree more with the general tone of your editorial, "Pressure on basic research," (1 July, p. 11), but your statement that there have been no major miracles for two decades is hardly justifiable. It is rather that our society has become so blasé that major miracles are considered standard operating procedure. The totally unexpected wealth of hadrons and the equally unexpected existence of quasars are but two examples of major miracles, not to mention what is going on in the life sciences.

As to their usefulness, it might be argued that if there are no miracles in basic research, there will be no miracles in applied research. The laser and the Mössbauer effect, just to mention a couple of applied research miracles from the last two decades, are solidly based on previous miracles in basic research. But to delineate the applied miracles of the future corresponding to today's basic miracles would be equivalent to have specified a ruby crystal with two mirrors in 1905.

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In What Year Did Newton Die?

Sir Isaac Newton died on 20 March 1727—of that there is no doubt. Indeed, all the books say so! I was therefore not a little surprised to observe, on a recent visit to Westminster Abbey, that the inscription at the base of the impressive monument to Newton gives the date of his death as: "XX Mar. MDCCXXVI" (20 March 1726). The explanation of this apparent discrepancy of 1 year, although well known to historians, was not previously known to me nor to most of my scientific acquaintances. The following, therefore, may be of interest to physicists and perhaps other scientists.

About a quarter century after Newton's death and nearly 170 years after Pope Gregory XIII introduced the new "Gregorian calendar," the English Parliament passed the "Calendar (New Style) Act of 1751." This Act not only adopted the Gregorian calendar, but it also provided that in England the first day of the new year would legally be advanced from the 25th of March to the 1st of January. Since the date of Newton's death, 20 March, fell within this period of approximately 3 months, the 25th anniversary of his death was updated, by the Act, from 1751 to 1752. Extrapolating backward in time, the year of his death then becomes 1727.

David Brewster, in *The Life of Sir Isaac Newton* (J. and J. Harper, New York, 1833), quotes in full the inscription at the base of Newton's monument in Westminster Abbey and takes the unpardonable liberty of changing the stonemason's "MDCCXXVI" to "MDCCXXVII," without so much as a footnote to explain that he was tampering with the truth merely to conform with the Act of 1751.

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