

Letters

Essay Tests Can Be Standardized

Barr's suggestion (Letters, 7 Aug., p. 533) that *Science* offer a forum for discussion of bias in standardized tests impresses me as such a wise one that I should like to attempt a contribution.

"One very important element in such a discussion," Barr says, "would be the exploration of alternatives to multiple-choice testing." Obviously, essay tests furnish one possible alternative and their potential is vastly underestimated. I have two general points: (i) The scoring of essay tests can be standardized and rendered more "objective" than is commonly supposed. (ii) Tests serve other very important functions in addition to grade determination; with respect to these extraneous functions, essay examinations are eminently superior to multiple-choice.

Experimental psychological evidence now suggests some effective ways to reduce "subjectivity" in scoring essay tests. Among these are (i) avoidance of distortion due to "prestige suggestion" by having the identity of the examinee concealed; (ii) reading half-a-dozen randomly selected examinations before grading any, so as to reduce "order effects" and "residual factors" in the judgmental set; (iii) grading all examinations under the same quiet physical and psychological conditions, when not fatigued, when neither elated nor depressed, and so on; (iv) having the generally acceptable answers in the back of one's mind to furnish anchorages against suggestibility; and (v) attending not merely to answers to specific questions but noticing also the relations between answers in an effort to reward good theoretical-thinking ability and creativity. "Subjectivity" which continued to creep into the grading of essay tests would be more than compensated for by their much greater potential for tapping the wells of thoughtfulness.

An important extraneous function

which essay examinations serve far better than multiple-choice concerns *motivation*. If students know they will have to take standardized essay exams, they will study differently, I believe. When preparing for multiple-choice tests they probably spend most of their time memorizing facts; when preparing for essay exams, they will spend a considerably higher proportion of their time thinking about relations between facts, and with a problem-solving attitude. Everyone from William James and John Dewey to Max Wertheimer to Albert Einstein would agree that this orientation will render the work more interesting and meaningful to the student (and it may equip him with a better memory than were he to concentrate on memorization *per se*). Through standardized essay exams we can avoid what Banesh Hoffmann, in his book *The Tyranny of Tests*, has so rightly and brilliantly deplored—the awarding of the highest grades to the most superficial students.

LAWRENCE LA FAVE
Detroit Institute of Technology,
Detroit, Michigan 48201

Science and the Election

I feel that the section "News and Comment" is entirely out of place in *Science*. I am not the slightest bit interested in Greenberg's "Goldwater: an effort to evaluate the effects that his election might have on scientific activity" (14 Aug., p. 685), and I believe that if you took a sampling vote of members of the AAAS they would agree with me.

THOMAS F. COOKE
Killam's Point, Branford, Connecticut

My respect for *Science* fell substantially after reading the article on Senator Goldwater, or more specifically, the anti-Goldwater story by D. S. Green-

berg, which was much more political than objective and was scarcely proper for a publication reporting in the field of science. We get quite enough of political twists in the routine news publications.

Among scientists there are doubtless some leftists and also some of the pork-barrel persuasion, but for the most part, scientists are concerned with truth and not political pitches to the left, and science has its good share of conservatives.

J. W. BRANDT
514 Empire Building,
Pittsburgh 22, Pennsylvania

Greenberg's analysis of Goldwater's possible effect on U.S. science is interesting, timely, and in many ways delightful. It also was most appropriately placed following Boring's article, "Cognitive dissonance." Greenberg's positions and implications are viable only in the light of two hidden assumptions: (i) that federal support of science in its present form is good for science and the community; and (ii) that withdrawal of some, or all, federal support as part of a return to fiscal responsibility would not provide the basis for increased nonfederal support.

Without implying, or agreeing, that Goldwater would necessarily reduce overall federal support of the basic sciences, I assert that an honest examination of the sciences in countries with highly centralized support and control demonstrates the undesirability of overwhelming federal support here. Fiscal responsibility, reduction of taxes, and arrest of inflation would make other sources of support much more effective and also allow the establishment of additional sources.

Admittedly many in the scientific community painlessly suffer cognitive dissonance between their scientific and their political standards of thought. That some of these individuals might not want to work with Goldwater is not surprising. In fact it might provide one of the best stimuli for most scientists to support the senator.

JACK BENNETT
Department of Biology, Northern
Illinois University, DeKalb

Your note on the formation of the committee Scientists and Engineers for Johnson (21 Aug., p. 848) recalled a similar committee that I initiated four long years ago. The New York Demo-