

Letters

Education of American Teachers

No one could be better qualified to review Conant's *The Education of American Teachers* than President Robb of George Peabody College of Teachers. Conant's contribution has been to dissect the education business and counter the broad generalizations to which it is so subject from without and within. Up to a point, Robb's review reflects this contribution well. But when he flatly states that the biggest problem facing American schools is the spotty quality of school boards, he abandons the scope and spirit of the study and reverts to the party line.

His excuse for the statement is another broad generalization: that it is impossible for 32,891 independent school boards to carry out the Conant proposal. With equal impertinence, one could counter that it would also be impossible for 123,456 individual pros to administer it, or for 654,321 different teachers to benefit from it.

Spotty quality of school boards is indeed a problem, just as it is of pupils, teachers, pros, legislators, voters, or other groups of living things. Robb wonders then how desirable changes shall be brought about. Perhaps Conant's next study should dissect the policy-making bodies in the education business, including school boards. Had Robb made that point, I could only have wholeheartedly agreed.

ROBERT F. MARSCHNER
18427 Stewart Avenue,
Homewood, Illinois

Scientists, Lawyers, and Admirals

After rejecting assertions about scientists made by C. P. Snow and Robert M. Hutchins as dubious, D. S. Greenberg ["News and comment," *Science* **142**, 34 (4 Oct. 1963)] goes on to make the same error as they: urging the truth of a proposition on the basis

of illustrative and even hypothetical evidence ("scores of thousands" of scientists). He states that "it is plain that, in terms of morality, competence, and devotion to the public interest, they are no better or worse as a group than lawyers, admirals," and so forth. To whom is it plain?

Actually Hutchins's rather cavalier comments raise a number of interesting and perhaps increasingly important questions that deserve systematic research. His disquisition on the *hubris* of the modern scientist suggests one significant social psychological problem, for example, concerning the diffusion of self-esteem from one occupational role to another. Because of their *esprit de corps*, are scientists really overconfident of their own abilities, particularly in areas where they have no training or knowledge? This is a researchable problem, perhaps beginning in the laboratory with lesser scientists and continuing in the field with greater ones. Greenberg's easy answer obscures this and other such issues, and perhaps illustrates Hutchins's thesis.

THOMAS J. SCHEFF
Department of Sociology-Anthropology,
University of California,
Santa Barbara

Anything can be elevated as a suitable subject for research, and Scheff is, of course, free to follow his inclinations, but I'd wager that after he runs the cards through the machine, he'll find "that, in terms of morality, competence, and devotion to the public interest, they [scientists] are no better or worse as a group than lawyers, admirals," and so forth. To whom is this plain? I think it is plain to anyone who has watched scientists perform in public affairs alongside lawyers, admirals, and so forth. If it would be useful to state this numerically, let it be done. But I think the talent required for this could be devoted to more useful purposes.—D.S.G.

I cannot let the letter of F. R. Fosberg [*Science* **142**, 150 (1963)] pass unchallenged. The allowance of overhead costs for sponsored research is, I contend, essential to the continued vitality of American science and American universities. I understand full well the situation which leads Fosberg to dislike the practice: during the years 1948 through 1962, I held faculty appointments first at Washington University and then at Stanford University, and I estimate that nearly \$200,000 was "siphoned off" from my research grants and contracts for overhead. This is certainly no record amount—I am sure that many other physicists during that period "lost" much more—but I very much disliked to "lose" that money from my research. In fact, when I had simultaneously a grant with a flat percentage of total expenditure charged to indirect costs, and a contract with overhead charged as a percentage of salaries only, I learned to minimize the overhead funds going to the university by charging as many of the salaries as possible to the grant and buying most of the consumable supplies with the contract.

But in my present position I have cognizance of all the budgets of a medium-sized university. And I can state flatly that, if it received no overhead allowances to meet the pro rata costs of the myriad of services, fringe benefits, bookkeeping transactions, and so on which go with each sponsored research expenditure, a private university such as Washington or Stanford would be forced to cut its research activities in science by a large factor, perhaps ten. The output of Ph.D.'s in science would drop by some similar factor, as would, of course, the contributions of the university to basic research.

The present overhead rates partly meet, but fall short of, pro rata indirect costs. Each growth in complexity of the science program calls for an expansion of the business office (bookkeepers, business machines, and so forth, to say nothing of office space) for which the university must rob its funds intended to support the teaching program as well as, for example, research scholarship in the hard-pressed humanities and arts.

The contention that administrators press faculty members to seek outside research support in order to rake in the overhead is ridiculous. Without any

increase in the arbitrary indirect-cost limits placed upon many research grants (limits already inadequate according to the government's own auditing procedures set forth in the famous circular A-21), we at Washington University were forced by the new NIH regulations, which call for much more paper work and reporting, to squeeze additional business office staff into an already strained university budget and into severely cramped buildings. We do encourage the development of greater research activity in parts of the university, but for academic reasons relating to the program. We do this in spite of overhead losses that will be incurred.

Fosberg is correct in contending that research is a fundamental function of any university worthy of the name. That question is not at issue. What is at issue is whether, if I were faced with making a university budget in the absence of indirect cost allowances for sponsored research in science, I would be helping the nation and higher education as I chose between two alternatives:

1) Squeeze the humanities, the arts, and most professional programs in the university in order to try to keep the costly science projects afloat.

2) Drastically curtail the university's participation in science research and in the training of research scientists.

GEORGE E. PAKE

*Washington University,
St. Louis, Missouri*

For some months I have been adding to my reviews of grant proposals a statement such as this (taken from a June 1963 proposal): "Computation of indirect costs at 25 percent seems excessive. I recommend that the sponsoring institution be invited to substantiate its claim that institutional support of this program will cost over \$14,000." The project which brought forth this particular comment was in systematic biology for a 2-year period. The research budget items were about 75 percent for salaries, 15 percent for publication of results, 9 percent for travel, and 1 percent for expendable supplies. How could it ever cost \$14,000 to administer such a program?

It would be in order for project reviewers and panel members to question excessive overhead charges.

KARL V. KROMBEIN

*3026 John Marshall Drive,
Arlington 7, Virginia*

Specialization in Medicine

In attempting to answer Baldwin's indictment [*Science* **141**, 1237 (1963)] of specialization in medicine, I must begin by assuming that he is seriously interested in the welfare of patients and in the advancement of biological and medical knowledge.

Specialization in medical practice and medical research has not been all to the good, and it has probably stifled the creativity of a certain number of virtuosi in these fields. But it certainly has not been instigated or nourished by the venality and willfulness of the medical profession, as stated so bluntly by Baldwin. Nor is it a negative phenomenon, as he would urge us to believe by his choice of adjectives throughout his letter.

First of all, during the medical-school training of a physician there is no specialization. From the basic scientific years through his clinical training, medical educators expose him to all facets of biological and clinical knowledge. At the end of this 4-year period of education and training the poor fellow really begins to learn what medicine is all about.

The technical side of the practice of medicine, as a service to patients, is a matter of technical competence in gathering data, evaluating it, arriving at conclusions, and finally, taking action. Of course, in addition to this "biological engineering" there is the added problem of "human engineering"—the relationship of the physician with his patient and with society—but discussion of this important matter does not seem pertinent to Baldwin's comments.

Unless he is disoriented, the budding physician will find out sooner or later what Baldwin denies—namely, that there *has been* an explosion of medical knowledge, and that while he may encompass it in theory, it is impossible for him to become skillful at applying it all in practice. Most chastening is the realization that there is no such animal as a brilliant "young" doctor. We have brilliant young men who are doctors, but it takes a finite period of time for them to become brilliant doctors, at the end of which time they are older.

During this period of professional maturation a real physician inevitably recognizes that there is not enough time for him to become skilled in all the ways of examining and manipulating the human body and mind. In par-

ticular, there is not time for him to learn enough in each discipline so that he can conscientiously trust his own judgment and take moral responsibility for his actions in all of them.

That is why the budding genius suffers the urologist to peer into the patient's bladder. He knows that this consultant's "narrow" but high-powered background of apprenticeship makes him more competent in data-gathering and decision-making about people's bladders. Similarly, the pathologist who has suffered agonies of decision-making over his microscope in hundreds of bladder biopsies has the clearest right to be trusted with the decision as to whether the disease is benign or malignant. And finally, whom will Baldwin call in to operate on his own bladder—the narrow but skillful chap who has proved he can do the right thing on purpose in a hundred bladder problems or the genius who cannot possibly do the right thing, even by accident, when he has a total experience of one case each in a hundred different surgical procedures?

I do not know why Baldwin interprets an explosion of competence as no explosion at all. Perhaps he prefers the separate plodding of ten dilettantes to the coordinated plodding of ten experts. Maybe he has heard somewhere that sometimes physicians have ego problems and prefer to work alone. Perhaps he is annoyed by the fact that the scientific aspects of medical care are getting more rational and more salutary each day, instead of falling apart, as our detractors would like to believe. It certainly has become fashionable to accuse physicians of selfishness, ignorance, and shortsightedness, and this Baldwin has done in full measure. In any event, it is good to know that in a country with notably high standards of medical education, of medical care, and of medical scientific achievement, there are those who care enough to write.

STANLEY M. ROGOFF

*School of Medicine and Dentistry and
Strong Memorial Hospital, University
of Rochester, Rochester, New York*

Baldwin propounds inaccuracies concerning both theory and practice. I will limit my discussion to his comments on radiology, about which I have some personal knowledge. As far as I am aware, all medical-school curricula include radiology. There are many institutions offering post-graduate instruc-