Letters

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improper, since many of the objective check-list items measured behavior more adequately designated as distress, disturbance, yearning, and displaced aggression. The term *disturbance index* could be substituted for *emotionality index* without semantic loss and, probably, without semantic gain.

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Small Colleges and Small Minds

The lack of interest of some teachers in research, discussed in the editorial of 8 January [*Science* **131**, 71 (1960)], is disturbing, but so also are some aspects of the editorial itself.

The heading "Small colleges and small minds" implies that these go together. This guilt-by-association technique is used several times in the editorial, though the man whose views are cited as the basis for the editorial is the president of a "small college." Is there evidence for a larger proportion of so-called small minds in small colleges?

The following statement is perhaps the worst part: "The core of the argument for scientific research . . . is that while there may be good research scientists who are not good teachers, the evidence is that there are no good teachers whose competence is not increased by good scholarship." Ostensibly this places the research scientist above reproach and leaves the incubus on the teacher. Actually, the statement is a *non sequitur,* and its converse is equally true—and unfair, in turn, to the research scientist. It is suggested that the reader substitute the word *editors* for *teachers* (he will find it equally correct). Competence in any profession would be increased by good scholarship, as the editorial in question seems to illustrate.

After this unfair statement the editor changes from "good scholarship" to "research" in the next sentence, which again helps to put the research scientist beyond criticism and implies criticism of the teacher. Had he chosen to make a straightforward statement of what he implies it might have read something like this: "While there may be good research scientists who are not good teachers, the evidence is that there are no good teachers who are not good research scientists." This is, I suggest, rather untenable.

In the next paragraph we are told: "A prominent figure on many campuses is the instructor who is forever marking exams, grading papers, and drawing curves representing his students' performance." With our present grading system instructors are inevitably marking exams, and so on, but the editor is depreciating the teacher with the guilt-by-association technique again, for he indicates that these instructors have "schemes" of a detrimental nature. But the scientist could be given the same unjust treatment, in very similar phrases: "A prominent figure in many research laboratories is the scientist who is forever looking at figures, evaluating data, and drawing curves representing his results. He is full of schemes . . . that if instituted would require the assistance of all his colleagues." Though, curiously, in this case involving one's colleagues becomes a virtue and is extolled under the name of "scientific teamwork."

But this is not all. Having implied that no research means no scholarship, the editor completes his degradation of the teacher in the next sentence by suggesting that those concerned with students' performance are even against reading books!

In the last paragraph the editor proposes the right question, but for the wrong schools, when he asks: "But why in small colleges should some instructors oppose the recognition of good research as a consideration second to good teaching?" In so far as this opposition exists, it is typical not of the small school but of the large school with an extensive graduate program, where some instructors want recognition of good research first and of good teaching second, if at all. In large measure the apparent hostility toward research in the small college is manifested by instructors who do not oppose research as such, but oppose the evaluation of good teaching as a consideration second to good research, because they have seen the unfortunate results of this practice, especially since all too often a department finds itself with "research scientists who are not good teachers."

WILLIAM K. NOYCE
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It was with considerable interest that we read your editorial "Small colleges and small minds," for here at Wilkes College the subject of research in small colleges has been of more than academic interest. Wilkes, I believe, would fulfill your criteria for a small independent liberal arts college. Our experience in the initiation and conduct of a research-teaching program has been satisfactory and rewarding. A summary of our findings may be of interest

to a general scientific audience. We published a fuller description in the *AIBS Bulletin* [**8**, 16 (1958)].

We found at Wilkes that the minimum prerequisites for establishing a research program are: teachers with an interest in conducting investigations and with the ability to communicate that interest to students; a sympathetic attitude on the part of the college administration; realization that the merit of a given piece of research is not measured only by the magnitude of the study or by the amount of technical apparatus it requires; selection of a problem suitable for investigation by a group; adaptation of student laboratory equipment for special needs and utilization of existing classroom space by appropriate planning; enlistment of the librarians of the college in seeking the cooperation of local hospital and industrial libraries and that of university and governmental library loan and microfilming services; use of undergraduate assistants—under supervision they have often proved as valuable as the average technician working solely for a salary; and, finally, invitation of scientists residing in the community to participate in the research-teaching program.

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From my limited experience it would seem that problems of opposition to research on the part of any college staff member are minor. The real problem, as usual, is one of finance or stimulation of interest. Small colleges are not even in the running when it comes to the money spent by the larger institutions just to line up federal grants, to lobby the legislature, or to secure research money from industry or philanthropical organizations.

The faculty and students in most colleges are usually a step or two ahead of the administration and sources of income both as to the desirability of research and the time and minor facilities necessary to be devoted to studies.

A. D. MOINAT
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It is easy to agree with Wiggers [*Science* **131**, 942 (25 March 1960)] that "larger colleges do not have a monopoly on students with ability, curiosity, and desire." This is a truism. What he overlooks in asserting that smaller colleges do not supply their share of the scientific talent of the country is that they have, in fact, provided a disproportionate share of scientific personnel. As reported in the October 1948 issue of *Fortune* and in the study of the origins of American scientists by R. H. Knapp (1952), one of the anomalous conclusions was that most Ph.D.'s in science received their undergraduate training in small and even obscure colleges. The productivity of these smaller colleges, measured as a proportion of the number of graduates, contrasts strangely with the low productivity of larger institutions famed for research and staffed by prominent scientists. Most of the faculty members responsible for stimulating these undergraduates to pursue scientific careers were not themselves well known as researchers.

Reportedly, in recent years the larger and wealthier institutions have performed somewhat better in fulfilling their obligation to provide inspiration, challenges, and opportunities leading to scientific careers.

It may be that the commonly overworked science teacher in the smaller college somehow transferred his own thwarted research ambitions and motivation to students who showed promise and interest in a scientific career. Whatever the explanation, it is unfair to castigate these persons and institutions for not producing scientists when they have produced scientists and scholars in larger proportion than their numbers, faculty, facilities, or financial status would seem to warrant.

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The responses of Wiggers and of Allen to the editorial "Small colleges and small minds" reflect two views on the subject of teaching and research in the small college neither of which are entirely realistic. I am in a position to know that research of a serious nature not only can be pursued in a small college but serves as a potent stimulus to student curiosity and interest and gives the staff member a sense of fulfillment which teaching alone seldom does. Allen's rather cynical comment that "teaching should be more than a meal ticket for researchers" should not be considered a universal attitude among college scientists.

At this college and in this department the research program during the academic year is necessarily curtailed because of teaching duties. But there are virtually 4 months of summer during which research is pursued without interruption. In the early stages support must be had from the college itself, but if the caliber of the research is sufficiently high, outside support in the form of grants is available.

No matter how much this subject of college research is kicked around,

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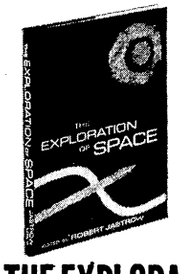

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however, the fact remains that, wherever he may find himself, the scientist who pursues research out of a deep inner urge to do so will find ways and means of satisfying his needs. It is this individual and not the opportunist who does research for what he may get out of it in the way of promotion who will, with some support, reveal the now almost hidden sources of research talent that are present in our small colleges.

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Obesity and Steroid Hormones

In the 5 June 1959 issue of *Science* [**129**, 1546 (1959)] there appeared a report on "Storage of steroid hormones by adipose tissue in two experimental obesities," by Zomzely, Asti, and Mayer.

This otherwise admirable article contains an inaccuracy in its reference to the studies of Gallagher, Fukushima, Barry, and Dobriner [*Recent Progr. in Hormone Research* **6**, 131 (1951)]. In the last three sentences of the article by Zomzely *et al.* it is stated that a large amount of fat in obese individuals may favor retention of their own steroid hormones, and that storage of administered hormones in fat depots might have therapeutic significance. The work of Gallagher *et al.* is cited in connection with this statement.

I did not detect any reference to this point of view in my examination of the article by Gallagher *et al.* However, an explicit prediction of the findings contained in the *Science* article, and of the probable importance of this in the control of obese patients, was adumbrated by S. G. Margolin in a communication to me in 1953.

With Margolin's permission, his hypothesis was summarized in a chapter of a book in the editing of which I collaborated at about that time [E. D. Wittkower and R. A. Cleghorn, Eds., *Recent Developments in Psychosomatic Medicine* (Lippincott, Philadelphia, 1954)]. It may be of some importance to draw attention to this, particularly because of one suggestion contained therein—namely, that in the dieting of obese patients, a reinforcement of the biological instinctual appetite to eat may occur with the release of steroid hormones as the patient reduces weight. No attention seems to have been paid to this point in the literature, and it is a suggestion of sufficient interest to be entertained.

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