young men and women responding to other teachers in other fields who believe sufficiently in the importance of their work to offer not only mind, but heart and spirit as well.

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Abelson's editorial "Science dropouts" (26 June, p. 1535) presented the statistics to corroborate what has been apparent for some time in the classrooms on college campuses across the nation. . . .

Undoubtedly, poor graduate teaching assistants in beginning courses do make their unwholesome contributions to this malady, but it is difficult to place more than a very minor part of the blame on these people.

Faculty members who do little or no research (research can, by my definition, take various forms, including good literature review) are soon obsolete and stimulate no one. However, the strongly research-oriented faculty member who cannot spare the time from his research to meet his classes consistently, prepare or refine his lectures, attend his labs, compose fresh and stimulating examinations, or lower his lofty intellect to discuss and explain the all-important basic facts (upon which concepts are built, not vice versa) to the beginners is, I believe, much more the contributor to the science-dropout problem. Read the literature in nearly any field and see the pathetic results of research motivated by pressure for publication, prestige, promotion, and even fame. Much of this allegedly scientific literature is not only useless but so poorly written and based upon such inadequate research as to be just plain bunk. Take this product of poorly motivated and executed investigations and add to it the poor faculty classroom performance, and the sum is the high science-dropout rate. . . .

THOMAS A. WEIDMAN
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It has been pointed out repeatedly that the liberal arts college (not related to a university) contributes more than its share of men and women who climb the ladder of success as scientists. One of the by-products of the National Merit Scholarship system is the channeling of an ever-increasing percentage of the top college prospects into a relatively small number of institutions of higher learning, virtually all of them multipurpose universities, virtually all of them institutions graced by the presence of distinguished scientists who are deeply enmeshed in research and in the training of doctoral students.

The situation is not very much different with regard to graduate students. Here again, the national programs tend to bring ever larger numbers of the most deserving students into a few institutions where, not infrequently, they become "lost souls," frustrated and disappointed. Since, additionally, it is to a graduate student's advantage to be a research assistant rather than a teaching assistant, as he may thus embark upon dissertation research while being financially supported, the graduate assistant whom the undergraduate encounters is likely to communicate to him a sense of disillusionment, rarely a spirit of unbounded enthusiasm with the career upon which he has attempted to embark. . . . We would be doing our students a favor and we would be contributing significantly to the supply of future scientists if we were to encourage them to seek institutions of higher learning, whether undergraduate or graduate, where it is not only still possible but quite likely that they will find themselves exposed to enthusiastic teaching. This takes some very candid counseling, but it would be in all our best interests if there were more people who had the courage of candor.

FRANCIS H. HELLER
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I think I want to take issue with the editorial. I'm not sure, because it isn't clear what Abelson (or Nichols in his article) includes in the concept of science. If he includes the social sciences, I would not disagree, but if he is referring to the physical and biological sciences as science, I would like to call attention to the fact that the problems which must be solved in the coming two or three decades are not in the physical-biological realm. The pressing problems are those dealing with the functioning of personality, interpersonal and intergroup relations, and national and world political problems and economic problems. The biological and physical sciences have, at least comparatively, already solved their problems, and those that remain are not especially pressing. Furthermore, the problems in the social sciences are more complex and their methodologies more difficult.

For these reasons, I see no cause for alarm if the physical sciences are not getting a majority of the top high school students. I don't know what proportion are electing sociology, psychology, anthropology, economics, and political science, but it is in these disciplines that the best minds of tomorrow are required.

F. IVAN NYE
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One very significant factor in the trend away from science and engineering among students already in college is that, administratively, such changes of program are generally not difficult, whereas changes in the opposite direction usually require a student to forfeit most of his previous academic career.

PETER P. GILLIS
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New Textbooks on Old Subjects

Hoenig's statement (3 July, p. 7) that the high cost of textbooks is caused by "the greed of publishers" who are not content to see only one book in existence on a given subject is not only unfair but is based upon a completely invalid premise. Since the production cost (hence selling price) of a volume is a function of the size and complexity of the manuscript, it costs the same to produce (sell) a book whether it is one of a kind or one of many.

A textbook has two justifications for its existence. One is that it covers completely fresh material, never before presented in book form. The other (and who is to say that it is less compelling?) is that the book, while covering standard material, offers a unique arrangement of the topics, is unusually clearly written, or in some other way benefits the teacher and makes learning easier for the student. Would every professor be content to teach his course in the same way for 20 years and to use the same textbook every year? The answer to this lies in the ready acceptance of new textbooks and in the existence of *authors who write new textbooks.*

For, as every publisher knows, it is not we who "talk faculty members into writing unneeded textbooks." In 99 out of 100 cases, it is the faculty member who takes the initiative, who de-

cides that existing books do not fit his course needs, who proceeds with the development first of course notes and then of a manuscript. It is the faculty member's peers at other colleges who decide that the manuscript is good and desirable, and signify that they will adopt the book if published. You may be sure that the publisher could not himself create the book and absorb his own output.

Perhaps the best refutation of Hoenig's statement is furnished, appropriately enough, by a review in the same issue of *Science* (p. 41). Commenting on a new Addison-Wesley book, the reviewer said: "What a wealth of books on algebra . . . are available today! However, it is probable that Haag's *Structure of Algebra* is close to unique; certainly it meets a definite need."

I rest my case.

LESLIE J. WILSON
Addison-Wesley Publishing Company, Reading, Massachusetts

Money, Accounting, and Research Talent

In production or the buying of services and in the development of ideas to accomplish specific purposes, accountants have developed methods for keeping track of expenses and of just what each dollar is buying. On such an accounting basis Congress might properly say, for example, that it is costly and inefficient for every government department to engage in scientific research, and that such research should be centered in one agency—the National Science Foundation. Another department—for example, Defense—might then attempt to justify a research program of its own by proposing specific projects, tightly budgeted, with red tape to limit duplication, and so forth.

But all this defeats its own purpose, because it destroys the atmosphere in which science thrives and because executive attempts to control research, and the time spent by researchers in justifying their work, add unnecessary costs. The point of this communication is that there is another and different answer to the question of how the money that Congress allocates to research can best be spent.

Money made available for scientific research buys talent—talent of a type that is hard to obtain in any other way. Good research attracts good scientists, and they in turn attract talent of other kinds, in development and engineering. Such talent is very responsive if properly treated, and its presence helps give a department the power to accomplish its purpose in many ways. No matter what specific research the individuals are working on, by their intelligence and independent thinking they inspire the whole department. Every department needs talent of this kind.

It does not matter where research is done (in fact, history teaches us that some of the most significant results come from the most peculiar and unpredictable places). The results become available to all, and the knowledge is power that the whole society can use to its advantage—to feed and clothe itself better, to defend itself better, to keep the peace better.

What Congress might well ask the executive departments, then, is: "Have you got your proper share of scientific talent? Are you paying those of outstanding talent enough to keep them? Are you paying the mediocre ones little enough to encourage them to go elsewhere? Are you contracting out enough research to universities to have sufficient contact with and feedback from these main centers of talent and excellence? Are you leaving the talent in your employ free to recognize and exploit new understanding? Is your accounting system able to tell you how much excellence you are buying, or is it telling you only how much mediocrity you have working on 'projects'?"

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Timing Calls for Papers

Calls for papers for scientific and technical meetings are received anywhere from 10 months before the deadline for papers or abstracts to a week or two *after* the deadline. Somewhere between the two extremes must lie the ideal lead time for issuance of calls. Too early issuance gives people time to forget about the meeting before the deadline; issuance too late at the very least annoys contributors, and at worst results in major loss of papers.

A recent survey by Technical Meetings Information Service indicates that most people want at least 2 months' lead time; my own experience indicates that 6 weeks between release of call and deadline is an absolute minimum. Here is a more detailed schedule of time to allow. The time given is after receipt of the call. Two more weeks should be allowed for printing, mailing, and delivery of the calls.

Operation	*Weeks*
Routing calls via interoffice mail, posting on bulletin boards, or publicizing in internal company newsletter	1
Time required for potential authors to react and submit abstracts for internal company processing	2
Editing abstract and obtaining internal company approval for release	3
Total	6
If Department of Defense security clearance is required, add	8
If complete papers are required rather than abstracts, add	4
If the call is sent to a monthly magazine for publication, add	5

Each of the totals obtainable from the above figures should be considered a minimum. To be on the safe side, an additional 4 weeks should be allowed. Thus, the lead time for issuance of calls should range between 10 and 27 weeks, depending on the conditions specified.

HARRY BAUM
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Intrauterine Ring

I fully agree with Greenberg's reserved attitude toward Bellamy's appraisal of the intrauterine contraceptive pessary (Letters, 19 June, p. 1409). I would even go much further than Greenberg and emphatically warn against this device. In a considerable percentage of cases it produces the adverse effects Greenberg mentions. Furthermore, it appears very probable that it does not prevent the ascent of spermatozoa and the fertilization of the ovum but merely prevents or disturbs its nidation and development, that is, induces an early abortion of the fertilized ovum.

Besides that, it is not such a cheap device as Bellamy believes, since its insertion as well as its control and removal require the services of a well-trained gynecological specialist. Finally, there is no need for such a hazardous device since there are other more reliable and harmless contraceptive devices available.

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