

letters

heartedly with Kalbach that the commitment to marriage and family should be shared with women by men, but, as she points out, there are professional consequences of various options of which individuals should be aware in making their choices. To say that "The answer is in more opportunities for part-time or interrupted employment which is, nonetheless, challenging and interesting for a competent PhD holder," ignores both those individuals who make other career choices and the realities of the present-day employment situation. The only way that such a program could be accomplished is by either a truly effective affirmative-action program or a substantial increase in the demand for PhD scientists. In view of the indifferent success of affirmative action to date, I cannot be very hopeful of the first possibility, and there is no evidence for the second.

In her fourth paragraph, Kalbach attributes to me a point of view which I am told is one that even a moderately careful reader of my article would not assume. She begins, "Kistiakowsky seems to agree with much of society that personal fulfillment and happiness (however these are to be defined) are the greatest goals to be sought by the individual," and then proceeds to make a plea for less self-centeredness. I agree with the desirability of a less me-oriented society in this country, but would like to point out that the "Matthew effect" suggested by Kalbach would better be called a "Matthew admonishment." The Matthew effect identified by Robert Merton and mentioned in my article is a sociological observation, not a desiderata. Many physicists would disagree with her last sentence linking cooperation rather than competition with scientific productivity, if this is interpreted to apply globally, and would argue that discovery is spurred by competition. On the small scale theoretical centers, experimental groups, and so on, cooperation is certainly linked to productivity, and this is one of the reasons that Merton's Matthew effect is so evident in science. If you are isolated from appropriate collegial interactions, it is an enormous disadvantage. Another question that can be raised is whether the creative impulse that underlies much of scientific discovery would flourish in a controlled scientific environment. Lysenkoism in the USSR has shown that subordinating science to social ends can be very destructive. These comments are made with only basic research in mind, since I believe that social good should indeed be considered in cases such as the multi-billion dollar military R&D program

which is part of our current national march toward a nuclear cataclysm.

Kalbach's last two paragraphs are an expression of her personal point of view and I will restrict myself to two brief comments. First, if girls should seek intelligent boyfriends, then the converse should also be true. However, I would question whether intelligence is always the overriding attribute to be considered in a personal relationship. Secondly, I would rephrase her closing sentiments as follows: "...let's not try to force humans to conform to stereotypes. Individuals are different, and in the words of Elizabeth Cady Stanton (1848): 'Every man has a different sphere, and one in which he may shine, and it is the same with every woman;...'"

VERA KISTIAKOWSKY

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3/26/80 Cambridge, Massachusetts

More on global problems

Robert Marshak's comments (November, page 9) on the need to direct some of our intellectual and research capabilities to the major problems of global concern draw attention to a vital matter confronting all of us. However, I would take issue with his proposed solutions, the setting up of interdisciplinary centers and the holding of international workshops.

A large number of such centers have been set up, and their principal function seems to be to attract and funnel governmental research funds and to support the inevitable administrative overhead cost the existence of a separate "center" entails. It has yet to be demonstrated that academic specialists are more willing or effective to tackle global, interdisciplinary problems when sponsored and "coordinated" by such a center than when housed in a discipline-oriented department.

The other fallacy relates to the assumption that a significant impact on the world's problems can be made by a group of people pontificating and building computer models while ensconced in the safe environment of a "center" in a developed country, reinforced by occasional and expensive brief visits to a developing country or by workshops attended by senior officials of such a country, on an expense account, who will make all the correct, encouraging remarks.

I believe effective technological assistance to developing countries is possible only through people who are willing to spend appreciable time (at the working level, not the official level) in selected countries. Unless one is aware of the political, economic and cultural limitations to many, otherwise excellent, solutions, many of the well-meant

applications of research techniques to global problems turn out to be an expensive waste of taxpayers' money and disillusioning to all concerned.

I do not think there are global solutions to global problems and there are surprising differences in the area of technology transfer, for example, between countries with superficial similarities.

GEOFFREY G. EICHHOLZ

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1/24/80

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THE AUTHOR COMMENTS: Eichholz's letter to the editor concerning my Guest Comment is rather spirited, and I am pleased that my remarks were so provocative. However, there seems to be some misapprehension concerning my basic thesis. The essential argument is given in the concluding sentence of my Guest Comment, to wit: "We can make a major contribution to meeting the global challenges facing our nation by organizing applied interdisciplinary research in our universities on the same massive scale as basic research." The research must be interdisciplinary—by definition—and the leadership role should be taken by the universities rather than government or the multinationals (the reasons are spelled out in my Guest Comment).

If one accepts the basic thesis that during the decade of the 1980's a large applied research effort should be focused on global problems within a university environment—and apparently Eichholz does not take issue with this—then the particular mechanism selected can be left to persons of good will and serious interest. If a discipline-oriented department possesses sufficient intellectual breadth and hospitality to colleagues from other disciplines to mount a concerted attack on one of the "global problems," then by all means the "program" or "institute" or "center" should be housed in this department. My own experience does not support Eichholz's contention that an interdisciplinary center necessarily requires more administrative overhead than a departmental program, and I would make the decision more in terms of the clarity of goals and talent of the investigators. (Roger Revelle and I were instrumental in creating the International Foundation for Science in 1970—an interdisciplinary organization operating out of Stockholm that awards research grants to scientists from the developing countries in a selected number of fields—and it is remarkable how low the administrative overhead can be kept if one wills it so.)

I can further assure Eichholz that I do not believe—nor should he have drawn the implication from anything I said—that "a significant impact on the world's problems can be made by a group of people pontificating and build-

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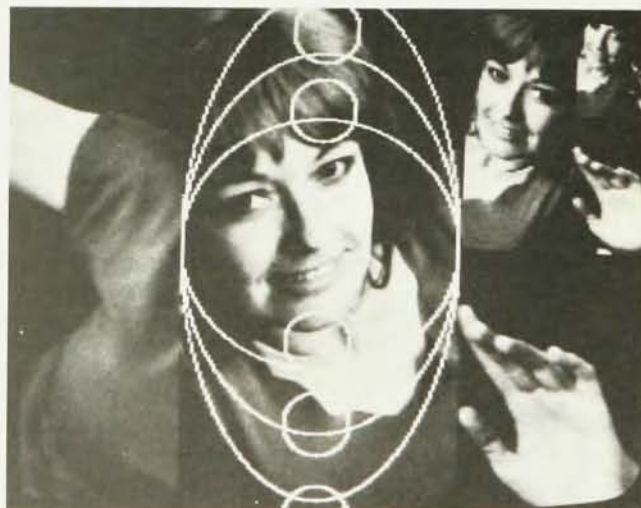
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letters

ing computer models while ensconced in the safe environment of a "center" in a developed country . . ." He can check this by studying the recommendations to the American and Nigerian governments that emerged from the workshop on "Technological Development in Nigeria," which was held at City College last April and to which I made reference in my Guest Comment. A member of the National Advisory Committee and a key participant in this workshop was Eichholz's own colleague, Ross Hammond, Director of the Engineering Experimental Station, who clearly believes in "rolling-up one's sleeves" to get a job done. (A copy of the Proceedings of this workshop can be obtained from City College.)

Finally, I also do not think that "there are global solutions to global problems." Why else would I argue for a university institute cooperating with the private sector and government that would "deal with the complexity of technology transfer to a larger developing country like Nigeria" and "would attempt to understand the impact of technology transfer on the economic, social and ecological conditions of the country into which it is introduced."

ROBERT E. MARSHAK
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3/10/80

Physique of physicists

J. S. Garrow (Brit. Med. J. 2, 1171, 1979) shows that a physique that is associated with longevity is given by a value of W/H^2 in the range of 20 to 25 for men and 19 to 25 for women, where W = mass in kg and H = height in m. He argues persuasively that overweight is a cause of excess mortality.

It would be interesting to know $\langle W/H^2 \rangle$ for physicists. Marathon runners have W/H^2 about 20.

L. S. FINEGOLD
A Fat Physicist
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3/4/80

Philadelphia, Pennsylvania

Scholarly communications

I enjoyed your February editorial, (page 112) on the report of the National Enquiry into Scholarly Communication, but I think the report is limited by the same institutional, as opposed to technical, barriers that are delaying the end of printed newspapers.

Advertising, for example.

However, I have been predicting for some time that the owners of cable-television systems will suddenly realize they have all the hardware needed to

publish continually updated news with, of course, the customer's ability to print out anything he wants to put in his scrapbook.

I suspect the same thing will happen to scientific literature now that all universities have large computer capability, and almost overnight the printed journals will disappear. When a writer discovers his paper can reach around the world months before a printed journal, he will probably opt for electrical publication.

I realize the institutional problems, copyright for another, are immense, but all it will take is for a major university to put a few important papers in a widely bought data bank for the steamroller to begin crunching printed journals to death.

HENRY F. DAVIDSON
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2/26/80

International language

The advocacy of Esperanto as a language for international communication by Bruce Sherwood (July, page 9) and André Heck (January, page 102) represents a concern shared by many scientists. Even those of us who were required to learn foreign languages in high school and college (either as undergraduate or graduate students), usually find that while we can work out the meaning of an article in a language other than English, the process always involves more or less discomfort. Nevertheless, I, and probably many others, share a disinclination to make the effort to learn Esperanto for communication purposes since relatively little scientific material of importance seems to be written in it.

We do indeed need an international language for reading, writing and speaking, so may I propose an alternative, one which seems to me to have manifest merit? Why don't we take advantage of the international language that has been taught and is still being taught not only in our colleges and universities, but even in many of the high schools of our country—and probably in similar schools around the world? Since suitable books for the study of this language are readily available, not to mention a tremendous amount of high-quality reading material in both book and article form, self-study is feasible. Actually, quite a large number of people in science already have limited competency in this language, and the beginner is helped by the many English cognates.

I refer, of course to Latin. For many centuries it was the common language of all scholars. It is the language in which some of the greatest books in Physics were written—Newton's *Prin-*

cipia . . ., for example—and for many years was the chosen language for scientific articles, until nationalistic jingoism displaced it. A paper by Gauss in 1832 was, I think, the last notable scientific paper to be written in Latin. Could we, perhaps, turn back the clock a century and a half and get back to more efficient communication system, one of proven merit?

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1/25/80

National library

The editorial of Harold L. Davis, "Time for a National Library" (February, page 112) presented some misinformation. His statement that a national library was first proposed in 1899 overlooks the earlier proposal by Charles Coffin Jewett in 1848. Jewett, who was the first librarian of the Smithsonian Institution, saw a need for scientific and technical information as a resource in promoting American growth.

Davis asks the question: "... why don't the libraries agree to share one copy of each book or periodical that would be stored at a central location?" The answer is: As early as the last quarter of the 19th century the Library of Congress had formed a bibliographic network with the then-existing large public and academic libraries. In effect, the Library of Congress has available the card catalogues of all the major libraries of the nation. Today regional library networks are located throughout the country.

At first the idea of a central depository seems eminently practical and logical. Researchers, however, are not prepared to wait for needed materials for times on the order of days or weeks. Currently, inter-library loan among academic libraries averages three weeks. The slowdown incurred by inter-library loan relative to home-library access time would seriously impede the rate at which reference and background research could be done. The move to a centralized depository system on a national level undoubtedly implies that paperwork alone would increase the delay of document delivery.

To speed information retrieval, Davis suggests the computer-based information-storage systems as a vehicle for the researcher to leisurely locate pertinent information. Currently all data bases are owned by commercial vendors. The connect-time and document delivery are expensive. Virtually all of the intricate searches (including key-word usage, search strategies, search span in both time and number of documents) are performed by an intermediary, not the researcher himself. Additionally,