

THE ARTICLE'S AUTHORS REPLY: We agree wholeheartedly with the central concern expressed by Ellen D. Yorke. No physics student should be rendered a second-class citizen by virtue of compromised expectations.

The members of the IUPP steering committee, like most American physicists, recognize that their profession is populated largely by white males. From the beginning of IUPP, we considered it important that the project promote curriculums, textbooks and classroom environments that are free of any influences that might keep students from achieving their full potential. At the same time, steering committee members were painfully aware of how little is really understood about how such influences are to be neutralized.

The IUPP evaluation program was designed primarily to address issues related to course content and methods of presentation. However, during interviews and journal keeping, students have often spoken about critically important issues that influence career choices—such things as childhood experiences, parental and societal values and expectations, peer influences, put-downs by instructors, and sexist or racist attitudes in high school and on college campuses. As we collect, correlate, analyze and publish these student commentaries over the next year or so, we hope to help our current, rather homogeneous population of physics instructors to better understand the experiences and perspectives that students of various stripe bring to the course.

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8/93

Restore Shelved Library Funding

Ralph E. Gomory's article "Goals for the Federal Role in Science and Technology" (May 1993, page 42) is timely, not only because of the new Administration but because of the shift from a cold war economy that happened in spite of a lack of leadership, planning and setting of objectives.

In discussions of support for basic science, especially for individual scientists, one of the great omissions has been attention to the library services that researchers rely on for the

preparation of research hypotheses and designs. In Vannevar Bush's day, major libraries had more or less kept pace with publication; regrettably, the libraries have slowed their growth, while the increase in science literature, as is easily confirmed by a look at *Physics Abstracts* and similar records, continues unabated.

There are several reasons for the deterioration of library quality, the main one being the research community's lack of attention to the funding of its major research library collections. According to statistics recently published by the Association of Research Libraries,¹ universities have decreased the libraries' share of their budgets systematically for over a decade. Hundreds of millions of dollars of "indirect" funding of Federal research grants justified by library services have been used for other purposes. When Congress reviewed funding of libraries under the Higher Education Act of 1965, no representatives of the research community offered any testimony. As a result, Congress followed the recommendations of librarians and in 1992 deleted the portion of the act that had once increased college library collection development funds by well over 10%.

The librarians seem to desire an environment where there are no books and journals to catalog and put away—only computers to turn off and on. Where Bush's generation could find nearly every journal of interest on the shelf, future generations will be forced to "browse" by computer—the equivalent of looking through a keyhole—and will miss important articles that are related only by insight and inspiration.

Therefore, if any goals of excellence and competitiveness are adopted, the work must begin, like research, in the library, with the restoration of Federal funding and the provision of departmental subscriptions (called "duplicate" by librarians) to important journals as well as the archiving of comprehensive coverage in the main collections.

Reference

1. A. M. Cummings *et al.*, *University Libraries and Scholarly Communication*, Assoc. of Res. Libraries, Washington, D. C. (1992).

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6/93

Tritium's 'Perverse' Presence in Nature

Many involved in environmental monitoring research will be mildly amused by the declaration in the May

1993 Washington Reports story (page 53) that "tritium is not normally found in nature." Nature is perverse, and to confound the presumption that a short-lived nuclide would not be present she invented cosmic rays and spallation.

This was a minor error in an otherwise interesting report.

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5/93

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Atmospheric Heating and Hubble's Lifetime

Greg Davidson (May 1993, page 91) wrote some interesting comments about solar activity cycles, but they were irrelevant to the central premise of my letter (October 1992, page 142): that if the atmosphere has been heated, data should exist that may help decide the question. Also, in his last paragraph, Davidson made an unfortunate comment that may be clever but is irrelevant and even untrue.

To quote Davidson directly, "Kepros refers to NASA's announcing that [the Hubble Space Telescope's] lifetime would be truncated from 15 years to 5 because 'the atmosphere had expanded' and then mysteriously withdrawing that announcement." Please note that nowhere in my letter was the word "mysterious" used. Only the fact of the withdrawal was stated, and in my mind there is no mystery whatsoever. On taking office in 1981, President Reagan's Administration announced that security control of technical data would be greatly increased. Orbital technology was one of the areas that were especially targeted for upgraded security classification. The succeeding Bush Administration's position on the environment is well known too.

The question was and is whether atmospheric expansion due to global warming calculated from the ideal-gas law agrees with present data-based models. The physics is simple, and I calculate the change to be 1.488 kilometers for a spherical shell 480 km thick when there is a mean temperature change from 300 to 301 K. Are data available? NASA, in cooperation with the US Air Force, has published such data in the past, in the volume "US Standard Atmosphere Supplements, 1966." A similar document is available for 1977. There is no later similar document issued by NASA or USAF.

Whether errors associated with such models make the numbers meaningful is a separate problem.