

research productivity, particularly as manifested in article counts, is strongly affected by characteristics of the employing institution. In particular, there is strong evidence that physicists employed in top PhD-granting departments and Federally funded R&D centers are more likely to publish than their colleagues in places where resources are scarcer and the environment is less condu-

cive to research.⁸ It is clear that not all generations of physicists have had equal access to the most productive sector. Indeed, one need only look at the pages of *PHYSICS TODAY* to see how job opportunities for physicists have changed over time. A cohort particularly hurt was that of the late 1960s and early 1970s—the cohort from which the “young” in our study are drawn.

Finally, some have expressed concern that the average ability of new science PhDs has declined in recent years as the best and brightest in our society have been drawn into the lucrative professions of law, business and medicine.⁹

Because our data allowed us to observe physicists as they aged over a six-year period, we were able to draw inferences concerning the presence of cohort effects and to see whether true aging effects exist once we controlled for these cohort effects. Using an econometric technique that controls for both cohort and aging effects, we found evidence that except for particle physicists employed in PhD-granting departments, true aging effects exist. Furthermore, when we held the aging effects constant, we found evidence that for the period of our study the latest PhD cohorts were not the most productive in any of the subfields of physics we studied.

References

1. P. E. Stephan, S. G. Levin, “Demographic and Economic Determinants of Scientific Productivity,” Georgia State U., Atlanta (1987).
2. R. Evenson, Y. Kislev, *Agricultural Research and Productivity*, Yale U.P., New Haven (1975).
3. E. Garfield, ed., *SCI Journal Citation Reports*, Institute for Scientific Information, Philadelphia (1975).
4. National Research Council, *Science, Engineering, and Humanities Doctorates in the United States, 1979 Profile*, Natl. Acad. Sci., Washington, D. C. (1980).
5. S. Cole, *Am. Sociol. Rev.* 84(4), 958 (1979).
6. A. E. Bayer, J. E. Dutton, *J. Higher Ed.* 48(3), 259 (1977).
7. D. C. Pelz, F. M. Andrews, *Scientists in Organizations*, revised edition, U. Michigan P., Ann Arbor (1976).
8. J. S. Long, *Am. Sociol. Rev.* 43, 889 (1978).
9. H. R. Bowen, J. Schuster, *American Professors: A National Resource Impaired*, Oxford U. P., New York (1986).

PAULA E. STEPHAN

Department of Economics
and Policy Research Program

Georgia State University
SHARON G. LEVIN

Department of Economics

2/89 University of Missouri, St. Louis

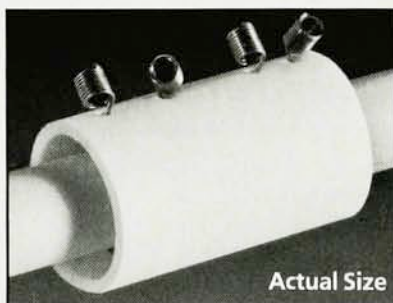
THE FIRST IN-VACUUM, LINEAR MOTOR POSITIONING SYSTEM.

Featuring Remote Control With No Mechanical Feedthroughs.

Precision positioning inside high vacuum chambers used to require bulky, expensive equipment. No more. For over fifteen years, Burleigh has offered a diverse line of sophisticated piezoelectric (PZT) actuators and motor systems, including our famous all-piezoelectric Inchworm® motor. Now Burleigh has completely redesigned the compact Inchworm motor and companion translation stage for in-vacuum operation.

- UHV compatible materials.
- In-vacuum operation with remote controller.
- No mechanical feedthroughs or bellows.
- A small footprint makes it ideal for close quarters.
- True linear motion.
- Bakeout temperatures to 150°C
- Micron resolution

The Burleigh UHV Series represents an important advance. To receive a product brochure or discuss your application, call Burleigh and ask for the UHV Applications Group.



Burleigh Instruments, Inc.
Burleigh Park,
Fishers, NY 14453 USA
(716) 924-9355,
Telex 97-8379

European Headquarters: Burleigh Instruments,
Pfungstadt, West Germany. Tel. (06157) 3047,
Telex (841) 4191728

United Kingdom: Burleigh Instruments, Ltd
Tel. (0727) 41347; Telex (851) 94011348

Japanese Representative: Marubun Corp.
Tel. (03) 6399871; Telex (781) J22803

burleigh

Inchworm is a registered trademark of Burleigh Instruments, Inc.

© Burleigh Instruments, 1988

AVS Show—Booth #315

Circle number 137 on Reader Service Card

Bread Shortage in the Nation's Breadbasket?

In the December 1987 issue (page 9), George E. Pake writes: “Through its extensive nationwide system of research universities, centers of basic research are ubiquitous in the US.

Nearly every citizen lives relatively near a laboratory doing research somewhere along the frontier of basic knowledge." These statements simply are not true.

In the heartland of our country, high-grade basic research proceeds at only a few locations. Throughout most of the area, the citizens reside far from such facilities. As a result, they are familiar with only the descriptive aspects of science, as presented in television broadcasts.

Furthermore, the people in power do not reasonably support most of the research facilities that do exist. It is not just a matter of lack of funds; the organizational structure is quite often deficient.

At South Dakota State University, the basic sciences are divided up among the various deans, so the plight of fundamental researchers is of little concern to the hierarchy. Relatedly, the instruction here neglects the foundations students need for a research career.

If our country's leaders felt that Pake's statements constituted an ideal, they would distribute research funds accordingly. This they do *not* do. Instead, the funds are concentrated on a few, already well-heeled institutions.

GEORGE H. DUFFEY

South Dakota State University

Brookings, South Dakota

10/88

PAKE REPLIES: It seems that George H. Duffey and I would disagree only in matters of extent or of degree. My statement is, I believe, suitably qualified to be valid. I had in mind that every state has at least one state university, which in turn sustains graduate programs in the sciences that award the PhD, a research degree at the frontier of current knowledge. Admittedly, in the larger states west of the Mississippi, some citizens do not live very near to the state university, although they may readily on an autumn Saturday commute to the campus for a football game—which I grant is not a research interest.

All universities I know allocate or distribute the basic science departments among several deans.

The implication that funding for basic science research ought perhaps to be distributed geographically or more uniformly does not take into account that in addition to state universities there are a number of academically strong private universities in a few states. These pinnacles of privately established science strength are not uniformly distributed throughout the nation, yet they represent a major component in US

basic research competence. Looking at things this way, it is only logical that, for example, Massachusetts, with Harvard and MIT as well as the University of Massachusetts, receives larger amounts of Federal basic research funds than most other states, but probably less funding for agricultural research (both basic and applied) than the larger Western states.

Both Duffey and I would like to see

the "people in power" support more aggressively the research facilities that do exist in the US.

GEORGE E. PAKE

Palo Alto, California

6/89

Correction

August, page 56—STI should have been identified as Superconductor Technologies Inc. ■

Don't Fool Around With High Voltage.

Materials deposition,
electron and

ion beam, laser, capacitor charging, x-ray and other systems aren't places to fool around with high voltage. After all, if your power supply doesn't work right, neither will the rest of your system.

We're serious about high voltage. We specialize in building highly reliable, high performance HV power supplies. Designed and built to exacting standards so they'll survive the rigors of your application. And they're backed by the industry's best warranties.

Standard and custom designs are available with outputs up to 200 kV. Our SERIES 1000 units are ideal for laboratory or medium power

applications. The higher power SERIES

6000 is designed for process applications requiring utmost reliability and performance in vacuum environments. Our custom systems exhibit the same dedication to reliability and dependability that has made KSI the industry leader in truly meeting the customer's specifications.

On-time delivery is just as important as system performance. At KSI we're serious about schedules too, and we have an on-time delivery record of 98%!

Call us. Let's discuss your application. Or fax your specifications to our sales department. And stop fooling around with high voltage.

KSI Kaiser Systems, Inc.

The High Voltage Power Supplies That Work®

126 Sohler Road, Beverly, MA 01915 • Phone: (508) 922-9300 • FAX: (508) 922-8374

Circle number 138 on Reader Service Card