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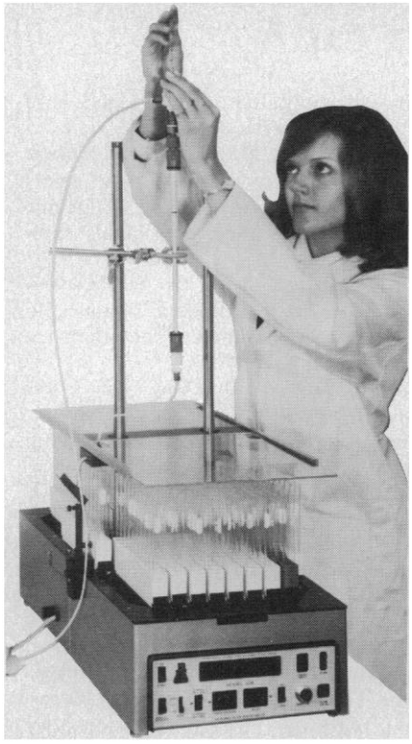

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## LETTERS

### Research and Public Funds

DeWitt Stetten's editorial (19 Sept., p. 953) and the several letters of comment (24 Oct., p. 324) have neglected a crucial point concerning "Freedom of inquiry." The real issue is not freedom to do research, since few areas of research are prohibited by law, but freedom to use taxpayer funds to conduct research that the taxpayer may not need or want, or may even oppose. Surely there is a major ethical issue here that supersedes any question of knowledge.

No one has seriously suggested that research on genetic contributions to intelligence be outlawed. However, many of us object vigorously to the use of our tax dollars for this purpose. In our view, satisfying the intellectual needs or desires of a few scientists is not an adequate reason for spending public funds.

The comparison between freedom of speech and freedom of research is misleading. I would not suggest that a law be passed prohibiting people from criticizing ethnic groups, but I would object vigorously to giving people federal grants to go around making such criticisms.

Stetten appears to object to political involvement in scientific decisions. I suggest that such political involvement is a necessary safeguard for all of us.


SOLOMON GARB
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### Are the Data Worth Owning?

Three years ago, in an editorial in *Science* (30 June 1972, p. 1377), J. Ross Macdonald answered this question with an embarrassing and costly "No" for a major fraction of the published scientific and technical data. Since then, slow but steady progress has been made in increasing the reliability of data which is so essential for the orderly conduct of R &D programs. On a national level, the National Bureau of Standards' Office of Standard Reference Data, together with the American Chemical Society and the American Institute of Physics have launched the *Journal of Physical and Chemical Reference Data.* On an international level, CODATA, the Committee on Data for Science and Technology of the International Council of Scientific Unions, has stepped up its efforts to promote international cooperation in data evaluation and dissemination, with continued emphasis on high standards of data quality. CODATA also has broadened its scope to include the life sciences and geosciences in addition to the physical sciences. In recognition of the growing role of CODATA, the National Academy of Sciences has invited CODATA to hold an open international scientific conference in the United States at Boulder, Colorado, in the summer of 1976. Persons working in the physical, life, and earth sciences as well as data handling specialists are urged to attend and discuss their approaches to problems of scientific data evaluation and dissemination. A successful conference of this kind will do much to raise an awareness of the need for greater support of high-quality data compilation, commensurate with the total R & D efforts.


W. DALE COMPTON
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### Investment in Research

Arthur Kornberg, in his editorial of 22 August (p. 599), based on his 19 April address at the National Institutes of Health alumni reunion, states, "There is no industry based on technology today that spends less than 5 percent of its product [income] on research and development."

The petroleum refining industry, long considered to be a high-technology industry, spends considerably less than 5 percent. Its R & D costs have usually amounted to 1 percent or less of its product sales income.


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### Black Ph.D.'s

The method employed by Joseph L. McCarthy and Dael Wolfle in their article "Doctorates granted to women and minority group members" (12 Sept., p. 856) does not give an accurate assessment of the number of doctorates awarded to Blacks for two main reasons: (i) a decreasing percentage of Blacks are obtaining doctorates from Association of American Universities (AAU) member institutions, and (ii) there is a distinct pattern of undergraduate origins of Black Ph.D.'s.

The percentage of science doctorates awarded to Blacks by AAU universities has steadily decreased since the 1930's. I maintain files on the number of science doctorates earned by American-born Blacks and, while my data do not include other degree fields, I am unaware of any significant differences between the institutions awarding science Ph.D.'s to Blacks

# Problem #1

## How old is Jack?

If Jack were two years younger than Jill would be if Jill were two years older than half as old as Jack would be if Jack were two years younger than twice as old as Jill would be if Jill were twice as old as Jack is, he would be ten years older than he is now. (For answer, read on).

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and those that award nonscience Ph.D.'s (*1*). Between 1876 and 1930, only 13 science doctorates were awarded to American-born Blacks, and all but one of these was by an AAU university. Between 1876 and 1940, 91 Blacks received science doctorates, with 78, or about 86 percent, coming from AAU schools. For the calendar years 1969 to 1972, my files indicate 148 Black Ph.D. recipients, and only 70, or 47 percent, of these received their degrees from AAU universities. While I do not have data on all Black science doctorates for the past 5 years, my data are not biased in favor of either AAU or non-AAU schools, since I have not solicited names directly from any colleges or universities. I estimate that the AAU universities now account for no more than about 40 percent of Black doctorates in all fields. To apply the figures derived by McCarthy and Wolfle for minorities to Black doctorates is to underestimate the actual numbers being produced.

With respect to the reasons for the decline in Black doctorates awarded by AAU institutions, one need only consider that somewhere between 70 and 80 percent of Black Ph.D.'s receive their undergraduate degrees from the historically Black colleges and universities. Almost all of these institutions are located in the traditional South and are thus physically closer to a large number of non-AAU universities. Howard University is now a significant producer of Black doctorates, and it, along with Atlanta University, will become even more significant in the years to come.

The traditional undergraduate feeder source for a doctorate-granting institution is that same institution. This is true for the AAU universities as well as for others, with the number of institutions that are their "own sources" ranging from 12.7 to 57.4 percent for all doctorates awarded by the 34 leading AAU schools for the years 1920 to 1962 (*2*). Of 864 Black science Ph.D's listed in my files whose undergraduate institutions are known, only 113, or 13 percent, received their doctorates from AAU universities. Included in this number are some who received doctorates in 1975 (the total of American-born Black science Ph.D.'s does not exceed 1200). The 13 percent of Black science Ph.D.'s noted above is well below the "own source" average for AAU schools and is probably the same for all degree fields. Since the once racially segregated state universities are becoming more and more significant producers of Black Ph.D.'s (*3*), this may well reflect a shift to these institutions of Black undergraduates who seek doctorates.

It is difficult to deal with the number of doctorates and the patterns among such diverse groups as those considered by McCarthy and Wolfle. Black students from other countries seeking doctorates in the United States should not be included with American-born Blacks. Likewise, the rationale for comparing the number of doctorates earned by Asian Americans to the number earned by Blacks and women at American universities escapes me, and I question the validity of this kind of study. The authors are to be thanked for calling attention to the errors in the 1973 figures on minority group doctorates compiled by the National Research Council.


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**References**


1. J. M. Jay, *Negroes in Science: Natural Science Doctorates, 1876–1969* (Balamp, Detroit, Mich., 1971).
2. Office of Scientific Personnel, *Doctorate Production in United States Universities 1920 1962* (Publ. 1142, National Academy of Sciences–National Research Council, Washington, D.C., 1963).
3. Among the non-AAU universities with relatively recent histories of Black enrollment that are now, and will most likely continue to be, significant producers of Black Ph.D.'s are the universities of Alabama, Arkansas, Georgia, Miami, Mississippi, South Carolina, and Tennessee; Louisiana State University; and Texas A & M University.


## Interdisciplinary Misunderstanding

The problems involved in putting together a wide-ranging interdisciplinary journal must be many. The goal of ensuring universal comprehension of even the titles must be beyond any editor's reach, I suppose. Yet I must share my disappointment (as a biopsychologist) on discovering that "Direct observation of domains in wet lipid bilayers" (24 October, p. 383) has nothing whatever to do with the ecology of waterfowl that lay high-cholesterol eggs in pairs.


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## Erratum

In the issue of *Science* numbered 3995 of volume 173 [30 July 1971], the editors inadvertently published a copyrighted cartoon as a cover illustration and as a figure accompanying an article, without the permission of the artist, Mr. Charles A. Leap, of Fairbanks, Alaska. The cartoon was called "Solution Here in Time" and pictured a fanciful depiction of the Trans-Alaska Pipeline suspended from clouds to eliminate environmental concerns. The editors and the Association regret this mistake.—ED.