

LETTERS

The Funding of Research

Contrary to the impression given in the letter of Mark V. Morkovin (25 Aug., p. 652), the American people *did* lobby in Congress for decreased dictation by the Department of Defense (DOD) of basic research in this country. Many of us feel that fundamental research should be funded through competent and strictly civilian agencies, such as the National Science Foundation, the National Institutes of Health, and the National Aeronautics and Space Administration, and not by an inbred organization with obvious vested interests in military involvements. Strong conversion of funding from military-sponsored to civilian-sponsored research must ensue if "most of the results will be used in peaceful applications." This feeling was reflected in the mood of Congress when it passed the Mansfield amendment to limit DOD research to projects that are "apparently and directly" related to DOD's military mission. The Pentagon's willful alteration of contract titles and reports in 1970 in order to hoodwink elected representatives is not to have walked a "tight-rope," as Morkovin expresses it. Rather, this intentional deception flagrantly violated congressional intent and cheated the American public. The Mansfield amendment passed the Senate by a vote of 68 to 0 in 1971, and, even though it was modified in conference (*Science*, 6 Nov. 1970, p. 613), it still carries with it the intent of many in the Congress to encourage transfer of DOD spending to agencies in which there is a much higher probability of funding research with applications of benefit to society and to America. What we need now is an actual transfer by Congress of appropriations, not merely statements of guidelines. What we *don't* need is defense of deception.

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Research at Oberlin

In a recent letter (22 Sept., p. 1060) Rustum Roy states that "Dozens of small liberal arts colleges—the Wesleyans, Oberlins, Kenyons—managed to provide excellent undergraduate education without attempting to involve

the faculty in formal (funded) research activities." Apparently he is not familiar with the activities at these institutions.

The six permanent members of our department are all engaged in research in areas that include the history of science, nuclear physics, and solar physics. Each has published material related to his research within the past 2 years. Two faculty members have outside funding (from the National Science Foundation and from the Research Corporation), and two others have proposals pending. Most members of the other science departments here are involved in original research, and several have outside funding.

It may be true, as Roy states, that research is not "needed to retain or produce the best undergraduate teachers," but it has been our experience that most fine teachers wish to do research to remain alive in their own fields as well as to offer research opportunities to their students as part of their educational experience. Several papers co-authored by our faculty and their undergraduate students have recently appeared in such journals as *Physical Review* and *Nuclear Physics*.

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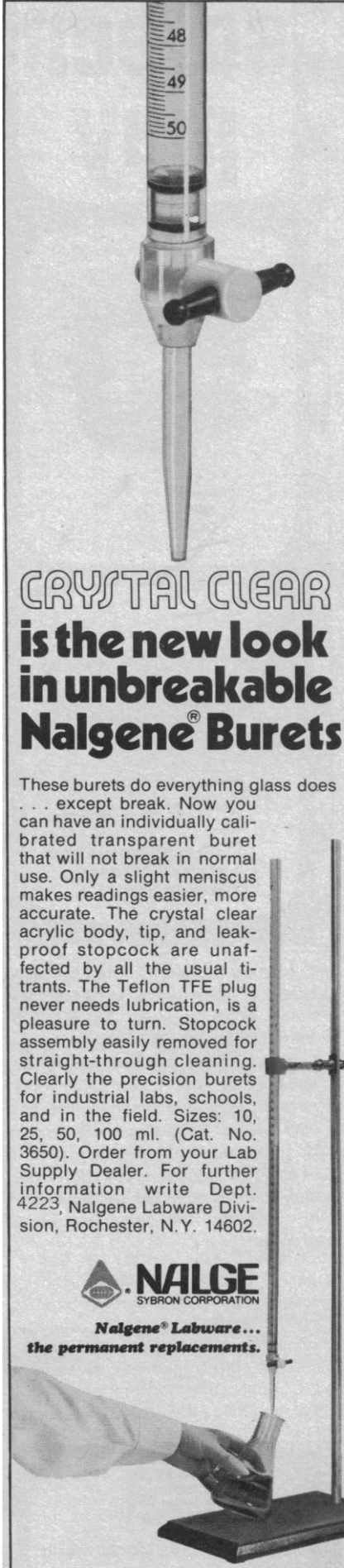
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Salvage Archeology


Ruth Gruhn (Letters, 28 Apr., p. 353) raises some important issues regarding salvage archeology in this country. In our opinion, she has so misrepresented the situation and presented such a divisive statement that a rebuttal is called for. Gruhn paints a rather grim picture of the loss of archeological resources, with an unrealistic segment of the profession standing by in grand aloofness, refusing to cooperate in the salvaging of information before it is lost. She labels this noncooperating segment of the profession, the "new archeologists" and seems to claim that the destruction of archeological resources is the result of their attitude. This is not true.

Gruhn also implies that the profession is polarized into two monolithic camps: one, the "new archeology," which views salvage archeology as "digging simply for the sake of digging," and a second group (unnamed) that is "realistic" and is the bulwark in the recovery of prehistoric remains about to be destroyed. Neither assertion is



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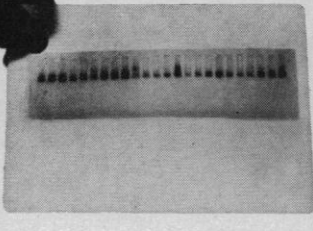
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accurate. In reality such a strict division of our profession does not exist. Certainly there are those archeologists who feel more comfortable adopting a nomothetic approach to their research, but it does not follow that these individuals cannot assist in the recovery of endangered archeological materials. Some selected examples make the point.

Prescott College has been conducting archeological investigations on Black Mesa in northern Arizona since 1967. Although this project was stimulated by the development of strip mining on the mesa, much of the research has been "theory-oriented" (1). Significantly, the Peabody Coal Company has supported a large portion of the work. The state-supported highway salvage program of the Arizona State Museum has been actively involved in recovery of archeological materials since 1964. Long-range planning for survey and excavation in this program has been made possible by ample funding and close liaison with the Arizona Highway Department. Such planning has permitted the development of testable hypotheses for some highway salvage projects (2). In other cases, data from previously excavated sites have been utilized in hypothesis testing (3). Most of this work has been conducted by graduate students in the Department of Anthropology at the University of Arizona. Sale of the Carter Ranch in east-central Arizona for subdivision and land development will result in the destruction of numerous sites. Some "salvage" may be carried out by personnel of the Field Museum of Natural History. Paul Martin and his associates have pioneered a problem-oriented research program in this area that provides a sound base for future excavation in endangered sites.

These examples demonstrate that "salvage" projects often are well funded. Furthermore, the critical need to develop adequate research designs prior to excavation is available in most instances, provided all archeologists work together in developing these programs. This has been the case in Arizona. Measures to increase this form of cooperation have been developed by the National Park Service in an effort to comply with recent federal environmental protection statutes, notably the Environmental Policy Act of 1969. Guidelines for the preparation of archeological resource sections of Environmental Impact Statements have been formulated by the Arizona Archeological Center of the National Park Service

in Tucson. These guidelines clearly state that adequate research designs must be devised for the investigation of endangered sites before any excavation is carried out.

Salvage projects can be undertaken utilizing previously formulated hypotheses. Furthermore, data collection need not be structured totally by the testing of specific hypotheses. Archeological data that are viewed as important are so recognized because their utility has been demonstrated in previous problem-solving endeavors.

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1. G. J. Gumerman, *Archaeological Investigations on Black Mesa: The 1969-1970 Season* (Prescott College Press, Prescott, Ariz., in press).
2. J. L. Brown, *Kiva* 33, 60 (1967).
3. P. Grebinger, *ibid.* 37, 30 (1971).

Etymological Purity

I am irritated but not surprised to find the word "lipofuchsin" creeping into the scientific literature. It is being used to describe a yellowish-brown, yellow-green to orange, fluorescent, sudanophilic, acid-fast pigment, which demonstrates electron-dense, osmiophilic granules under the electron microscope and which is known by anyone who has any respect for scientific accuracy as "lipofuscin."

Lipofuchsin, despite attempts by a few who have been caught using it to justify themselves, has no meaning and is the product of careless reading of the original word lipofuscin, resulting in its verbal use in papers read at scientific meetings and now its menacing entry into the printed scientific literature.

Lipofuscin, itself a bit of a bastard, but a bastard with sense, comes from a Greek word *lipo* which means "fat" and a Latin word *fuscus* which means "dark" or "dusky"; hence, lipofuscin means a dark or pigmented lipid. Lipofuchsin, however, makes no sense, as fuchsin is simply an aniline dye.

I hope editors will smite this interloper and help to keep one fragment of the scientific world etymologically pure.

GEOFFREY H. BOURNE
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