Letters

Martian Predictions

Two Mars Mariner spacecraft, designated as Mariner VI and VII, were launched from Cape Kennedy, Florida, on 24 February 1969 and 27 March 1969, respectively. Current estimates of the time of closest encounter with Mars are 0518 GMT 31 July for Mariner VI, and 0500 GMT 5 August for Mariner VII. These Mariner missions will provide a wealth of information concerning the surface and atmosphere of Mars, but the surface temperature measurements and polar cap photographs are of particular interest here.

Predictions of the Martian surface temperature, which were generated by a computer program entitled "MSFC Planetary Atmosphere Prediction Routine," indicate that the temperature measurements will range from 190°K to 300°K for Mariner VI and from 200°K to 290°K for Mariner VII. More specifically, the prediction indicates an equatorial temperature of 194°K at 245° longitude and 212°K at 315° longitude during the Mariner VI mission and a temperature of 210°K at 35°S latitude and 255° longitude during the Mariner VII mission. The MSFC predictions also indicate that the northern polar cap will extend from the pole to 84° latitude and the southern cap to 70°S latitude.

Martian atmospheric circulation is not considered in these predictions, but its effect is believed to be insignificant because the Martian atmosphere is very thin and the ground-atmosphere system acts as an effective radiator.

These predictions are not meant to reflect upon the scientific value of the Mariner program in any way; they were made to verify the "MSFC Planetary Atmosphere Prediction Routine" only.

Y. S. Lou
Northrop Corporation, Box 1484, Huntsville, Alabama 35807
Don K. Weidner
Otha H. Vaughan, Jr.
George S. West, Jr.
National Aeronautics and Space Administration, S&E-AERO-Y, Marshall Space Flight Center, Alabama 35812

Stanford's Classified Research

John Walsh's cogent summary of the "Confrontation at Stanford: Exit classified research" (2 May, p. 534) is an excellent account of a complex situation, but a few points deserve clarification. The references to "military research" on the campus should read "classified research." Only the classified research will be phased out by Stanford, while other unclassified research funded by military agencies will not be affected. A substantial portion of the work carried out under the classified contracts was in fact unclassified.

The article also refers to a "well-equipped print shop used to turn out classified research papers" in the basement of the Applied Electronics Laboratory (AEL), which the militant students occupied for 9 days. Actually the shop, equipped with several small offset presses, prints research reports for the entire school of engineering. Classified reports were a very small part of its total output. In all, the university carried about a dozen classified research contracts, the major portion of them directed by AEL investigators at an annual expenditure of around $2 million. Of the published research reports emanating from these classified projects, only about 15 percent were classified.

Robert Lamar
Stanford News Service, Stanford University, Stanford, California 94305

Gifts and Grants: Who Benefits?

Letters on the subject of costs seem to imply that universities derive financial benefit from gifts, grants, contracts, and the like. Colás (16 May), referring to equipment purchased with project funds, wrote "I submit that such equipment may certainly be regarded as an indirect subsidy, since accountability is usually waived and title is customarily vested in the original grantee institution. This is not the only or the most important of the indirect benefits that accrue to grantee institutions because of the federally supported research and training activities of their principal investigators. . . ."

This is representative of a widespread attitude and is rarely true. Program decisions are made on the basis of *academic* benefit: the financial component of these decisions is, at best, an attempt to minimize the loss. Even the gift of a building requires future budget appropriations for its operation and maintenance. The only real sources of *financial* benefit would be an unrestricted gift (cash or cashable) or the donation of an asset whose purchase had already been budgeted.

Howard P. Wile
National Association of Colleges and University Business Officers, 1785 Massachusetts Avenue, NW, Washington, D.C. 20036

Practical Courses for Nonscience Students

As a student (late Pleistocene) and later a professor at the University of California, I can hardly believe that nonscience students really appreciate learning about standing waves, which slit a photon uses, and synchronizing clocks for light velocity measurements, as described by Reif ("Science education for nonscience students," 30 May, p. 1032). These and other aspects of physics are not unimportant to a nonphysicist, but the course actually appears to be an expansion of a few topics taken from the usual course for scientists. Why not give the nonscientist something practical?

Over a decade ago I developed a year-long, integrated science course for nonscience college students, and this became quite popular, as did Reif's. It was based upon the student as the referent. Only the interests of the class and the abilities of the lecturers were the limits. When the beep-frequency of Sputnik increased as it approached, the class was led through the Doppler effect, the physics of sound, the chemistry of nerve transmission, and the biology of the ear structure. When an earthquake occurred (this could be counted on regularly), the whole gamut of geological principles could become involved, plus the socioeconomic aspects of real estate salesmanship. As more and more students rode in jet planes, the physiology of balance, respiration, time zone transition (geography!), fear, and "man was never made to fly" religion, were