published. If a particular scientist does not feel sufficiently competent in his research and is afraid criticism of the SVCP would affect his grant or the renewal of his contract, then he should honestly reply "No comment" to the interviewer's questions. However, if a scientist who is doing competent research and whose work is esteemed by others, were to have his research funds canceled by the National Cancer Institute (NCI) because he expressed his views, he would have an extremely good case in the scientific community for action against the NCI and the SVCP program. Grant programs have contributed greatly to cancer research but have not yet found the solutions. As urgent as the cancer problem is, other approaches are necessary to obtain rapid answers; the contract system is one such means. Under such a system, there will be deficiencies and duplications of effort in certain areas. This also occurs with grants, but I feel there is more sharing of ideas and more cooperation among contractees than there is among grantees.

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Accelerator at Argonne

In her report "High energy physics . . ." (News and Comment, 3 Sept., p. 897), Deborah Shapley suggests that the 12.5-Gev zero gradient proton synchrotron (ZGS) at the Argonne National Laboratory could be in line to be shut down. The arguments leading to that conclusion are derived from inadequate information and place the ZGS in an unfavorable light.

The highly competitive research program at the ZGS operates with the strong participation of university-based research teams. From the point of view of the Argonne Universities Association, which represents 30 major universities and is responsible for formulating, reviewing, and approving Argonne's policies and programs, the program is an excellent example of successful university participation in research at Argonne. Some 400 high energy physicists, mainly from midwestern universities, are actively participating in the ZGS program. In 1970, 20 experiments were completed at the ZGS, and 60 scientific papers were published based on the data taken in these or in previous experiments at the ZGS.

A severe shortage of funds has resulted in a substantial decrease in the operating budget of the ZGS for the past 4 years. As a result, the pace of research has had to be slowed, despite continuous pressure from ZGS users for more accelerator time. A steady flow of new proposals for topical experiments is received by the ZGS Program Committee. The schedule of approved experiments is crowded, and an 18-month backlog now exists.

Shapley reports that the phrase "useful but older" was used to describe several accelerators, including the ZGS. This epithet misses the mark widely in the case of ZGS, which has been in operation for only 8 years. No other accelerator has exceeded the ZGS in the simultaneous operation of many experiments. Beam handling and detector facilities at the ZGS are modern, and every known elementary particle can be produced. An ingenious, new, and far-reaching program to improve internal beam intensity is now well under way. Shapley does not mention the development at the ZGS of the largest bubble chamber in the world—12 feet in diameter; the unmatched pioneering work in the application of superconductivity to high energy physics research; and the exceptional versatility and cost-effectiveness of the accelerator, which allow many experiments to provide data simultaneously.

The ZGS and its related research program are making unique contributions to physics at the present time and give every promise of doing so for many years.

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Shapley reviews the serious problems now facing the national high energy physics program and performs a service in pointing out the need for new, more comprehensive procedures to assess priorities in science funding. However, we believe the opinions expressed in her report do not accurately represent the current feeling among high energy physicists. Although the laboratory administrators interviewed by Shapley are highly respected individuals within the field, a more balanced sampling of the entire high energy physics community would have been desirable. Unfortunately, the opinions of the many university physicists who have a

vital interest in the operation of the high energy accelerators were not represented.

We are also distressed at the manner in which Shapley identifies the ZGS as the accelerator least likely to continue in operation. She makes no mention of the many reasons why the ZGS is important to the nation's high energy physics program and should therefore continue to operate.

The energy range that is accessible for study at the ZGS—from low energies up to 12.5 Gev—is an extremely complex and interesting region in the study of particle physics. Resonance phenomena dominate the lower portion of this energy region and there is good reason to believe that smooth high energy characteristics are dominant in the higher portion. Because the transition from low energy to high energy behavior may well occur in this range, this region is very likely to be the proving ground for many new theoretical ideas. Experiments at the ZGS continue to play an important role in this respect and in the future could play a crucial role in the further development of our understanding of the strong interactions. Energies of a few Gev are also ideal for answering many of the completely unsettled questions that relate to weak decay proceses.

Because of the high demand for the continued use of the ZGS for high energy physics research, diversification of the accelerator program has never been seriously considered. Accelerator and apparatus development at Argonne have been sharply focused on enhancing the performance of the machine as a high energy physics accelerator. A program is also in progress to exploit those features of the ZGS which uniquely suit it for the acceleration of polarized protons, a capability which promises to open up an exciting new area for research in high energy physics.

The shutdown of any of the AEC's five major operating high energy accelerators would be an extremely serious event. Each of these accelerators has contributed substantially to progress in high energy physics in the last decade, and none of them is close to the end of its productive life. An exciting weak interactions experiment was done at the Berkeley Bevatron last year, and a pioneering experiment on neutrino nucleon interactions in hydrogen is now in operation at the ZGS.

No accelerator should be shut down until all conceivable attempts to ob-

tain adequate funds have failed and all possible alternatives have been eliminated. Those responsible for making such a determination should do so in a careful and considered manner, mindful of the profound impact this action can have on the future of high energy physics in this country.

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Open Admissions

As a supporter of the view that the implementation of open admissions programs in higher education is essential to the survival of our civilization, I think Bazell's report (News and Comment, 7 Jan., p. 38) fails to present a balanced appraisal of the problems and social benefits of this program at the City College of New York (CCNY). He does not present the students' perceptions of this program and places undue weight on the anxieties and frustrations of the faculty members who are resisting change in the educational processes, and in the philosophy and content of their courses, that must come with open admissions.

One cannot help asking how many students have entered CCNY under open admissions, and how many of these are Blacks and Puerto Ricans. Furthermore, in view of the crunch, to what extent has the composition of the CCNY faculty changed, and how much has the current faculty reeducated itself about the philosophical and educational requirements that we face today? In order to move toward achieving the goals of higher education, CCNY, like all universities and colleges in this country, needs a public policy of commitment of dollars to back up change through bold experimentation and research in teaching and learning. In this respect, the federal and state governments have the obligation, not just to bail out, but to infuse new life into higher education.

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