

Protesters ask: Should SSRL do weapons-related research?

Arthur Bienenstock is now making, as he says, "one of the most difficult decisions of my life." Bienenstock (director of the Stanford Synchrotron Radiation Laboratory) is caught between a protesting faculty and staff on one side and a \$6-million research proposal from a consortium consisting of Livermore, Los Alamos, Sandia and the University of California system on the other. The issue he is addressing, Bienenstock told us, is whether to judge a proposal solely on the basis of its scientific merit or whether to take into account the end-use of the research proposed—in this case, an end-use to which many of his staff are strongly opposed. The consortium proposes to build two new beam lines at SSRL for use, in part, in characterizing new instrument designs for measuring x rays generated by nuclear weapons. Protesters we spoke to were worried about the application of this research to nuclear-pumped x-ray-laser weapons. The principal investigator for the project, Lloyd Multhaupt (Livermore) said, however, "Looking to the future we may find this research useful for a nuclear-pumped x-ray laser, but the proposal is for basic science and technology." The proposal has so far sparked four petitions opposing the use of SSRL for what is described by the protesters as "clearly weapons-related

research." Included among them is a petition to Bienenstock himself, signed by 37 of the 50 people who work at SSRL, asking that the proposal not be accepted. Wolfgang Panofsky, director of SLAC and its SPEAR storage ring, which supplies the electrons for SSRL, has also received two petitions, one signed by 15 of the 31 SLAC research faculty and a separate petition from 280 of the 1200 SLAC staff. Donald Kennedy, president of Stanford University, has been petitioned by 2000 Stanford students. And Bienenstock must ultimately decide whether or not to go ahead with the project.

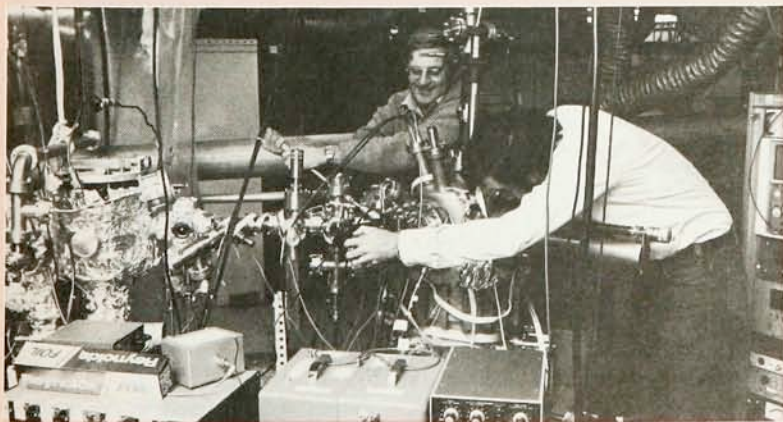
Livermore submitted a request for \$5.2 million to the DOE Office of Military Applications for the project, and the University of California system will provide an additional \$1 million. Although the proposal was developed by scientists at the three DOE weapons labs as well as university scientists, it involves entirely unclassified research. Multhaupt told us that the proposal includes construction funds for two beam lines—a state-of-the-art wiggler, a bending magnet and monochromators—to enable them to cover the range from 5 eV to 50 keV. In addition, \$1 million will be used to build a calibration facility at Livermore for the routine calibration of nuclear weapons,

Multhaupt said. When asked whether the research proposed was directly applicable to nuclear weapons, Multhaupt said, "A lot of research contributes to weapons systems, including the very process of building beam lines because we are dealing with significant x-ray technology. We intend to do research on basic science and technology. It is not aimed at specific tests. However, it will contribute to weapons development and our ability to conduct tests. The research proposed by the university people is clearly not weapons-related."

Robert Mozley, a SLAC physicist, disagrees: "The proposed research involves development and testing of high-speed x-ray detectors used to calibrate nuclear weapons; this application is blatant and clear. The Schedule 44 submitted to DOE requesting funds for the project refers directly to nuclear-weapons tests." Mozley, who did not sign the petition at SLAC, introduced a motion in the Stanford Faculty Senate, asking that Stanford's Committee on Research evaluate the amount of military research done at Stanford and consider the implications of this research for the university. The Faculty Senate passed the resolution, and at a 23 May meeting Stanford's Committee on Research was to begin such an evaluation.

John Harris, head of operations for SPEAR and a signatory to the staff petition, told us that the proposal as it is now written requests that 100% of the beam time on the new lines be made available to the proposers, in violation of current SSRL policy that proposers get $\frac{2}{3}$ of beam time and that $\frac{1}{3}$ be made available to general users. Additionally, Harris said, "At issue here is not merely staff and faculty morale, but also the question of whether in this country you can do high-caliber high-energy-physics research without involving yourself in weapons research. Is it really necessary that every lab do weapons research?"

The proposal was submitted to the SSRL review panel, headed by Charles Cantor of Columbia University. On 20 April they presented their recommen-



Sample chamber for vacuum uv and soft x rays at Stanford Synchrotron Radiation Lab, is adjusted by Guillermo Loubriel (right) of Sandia and G. Kaendl of Freie Universität (Berlin).

dations to Bienenstock; Cantor would not tell us what the panel had recommended. Meanwhile, Panofsky has indicated that, in accordance with the SLAC policy of not interfering with research decisions at SSRL, SLAC will fully support Bienenstock's decision. Kennedy has similarly stated that, because the research is unclassified, he sees no violation of Stanford policy and he would also support Bienenstock's

decision.

As this story went to press, Bienenstock was clearly holding the ball. He said, "I want to take time to evaluate the proposal fully, but if it is yes, I will set terms that take into consideration some of the issues raised. For example, there is no chance that we will deviate from the previous policy of making $\frac{1}{3}$ of the beam time available to general users." —JC

Foreign grad students raise enrollment

The enrollments of both graduate and undergraduate physics students seem to be rising from the nadir they had fallen to in the last few years, according to the new AIP manpower survey *Enrollments and Degrees*. The enrollments of US first-year graduate students, however, continue to decline; an overall increase of graduate students results from the growing number of foreign students.

The study, based on data provided by nearly 100% of department heads in the beginning of this academic year, reveals that 4558 students received bachelor's degrees in 1982, up from 4513 in 1981; 1476 got master's degrees in 1982, up from 1387 the previous year; and that while the number of PhDs awarded dipped slightly, the total enrollment of physics graduate students rose to 10 429, from 10 173, between Fall 1981 and Fall 1982. The number of students taking introductory physics courses also rose, 3%, to 287 000.

Foreign students constitute 40.1% of all first-year graduate students, accord-

ing to the survey. This percentage is nearly double the figure ten years ago (21.0%) and up 3 percentage points over the fraction a year ago. Meanwhile, the number of women graduates has risen: 5% more women received bachelor's degrees last year than in 1981, and 10% more women received PhDs (63 out of a total of 912 granted).

Although there are more graduate students, they are attending fewer institutions. During the last academic year, six universities dropped out of the 167 that had physics PhD programs: Colorado School of Mines, Fordham University, the University of Maine, Mississippi State University, the University of Vermont and Yeshiva University. They continue to grant master's or bachelor's degrees. The number of doctorate-granting institutions had only fallen by five in the previous five years.

The survey is available, free, from its author, Susanne D. Ellis, Manpower Statistics Division, AIP, 335 East 45th Street, New York, NY 10017. Request Document no. R-151.20.

Publication of Einstein Papers begins

Publication of the Einstein Papers, based on the 43 000 documents that constitute the Einstein Archive, is, after years of delay, underway. Early in 1984 Princeton University Press will publish the first of some thirty volumes of the *Collected Papers and Correspondence of Albert Einstein*. The first volume, *The Student Years*, will cover the period 1879-1900.

John Stachel, on leave from his positions as professor of physics and director of the Institute for Relativity Studies at Boston University, is the editor. In late 1982 the National Science Foundation, which provided some early money for the project, granted \$120 000 to complete the first volume; an application for a five-year grant of \$1.4 million is pending at NSF. Other resources have included income from an endowment for the editorship provided by Harold W. McGraw, a grant from the Alfred P. Sloan Foundation, and some money

from the Press.

The *Papers* are to include just about all of Einstein's extant writings. (In fact, the search for additional, unpublished writings, especially letters, is an aspect of the project.) The *Papers* will contain over 300 published and unpublished scientific works and at least 400 published articles and interviews on such topics as pacifism, disarmament, nuclear weapons, racism, Zionism, religion and education; almost all the letters Einstein wrote that survive; lecture notes; a few surviving notebooks, and notes taken by some of his students. Many letters written to him and some about him will be excerpted; others will be cited by date and author.

After the first volume, the documents will appear in parallel and extensively cross-referenced volumes of *Writings and Correspondence*. They will both be arranged in chronological order. All the material will be annotated to familiar-

ize readers with obscure people, places and events and to indicate changes or errors in the texts. There will also be generous amounts of background material preceding entries and bibliographies at the ends of the volumes.

The project is intended for the use of scholars: physicists, mathematicians, historians and philosophers of science, and also social and political historians. For a wider audience, to include students, a three- or four-volume English edition of selected documents is planned. It will contain scientific and nonscientific papers and selected correspondence.

One matter that is not yet settled is whether the writings, mostly in German, will all appear in English translation also. NSF would like to see the books contain translations. Stachel, anticipating that translating will almost double the time and cost of the project and increase significantly the length of the volumes, is reluctant to provide them. In the few cases in which documents are in languages other than German or English, they will appear in translation. Translating Einstein's German presents several obstacles. Because of the nature of the project, the translations will take on an authority that will require that they be painstakingly done. Also, according to Stachel, Einstein's deceptively simple German style is not easy to render in English. To see how much time and trouble they entail, translations are being done as an experiment for the first volume.

The project became active in 1977, when Stachel's appointment began. Late that year, disagreements developed between the Trustees of the Einstein Estate and Princeton University Press. The Press wanted Stachel to remain editor-in-chief, while the Estate wanted a board of three equal coeditors, one of whom would have been Stachel. Arbitration and courts confirmed Stachel's appointment. During the dispute, Stachel catalogued and copied the Archive. With the resolution of the dispute, he hired two associates and the editorial work began. In 1982 they sent the original documents to the home Einstein designated for them: the Hebrew University in Jerusalem. Stachel anticipates producing approximately one volume a year. —DG

in brief

The Optical Society of America has created a new standing committee, on laser safety standards, to respond to requests for comment on proposed regulations or legislation. John Bjorkholm (Bell Labs, Holmdel) is chairman. □