GRODZINS

tronomy and astrophysics), to be contrasted with over 1500 in 1970. By 1984 it may, however, drop as low as 850, he says, depending on the marketplace, and could rise as high as 1250.

Grodzins foresees a continued shortage of jobs but believes that if the size of the physics labor force remains constant, the demand will start to exceed the supply in the mid-1980's; in particular the supply of nuclear and particle physicists may well be too low in the early 1980's. However, the supply of theorists will exceed the demand for the foreseeable future, he believes.

Martin Perl of SLAC disagreed with Grodzins's anticipation of a shortage of physicists, noting that the projection assumed that we would have a continual upgrading of physics positions now held by bachelor's holders to PhD holders, a process not likely to continue indefinitely. Further, Perl argued that Grodzins assumed the economy will not worsen, that federal support will not decrease and that total college enrollments will not decrease. (Grodzins agrees that his projections are indeed optimistic if these assumptions are false.) Roland Good (Penn State), who co-chaired the conference with Perl, said, "Although there is less imbalance between supply and demand now compared to 1970, I think the improvement is fragile and can be destroyed by optimism based on perfectly sensible predictions." Indeed Grodzins agrees, saying, "A projection will surely be incorrect if everyone acts as if it will be correct, and yet the converse is not necessarily true."

Harvey Brooks (Harvard University) told the conference that federal funds for academic science had dropped 17% in constant 1967 dollars between 1967 and 1973. Furthermore, the percent change in average starting salaries (relative to annual earning of all industrial workers) for new physics PhD's has declined far more than for other science and engineering professionals (see table).

In his summary talk at the end of three days of lively interaction among the 160 participants, Perl said that even if jobs are plentiful in 1984, the quality of life for physicists will worsen. He said that salaries in real dollars are declining and that they are declining relative to the total work force, as Brooks demonstrated. In spite of the efforts of the American Physical Society Professional Concerns Committee, there has been no substantial change in employee protection for physicists despite improvements for other scientific professionals, he said.

The conference was sponsored by the APS Forum on Physics and Society, the Committee on Education, the Committee on Professional Concerns, and the American Association of Physics Teachers. The conference proceedings will be published by the American Institute of Physics. —GBL

Pimentel and Rutherford nominated to NSF posts

President Carter has announced his intention to nominate George C. Pimentel to be deputy director of the National Science Foundation. He would replace Richard C. Atkinson, the new director of NSF. The President also announced his intention to nominate F. James Rutherford to be assistant director for science education.

Pimentel has been in the chemistry department of the University of California at Berkeley since 1949 and a full professor since 1959. A member of the National Academy of Sciences, Pimentel has worked on infrared spectroscopy and molecular structure, chemical lasers, hydrogen bonding, matrix isolation spectroscopy, infrared study of planetary atmospheres, rapid-scan infrared and thermodynamic properties of hydrocarbons.

Rutherford received an EdD in science education from Harvard University in 1962. From 1964 to 1971 he was involved in science education at Harvard, and was executive director of Harvard Project Physics. Since 1971 he has been chairman of the science-education department at New York University.

Change in average starting salaries

Profession	1964–69 (relative to all industrial workers)	1969–73 (relative to all industrial workers)
PhD in Chem. Eng.	+2.7%	−21.2%
Civil Eng.	—	−19.1
Elec. Eng.	−5.8	−19.3
Math.	−6.6	−24.4
Mech. Eng.	−0.1	−18.2
Physics	+1.0	−28.0
All professors	+7.8	−7.6

Yeshiva to cut graduate physics and mathematics

In accordance with a decision made this summer, teaching programs in physics and mathematics at the Yeshiva University Belfer Graduate School of Science are to be phased out by June 1978. (Chemistry programs had been phased out earlier.) Nearly 70 students and 22 faculty in graduate mathematics and physics will be affected. Nine faculty in each department are tenured.

We spoke with Arthur Komar, the dean of the Belfer Graduate School of Science, who told us the plans for the phase-out. The administration's intentions are as follows: No graduate-level courses will be offered at Yeshiva in physics and mathematics during the 1977–78 academic year, senior graduate faculty will take on a full undergraduate course load with no drop in salary and finally, the graduate students themselves will enter into comparable programs at other universities in the New York metropolitan area. Thesis advising will continue at Yeshiva for the year.

These proposals quickly hit a few snags before the fall semester even began, according to Komar. Primarily problems stemmed from the poor timing of the announcement, which occurred during the summer months when students and faculty were away, and also at a time when course enrollments had been already filled at most schools. If students cannot be accommodated elsewhere, graduate courses may be taught in the 1977–78 academic year. After that year, there might be enough work to accommodate the faculty; so some may leave their positions when the programs are terminated. Komar feels that these problems will not delay the date of the phase-out. A half-million dollars is expected to be saved by the elimination of the two programs.

David Finkelstein, chairman of the

physics department at Yeshiva, confirmed that the administration would have a difficult time carrying out the plan and mentioned that the negotiations with another university to pick up Yeshiva graduate students had faltered, because in general PhD qualifying examinations at one school would not be recognized by another. The faculty had organized to challenge the phase-out by encouraging a protest. If a junior tenured faculty member is fired, the administration has offered a one-year paid leave. Senior members will be invited to take on a full undergraduate course load—if they refuse, they will be fired, according to Ralph E. Behrends, professor of physics at Yeshiva.

Behrends, who has been active in the attempt to organize a faculty protest, told us of his uneasiness about the future prospect of additional hiring in the Maybaum Institute—a research facility at Yeshiva. Research physicists at the Institute, he said, have also been told that their academic responsibilities to graduate students would be ending, but they would be retained as research scientists. Many of these are persons who have their own grants, enabling them to be self-supporting and even revenue-producing in the eyes of the University administration. Behrends said that research will be expanded at Yeshiva and he wouldn't be the least surprised if it was to the point of creating another "Lincoln Laboratory."

—BCC

US–Soviet Cooperation

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between Press and Kirillin. Among those interviewed by the panel were members of the working groups that had been organized under the previous agreement. They include physics, science policy, water resources, microbiology, metrology, forestry, electrometallurgy, chemical catalysis and applications of computers to management.

Program administration under the 1972 agreement was one problem that was addressed before the renewal, according to Anne Keatley, recently appointed senior policy adviser on international relations in the OSTP. A joint commission consisting of agency and government officials from both sides has the primary responsibility for the program, yet the actual administration—such as scheduling meetings, arranging for participants—has been divided between representatives of the National Science Foundation and the Department of State. The Garwin panel noted difficulties in "importing and exporting material, hosting conferences in the US, acquiring translation and transcription services, and proving social reciprocity" as a result of inefficient administration stemming from lack of direct responsibility, authority and funding. Keatley told us that now a special staff has been organized in the NSF's division of international programs as the central coordinating group for the agreement. They will brief working-group chairmen, report information generated by cooperative meetings and produce a newsletter and other publications, concerned not only with science and technology, but also science policy and diplomatic relations.

Even though the Garwin panel did not solicit Soviet views on the agreement for its report, Keatley told us that Press was able to bring up the question of Soviet administrative problems which had also been mentioned by the various working groups. She related Kirillin's comment, "If there are any problems, call me direct." As for the panel's statement that the working groups gave agreement high ratings on politics and culture and low ratings on science, Keatley reported that in the negotiations, guidelines had been set up for new topics that would most likely produce the best results in terms of science and technology exchange—the guidelines, which were not written into the agreement, will be dealt with on a secondary-staff level.

Physics working group activity was reviewed by Hans Frauenfelder (University of Illinois), a member of the Garwin panel, and two special reviewers: Marshall Baker (University of Washington) and Edward Frieman (Princeton University). Overall they reported that "no exchange or substantive interaction has taken place thus far in this working group." The joint commission for the 1972 agreement decided that the organization of joint research projects in physics would be done by the National Academy of Sciences and the USSR Academy of Sciences—it was not until the fall of 1976 that an agreement was reached on the principles of the cooperation and on a set of research projects. From 1972 to 1976, however, a number of joint symposia in condensed-matter theory were held under the auspices of the two academies, thereby establishing contact between physicists of both countries.

The first major activities in physics took place this summer, when a joint research group on condensed-matter physics met in Aspen, Colo., and a joint research seminar on cosmic x-ray sources met in the Soviet Union.

Organizational problems had been anticipated in advance and arrangements were made to avoid them. In October 1976, David Pines (University of Illinois), chairman of the working group, and Conyers Herring (Bell Laboratories), had met with G. K. Skryabin, chief scientific secretary of the Soviet Academy, and A. A. Kulakov, head of the Soviet Academy's foreign department. Together they decided that arrangements for research groups and seminars—specific topics and participants—had to be decided and agreed upon six months in advance. This was how plans were made for the Aspen and relativistic astrophysics meetings.

Mark Azbel is in Israel, having waited five years for an exit visa from the USSR. Azbel, a refusnik physicist, has assumed his position as professor of physics at Tel Aviv University. The Committee of Concerned Scientists provided this photo and told us that Azbel is planning a tour of the US this fall.

The US/USSR joint research group met in Aspen 4 July–29 August. The research group included 12 Soviet physicists (the same number that was scheduled in advance) and 25 American physicists. Some of the topics discussed by the participants were superfluid helium-three, electron–hole droplets, organic conductors and one-dimensional systems. Pines, an executive committee member for the research group, commented that this was the first time "a major group of extremely able condensed-matter Soviet physicists" had worked for an extended time period in the US in a cooperative endeavor. He told us also that 12 joint papers had been written during the eight-week period. The twelve participants from the USSR were G. B. Volovik, I. A. Fomin, V. A. Mineyev, G. Kharadze, Ya. Yb. Pokrovskij, V. B. Timofeyev, L. P. Gorkov and D. M. Gorkova, A. I. Larkin, I. F. Shchegolev, I. Kulik and A. A. Migdal. Co-chairmen of the group were Gorkov (Landau Institute of Physics) and J. Robert Schrieffer (University of Pennsylvania).

During August the joint research seminar on cosmic x-ray sources met in an informal setting at Protvino, near Serpukhov. Twenty-five leading Soviet astrophysicists discussed with thirteen Americans such topics as x-ray bursters, pulsating x-ray binaries, globular clusters, accretion onto magnetic neutron stars and the possibility of using x-ray astronomy to determine the structure of neutron stars. The senior Soviet participants