Polish Science Struggles On

Continuing exchanges between the United States and Poland are used ingeniously to help beleagured Polish scientists

During the past few years of political and economic turbulence in Poland, the scientific community has not been immune to the difficulties afflicting the country as a whole. Scientists have faced severe shortages in supplies, cutbacks in communications of all sorts with the West, direct political oppression, and widespread dispiritedness.

Yet, despite this, Polish science is still very much alive, albeit with some of its liveliest exponents now feeling forced to do science outside Poland. Among this group, however, only a small number consider themselves permanent refugees. And a considerable fraction is made up of scientists who are away from Poland with official permission to participate in exchange programs, many of which are surprisingly unscathed despite the troubles in Poland and its strained relations with the United States (see box, p. 146). But if the Polish scientists outside their country's boundaries have shown resiliency in pursuing their research, many of them also express bitterness about the fate of their colleagues still in Poland who have faced hardships or, in some cases, been imprisoned during part of the period since December 1981 when martial law was imposed.

Formidable economic and political obstacles have not extinguished the stubborn, idiosyncratic spirit that has helped align the Polish scientific community—more so than that of any other Eastern Bloc country—with its counterparts in Western Europe and the United States. Thus it is no surprise that the Solidarity movement that was at a peak in 1981 was very much felt by the scientists at universities and research institutes throughout Poland. And, before that movement was established, several Polish scientists and mathematicians (and others from the humanities) also were involved in founding the Worker's Defense Committee, called KOR, which disbanded voluntarily when Solidarity took over its principal functions.

Leaders of both these groups have been interned during much of the period since martial law was imposed and remain so now, even though martial law has been lifted. The imprisoned leaders of KOR include physicist Zbigniew Romaszewski and mathematician Henryk Wujec. Another group awaiting trial, called the Solidarity 7, contains several Poles with technical training, including Andrzej Gwiazda, Jan Rulewski, and Grzegorz Palka.

Both groups were originally charged with planning to overthrow the government by force. But in October 1983 the indictments were changed to conspiracy, meaning the accused face less severe penalties. At one point, the Polish government announced that, if a Western country would accept the accused, they would be free to go. But, according to one Polish scientist currently in the United States, "These leaders want amnesty and the charges dropped. As a matter of principle, they're not interested in leaving the country." Indeed, one KOR founder, historian Jan Lipski, was outside Poland when warrants were issued for his arrest but voluntarily returned "to prove his innocence." Although some of the accused have been imprisoned for about 2 years, no trial date is set. Some close observers doubt there will be a trial, noting the government already has put it off several times and that, if it occurs, the accused are likely to "make mincemeat" of the prosecutors. Meanwhile, many international groups have publicly or privately sent messages to the Polish authorities on behalf of the accused.

During the early weeks of martial law in late 1981 and early 1982, several hundred scientists and engineers with less obvious political leanings also were detained in the general crackdown. Many of them soon were released, but arrests have continued. Some scientists have fled or remained outside of Poland to avoid arrest.

The experience of fluid dynamicist Ryszard (Richard) Herczynski provides a vivid example of how scientists have struggled with the Polish authorities during the past few years. Herczynski's story is additionally important because it sparked an incident between the Polish and U.S. governments, leading to the expulsion from Poland of two embassy officials in 1982 and to the formal suspension of certain cultural exchange programs, including travel funding and other support for major scientific programs between the two countries.

Herczynski and Stanford University chemical engineer Andreas Acrivos submitted their first joint research proposal to the U.S. National Science Foundation in 1976. After protracted negotiations, supported by the NSF but stalled possibly for political reasons by the Polish Academy of Sciences, the collaborative effort was approved in 1980. During this period, Herczynski traveled to the West and made many friends among his pro-

KOK–Gamma

A silent vigil to support Solidarity, held outside Warsaw University in 1982.

U.S. Exchange with Poland

The cultural and particularly the scientific exchange programs between Poland and the United States have been extensive, exceeding those with any other Eastern Bloc country, including the Soviet Union. Somewhere between 500 and 1000 Polish scientists per year have been visiting the United States—often accompanied by their families—to participate in various exchange programs, and that volume has not been affected all that much by the formal suspension in 1982 of certain federally managed exchange programs.

The National Science Foundation, the National Institutes of Health, and the Department of Agriculture have participated in extensive joint ventures to support collaborations with Polish scientists. During the 1970's through 1981 this joint program flourished, according to Deborah Wince of NSF who helped nurture it. Between 1971 and 1976, for example, NSF awarded well over the equivalent of $6 million in Polish zlotys (from a fund derived from a U.S.-trade surplus eligible for this use under Public Law 480) to Polish universities and institutes.

On 11 December 1981, 2 days before the Polish government instituted martial law, Polish and U.S. officials signed a document authorizing a new program to be funded in part directly from the United States rather than with Polish zlotys. Because of martial law, this new program has not been

The 1981 signing of never implemented U.S.-Polish science exchanges.

implemented—although it is merely suspended, not rescinded. A presidential decision is needed to reinstate the program, a possibility that President Reagan is said to be considering.

Despite the official cooling off between the two countries, many exchange programs have continued to operate. Several independently operated programs, including that run by the Kosciouszko Foundation (which sponsors exchanges mainly in the humanities) of New York, the Church of the Brethren (which sponsors research and training exchanges in agriculture), the Fulbright program, the International Research and Exchanges Board (which arranges a total of 60 person-months per year of exchanges in either direction, almost half of that in the social sciences), and a program run by the National Academy of Sciences, have run at normal or near-normal levels throughout the period of difficulties. Thus exchanges take place, even though money has grown scarcer while red tape and the uncertainties it engenders have increased.

The big issue on the minds of many people is whether the official sanctions against Poland have outlived their usefulness. Some observers argue forcefully that continuing the sanctions now is counterproductive, serving to hurt and possibly to alienate an influential segment of Polish society that traditionally has looked to the West for partnerships. Leaving barriers between U.S. and Polish scientists thus may do double damage, it is argued. Those barriers not only isolate an important group of Poles or, worse, will eventually drive them to seek help from other Eastern Bloc countries, but they also cut off American scientists from a high-caliber group of colleagues whose contributions have been of considerable value over the years.—**J.L.F.**

fessional colleagues. Moreover, during the Solidarity period, he was involved with other Polish scientists who were trying to create an organization to be "a true academy of science," whose members were to be determined strictly by scientific merit.

These earlier activities undoubtedly helped set the stage for Herczynski's dramatic confrontation with Polish authorities (*Science*, 28 May 1982, p. 966). In May 1982 two U.S. officials, one of them former science attaché to Poland John Zerolis, were meeting with Herczynski when Polish police came into his apartment and accused them of "endangering the security of the Polish state." The U.S. officials were expelled from the country, and Herczynski was tried and eventually sentenced to 16 months in prison. After serving about 1 year, he was released during the general amnesty of July 1983. Although there were additional difficulties to face during the months in prison because of his heart condition, he was "treated relatively well," says his son Andrzej, currently a physics graduate student at Lehigh University in Pennsylvania. The authorities "allowed him to write a book on blood circulation. You might say this is very typical of Poland," the younger Herczynski says. "The best Polish scientists can't work, or they do so against all odds—either by being imprisoned or being forced out altogether."

Though some Polish scientists have left their country for political reasons, many more have come to the West because it is the most practical way to continue doing science. The difficulties of working inside Poland vary according to one's research specialization. In experimental fields where a steady flow of equipment, spare parts, and other supplies from the West is essential, it is next to impossible to conduct research. One Polish physicist explains that he remains in the West in part because his experiments require being in constant contact with others in the same field. In Poland now, "I could spend years to solve a problem that a simple phone call would solve in minutes," he says.

But even in research fields where a pencil and paper ought to be adequate for doing theoretical computations, there is frustration because current scientific journals are in scarce supply, if available at all. This shortage is further exacerbated because access to copying machines is severely restricted. Polish authorities are said to fear that such devices will be misused for duplicating underground newspapers, which nonetheless are in ample supply.

Research supplies and scientific journals from the West are not embargoed per se, but they cannot be purchased because there is not enough "hard" currency, meaning dollars or other Western currency, to do so. One consequence is that more Poles rely on Soviet scientific publications, which are inexpensive.

"The majority of the science faculty are giving up trying to do work," says one American scientist who visited Poland during 1983. "Those still trying face tremendous obstacles. They must order chemicals a year in advance sometimes, so they have to beg, borrow, or steal chemicals to do any work." Laboratories resemble "chemistry labs of the 1920's, where everything was made from scratch," he continues. "In chemistry, biochemistry, and physics, it's difficult to sustain research projects that have any meaning." The exception to this generalization is that some Polish scientists, who have contacts in the West, receive vital supplies through an aboveboard but thoroughly ad hoc system managed by understanding friends outside the country. The system includes many Polish scientists now working in the West, some of whom set aside part of their salaries to benefit the research of their colleagues at home.

For some programs, this informal supply system makes the crucial difference between disaster and workable conditions. But this outside effort serves another purpose. "A basic problem is to maintain a certain level of knowledge," explains one Polish molecular biologist who hopes someday to return. "If people are cut off, at some point they stop understanding the current literature. Scientists are going outside to stay current and then teach young people." Although this scientist and others are cynical about the Polish government's intentions in granting them relative freedom to go abroad, they say it eventually will help to rebuild Poland's research capability. "It's rare the authorities behave reasonably," this scientist adds wryly. "Perhaps this is one instance."

Though the scarcity of crucial supplies hampers research in Poland, some observers point to other equally important impediments. "Everyone is despondent and depressed, so they're not working but sitting around drinking tea and reading underground newspapers," says one American who visited Poland in mid-1983. "Also, people don't get enough to eat and can't think straight.

"A scientist who was trying to work told me," this same American continues, " 'You have to be very mature, stable, and highly motivated to do science in Poland right now. Look, we tried [to change the political system], but it didn't work. It doesn't help to spend time writing manifestos at the expense of doing your work.' "

"The euphoria of 1981 has changed to resignation," says John Romberger, a retired U.S. Department of Agriculture scientist who has been to Poland several times during the past 15 years—most recently last month. Nonetheless, he points out, some research groups are maintaining active programs. In some cases, this involvement in science is used by individuals as "an escape from reality," he says. Romberger's observation is amplified by a Polish scientist now working at a U.S. university, who says about his colleagues at home, "If a scientist [continues working], it's easier to keep a balance in that terrible environment, so one is not closed within the miserable political and economic conditions. For some, it's the only thing to keep them from going crazy." At his institute, scientists went back to work "right after the tanks left the streets."

This Polish scientist says that his former institute has remained relatively untouched by the current troubles, and thus a fair amount of research still is getting done there. But in the same breath, he warns not to mention its specialty, location, or anything that might risk bringing attention to it and perhaps jeopardizing its chances to continue. His fears are justified say other colleagues who point to politically more visible institutes, particularly the Institute for Nuclear Research, that have not fared so well. Late in 1982, the government officially dissolved that Institute, breaking it into three separate units—a procedure that was used to fire some of the Institute's scientists and harass many others.

Recounting such instances makes the Polish scientists now in the United States feel gloomy about the near future in their country. Laws, which have been largely unenforced so far, specify that university appointments are to be made not only on an academic basis but also on moral and political grounds. "If this policy is enforced, it will become possible to eliminate everybody who in the smallest way disagrees with present policies," one scientist points out. However, the scientific community may be spared such interference because it represents an "altogether marginal problem for the government compared to what the authorities face in the factories."

A chemical engineer, who was forced to leave Poland, recently learned that some of his former colleagues and friends were made to leave their positions because of their "political attitudes." Others, who still have jobs, lack money and equipment needed to continue working. "When I think of the colleagues I left, it makes me feel really sick," he says. Another Polish scientist adds, "Scientists in the United States should give support to their colleagues in Poland. It's important for the development of progress. . . . In Poland academic freedom is not completely gone."—**JEFFREY L. FOX**

Seeds of Dissension Sprout at FAO

Third World nations vote change in system to conserve germ plasm over objections of industrial countries which fund the program

A simmering dispute over international arrangements for conserving world plant genetic resources boiled over at the general meeting of the U.N. Food and Agriculture Organization (FAO) in Rome in November. Third World countries won approval of a proposal designed to give them more influence in a system in which the industrialized countries, which provide principal support for the activities, exercise major control. The effect of the action remains unclear because the willingness of the donor nations to continue to participate is uncertain.

The debate is another face-off over what militant less-developed countries (LDC's) see as the use by Western in-