# Peace Prize Shared by Physicist of Conscience and Pugwash Movement Founded to Avert Nuclear War

The irony is too obvious to miss. The international prize named for the inventor of dynamite was shared this year by an organization dedicated to ridding the world of nuclear arms and its sole surviving founder, Joseph Rotblat. A Polish-born British physicist, Rotblat was the only person to resign from the Manhattan Project on moral principle, more than six months before the first bomb was tested. Since then he has been a vigorous crusader for world arms control.

In awarding the prize to Rotblat and the Pugwash Conferences on Science and World Affairs, which he helped organize 38 years ago, the Norwegian Nobel Committee hailed them "for their efforts to diminish the part played by nuclear arms in international politics and in the longer run to eliminate such arms." By honoring Rotblat and Pugwash it also wanted to send a pointed protest against recent tests of nuclear weapons by France and China, said Francis Sejersted, professor of economics and social history at the University of Oslo and chairman of the five-member Nobel committee appointed by Norway's Parliament. Although one French politician declared himself "perfectly scandalized" by the committee's statement, the French government cabled Rotblat its congratulations.

After he was notified of the award, Rotblat took a stroll around his London neighborhood of Cricklewood "to collect my thoughts." He spent the next 11 hours in interviews. He hoped, he said, the decision to award the prize jointly to himself and Pugwash "will encourage scientists to think seriously about the social implications of their work and devote a little of their time to address the dangers of science for society."

Rotblat began protesting the atomic bomb even before the public knew it existed, according to his memoir published in the *Bulletin of the Atomic Scientists* in August 1985. Rotblat had been studying inelastic neutron scattering in Warsaw in 1939 when news of the discovery of fission in Germany reached him. Having worked with uranium, he set up an experiment to determine whether neutrons are emitted during fission, and he quickly calculated that a chain reaction was not only possible but would cause an unprecedented explosion. That same year he received a grant to work with James Chadwick at a cyclotron in Liverpool University in England, where he soon found himself on a team with Otto Frisch, who measured the fast-neutron cross section for uranium-235.

JOHNNY EGGITT/AGENCE FRANCE-PRESSE

ROTBLAT: Recognized as a pathfinder to world arms control.

Rotblat was recruited with Chadwick and other British physicists to work on the Manhattan Project in Los Alamos. As he wrote in his memoir, he participated because he believed the Germans had their own bomb project and he wanted to deter them from using such a weapon. In hindsight, Rotblat wrote, he now sees the "folly" of attempting to deter Hitler if he had had the bomb.

At a dinner at Chadwick's house one evening in March 1944, he heard General Leslie Groves, the Manhattan Project's military commander, mention that "the real purpose in making the bomb was to subdue the Soviets." He decided that Groves's casual remark, along with mounting evidence that the war in Europe would be won before the US bomb could be ready, "made my participation pointless." Rotblat asked for permission to quit and return to England, whereupon he was accused of being a spy for the Soviet Union. The allegation, he wrote, was "a load of rubbish," though Rotblat admitted it contained "a grain of truth" because he had broken security regulations on several occasions to meet a friend in Santa Fe, New Mexico, without Army approval. According to Rotblat, the Los Alamos security chief used this breach of protocol to pressure him into silence about his reason for leaving. His colleagues didn't learn for decades that he left the project in protest.

His experience at Los Alamos, Rotblat wrote, "radically changed my scientific career and the carrying out of my obligations to society." He chose an aspect of nuclear physics that he decided "would definitely be beneficial to humanity." Rotblat became a professor of physics at St. Bartholomew's Hospital Medical College in London to do research on medical radiation.

In 1951, during a nuclear physics conference in Chicago, Rotblat, Leo Szilard and the editor of the *Bulletin of the Atomic Scientists*, Eugene Rabinowitch, decided it might serve the cause of world peace to discuss nuclear arms control directly with Soviet scientists. But the increasingly chilling atmosphere of the cold war made such an idea seem far-fetched.

Then in 1955 Bertrand Russell is-

sued a manifesto calling on the world's scientists to "assemble in conference to appraise the perils of weapons of mass destruction." It was signed by Albert Einstein two days before his death and by nine other scientists, including Rotblat, Max Born and Hideki Yukawa. Within days an eccentric millionaire named Cyrus Eaton offered them the use of his summer estate in the tiny Canadian fishing village of Pugwash in Nova Scotia for such meetings. "At first Russell thought it was a joke," Rotblat recalled, because in England the name Pugwash was associated with an indolent comic-strip character. Eaton covered the expenses of the first meeting in July 1957, and because there were no hotels in the region, he sent in three sleeping cars from his Chesapeake & Ohio Railroad to accommodate the 22 participants from 10 nations.

Since that first conference, some 200 conferences, workshops and symposiums organized under the banner of Pugwash have attracted a total of more than 10 000 scientists, academics and military and political figures. Participants are invited in a personal capacity, not as representatives of their government, university, research center or think-tank. The meetings are closed to the press and public to encourage free-ranging discussions of politically sensitive issues and proposals, and only a summary report is issued at the end.

This strategy has paid off in influencing a series of agreements that reduced world tensions during the cold war. Pugwash meetings laid the groundwork for the Partial Test Ban Treaty of 1963 and the Non-Proliferation Treaty of 1968. At the 1967 Pugwash meeting, leading Soviet scientists, including Lev Artsimovich and Peter Kapitsa, agreed that developing antiballistic missiles would endanger national and world security. Their views contributed to shifting Soviet policy away from support for ABMs toward the 1972 Antiballistic Missile Treaty.

Pugwash is really part of a larger movement of scientists. That includes the founders of the *Bulletin of the Atomic Scientists*, the Federation of American Scientists and the Council for a Livable World. Their mission has lost some of its momentum over the decades, but only because many of the principles and policies proposed by the scientists have been widely accepted by civilized nations. The scientists and engineers contributed to winning the battle.

Rotblat has been closely identified with Pugwash, acting as its secretary-general between 1957 and 1973 and as chairman of British Pugwash from 1978 to 1988.

Much of the almost $1 million in prize money, to be shared equally by Rotblat and Pugwash, will go toward rescuing the organization from a permanent state of penury, due largely to its refusal to accept funding from governments. In recent years its major donor has been the John D. and Catherine T. MacArthur Foundation in the US but contributions also come from other foundations, individuals and national Pugwash committees and academies of science around the world.

IRWIN GOODWIN

## New Order at Bell Labs After AT&T's Breakup

The future of Bell Laboratories is beginning to take shape, following the uncertainty that accompanied the surprise announcement on 20 September of AT&T's voluntary breakup into three separate companies, with separate stocks and separate "bottom lines."

Most of Bell Labs' scientists and engineers—all but 6000 of the 26 000 now there—will become part of what insiders are calling Company B, the $20 billion business that will be responsible for manufacturing telecommunications equipment. The new head of this company is Henry B. Schacht, the former chairman and chief executive officer of the Cummins Engine Company. His second-in-command is Richard A. McGinn, who had been in charge of AT&T's Network Systems Unit and now is president and chief operations officer.

Bell Labs, which will comprise one division of Company B, is committed to becoming more commercially oriented, according to McGinn. On 16 October Daniel Stanzione, who was president of AT&T Network Systems' Global Networks Unit before being made president of Bell Labs last December, named Arun Netravali to be the new vice president of research. Netravali is an electrical engineer and expert in broadband networking and the up-and-coming digital-video technology. A native of India, Netravali earned master's and doctorate degrees in electrical engineering at Rice University and then did control and guidance engineering on the space shuttle program until he joined Bell Labs in 1972. Prior to his new position, he was vice president of communications sciences research and of the internal quality, engineering, software and technologies organization.

Netravali replaces Arno Penzias, who with Robert Wilson discovered the cosmic microwave background radiation in 1965. Penzias remains a vice president and has an additional title of chief scientist, but it is the 49-year-old Netravali who will now lead the 1400 people engaged in fundamental research at Bell Labs. The number of such researchers has stayed nearly constant for ten years, but the emphasis has changed. There is more work now on information and computer sciences, and less in more traditional fields such as physics.

## Wissbrun Is President of Society of Rheology

The Society of Rheology recently elected two new leaders: Kurt F. Wissbrun, who succeeded Robert C. Armstrong of MIT as president, and Ronald G. Larson, who succeeded Wissbrun as vice president. The new officers began their two-year terms during the organization's annual meeting in October.

Wissbrun received his BS in 1952 from the University of Pennsylvania and his MS and PhD in physical chemistry from Yale University in 1953 and 1956, respectively. He then joined Celanese Research Co (now Hoechst–Celanese), where he eventually became a senior research associate. His work there focused on the polymer science and engineering of synthetic fibers and plastics. Since his retirement in 1990 Wissbrun has been a consultant in Summit, New Jersey.

The new vice president, Larson, is a distinguished member of the technical staff at AT&T Bell Laboratories in Murray Hill, New Jersey. He holds a 1980 PhD in chemical engineering from the University of Minnesota.

In other results of the SoR elections, Andrew M. Kraynik of Sandia National Laboratories was reelected secretary, and Edward A. Collins of Avon Lake, Ohio, was reelected treasurer. Two new members-at-large were also chosen: Gerald G. Fuller of Stanford University and A. Jeffrey Giacomin of the University of Wisconsin—Madison.

## *Journal of Rheology* Gets a New Editor

In the recent elections of the Society of Rheology (see previous story), Morton M. Denn was chosen editor of the *Journal of Rheology*. He had been interim editor since August, when Arthur B. Metzner resigned.

Metzner, professor emeritus of chemical engineering at the University of Delaware, had served as editor since 1985. He decided to retire, he said, because "I firmly believe that