

cists, journalists, foreign diplomats, members of Congress and foundation leaders in the Great Hall of the National Academy of Sciences. The occasion also provided the first opportunity for Sakharov to sign the academy's members register since his election as a foreign associate in 1973. He was introduced in a moving tribute by Sidney Drell, deputy director of SLAC (see box below). Speaking in Russian, with an accompanying translation in English, Sakharov said he had listened to Drell's remarks "with a great deal of inner turbulence and distur-

bance." In 1983, he recalled, he had sent Drell an open letter, "Threat and Danger of a Thermonuclear War," in which he had expressed "all my anxieties about the present and future." That was the year of "the greatest pressure," he said. It was marked by a "libelous and abusive book, printed in 11 million copies, in which my name and the name of my wife were trampled in the mud. It also was the year in which four members of the Soviet Academy denounced me and my open letter. At the same time, I am moved never to forget the un-

equivocal support of this American academy."

As far back as 1973, Sakharov's leadership in defense of human values resulted in official denunciations and humiliations—though such colleagues as Pyotr Kapitza adamantly refused to sign any statement denouncing Sakharov. In 1980 he was forcibly removed from his modest apartment in Moscow to a guarded house in industrial Gorki for opposing the Soviet invasion of Afghanistan. That year the street in front of the Soviet embassy in Washington was

Celebrating Sakharov

For the 150 guests it was a memorable occasion. They had come to the Great Hall of the National Academy of Sciences on a rainswept Sunday night last 13 November to honor Andrei Sakharov on his first visit to the US. Elected a foreign associate in 1973, Sakharov at long last was able to sign the official registry of membership, which bears the signatures of members going back to 1863, when Congress selected the first 50 scientists. Sakharov received a three-minute standing ovation after he was introduced by Sidney D. Drell, deputy director of SLAC and codirector of Stanford University's Center for International Security and Arms Control. Excerpts of Drell's moving tribute follow:

Andrei, I always dared to hope—as did many of your friends and colleagues around the world—for this moment when you would be free to visit our shores and join us in this great Academy—which, since your election in 1973 as a Foreign Associate, is yours as well as ours. Still, as I look back over the arduous and at times tortuous path you had to travel to get here, this occasion seems to me to be as close to a miracle as I ever expect to witness. The recent changes in your country that have made possible your visit offer the further hope that our two great nations will embrace common principles of human dignity and mutual respect and that they will continue moving away from chilling confrontation toward constructive cooperation, the better to meet the challenges to the survival of humanity.

Twenty years ago Andrei Sakharov published his remarkable essay on "Progress, Coexistence, and Intellectual Freedom." The two basic theses which he developed in this essay are (1) the division of mankind threatens it with destruction and (2) intellectual freedom is essential to human society. His arguments remain as valid and compelling today as they were when they first appeared. This essay publicly marked Sakharov's emergence from the laboratory where he had worked as a scientist. It was soon followed by further writings and speeches of great impact, and Andrei became recognized not only as a scientific leader in search of nature's principles for the properties of matter, but also as a moral leader in search of ethical principles for a humanity striving for peace, for progress, and for basic human dignity.

From 1968 up to the present Andrei has continued to speak out—forcefully, courageously, persistently, and wisely on the main issues of our times. . . . He risked everything and sacrificed much in his support of prisoners of conscience and his opposition to oppression wherever it occurs in the world. In his devotion to truth and human dignity and his defense of the freedom of the human spirit Andrei has become, in the words of his 1975 Nobel Peace Prize citation, "the spokesman for the conscience of mankind."

Human history has been inspired and ennobled by the occasional occurrence of figures of indomitable courage. Each of us has our own personal honor roll of those rare individuals whose lives have become morality plays with the dimensions of an historical epic, the theme of which is the struggle between conscience and principle on the one hand and raw political power on the other. Andrei stands tall in my honor roll of those giants who have been driven to do battle for principle in the manner described so eloquently by the young lawyer, Gavin Stevens, in William Faulkner's *Intruder in the Dust*:

Some things you must always be unable to bear. Some things you must never stop refusing to bear. Injustice and outrage and dishonor and shame. No matter how young you are or how old you have got. Not for kudos and not for cash: your picture in the paper nor money in the bank either. Just refuse to bear them. . . .

Andrei is most widely known for his courageous leadership in the defense of human principles that we hold dear and as the father of the Soviet hydrogen bomb. But you should also know that he is a great scientist whose brilliant career as a theoretical physicist is distinguished by seminal research contributions to fundamental physics, including the behavior of plasmas and the properties of elementary particles.

In 1950 Andrei, together with Academician Igor Tamm, an internationally honored and greatly admired former leader of Soviet physics and Andrei's teacher, wrote the pioneering paper in the controlled fusion effort in the Soviet Union. In this paper they introduced a confinement scheme for a hot plasma that is famous today under the name Tokamak. . . .

Andrei also made a contribution of crucial importance to our quest to understand the evolution of our universe following its physical beginnings in the "big bang" of 18 or so billion years ago. The problem he addressed is this: Physicists know that for each form of matter, there also occurs antimatter—for example, electrons and positrons, protons and antiprotons. Antimatter is a necessary consequence of joining the general principles of atomic theory—that is, the quantum theory—with Einstein's special theory of relativity. But we must wonder then what has happened to all the antimatter. In our universe—or all we can see of it as we peer far out into space to receive signals just arriving from distant events that occurred ten or more billions of years ago—why are the massive systems of stars and galaxies made almost exclusively of matter and not antimatter?

Andrei provided the clue for understanding this in 1968—the same year he published his original essay on "Progress,