reactors in the former Soviet Union and Eastern Europe are safe to operate?

I do not support increased reliance on nuclear power. There is good reason to believe that we can meet our future energy needs through increased energy efficiency and use of natural gas and renewable energy without having to face the uncertainties of nuclear waste disposal.

Unsafe nuclear power reactors in Eastern Europe and the former Soviet Union are a serious concern. As a nation we should be providing what technical expertise we can to help make sure such reactors are safe to operate. We also should be helping the countries of Eastern Europe and the FSU become more efficient users of energy, so that they can gradually reduce their reliance on nuclear power.

9. *Given the collapse of the USSR and the reemergence of extreme nationalism and ethnic conflict in parts of the world, what should be the US position on nuclear arms control and nuclear nonproliferation? Is the conclusion of a comprehensive nuclear test ban treaty an important objective now?*

The end of the cold war leaves two great tasks for American arms control policy: firstly, to halt the spread of nuclear, biological and missile technologies to countries that do not have them; and secondly, to turn the legacy of the cold war into an effective strategy for the post-cold war era. Toward that end, nonproliferation will be a high priority of intelligence agencies in the Clinton–Gore Administration. We should ratify the Strategic Arms Reduction Treaty and the follow-on agreement of June 1992. And through a phased approach, the US should lead the effort to achieve a worldwide comprehensive test ban.

In an effort to stop nuclear proliferation, we must demand that other nations tighten their export laws and strengthen enforcement of policies regarding nuclear weapons, and lead a strong international effort to impose sanctions against companies or countries that spread these dangerous weapons. And we must bolster the International Atomic Energy Agency's capacity to inspect suspect facilities through surprise inspections in member countries. Without question, the US must strengthen safeguards to ensure that key nuclear technology and equipment are kept out of the grasp of any would-be aggressor.

10. *The number of American students willing to endure the rigors of education in science, math and engineering has declined in recent years. The problem is particularly acute for female and minority students. Many students who choose to pursue a career in science arrive at college poorly prepared by comparison with students from other countries. What can an Administration with you at its head do to improve the situation?*

To encourage students to choose study in the demanding fields of science, math and engineering, we need to ensure not only that they arrive at college academically prepared, but also that they have some assurance that jobs in these fields will be available for them upon graduation. It is no accident that improvements in K–12 education are an important part of the national economic strategy we have proposed for this country.

My commitment to educational reform can best be seen by my record as governor of Arkansas. One component of my reform was to add more math and science courses to high schools and to seek improvement in math and reading test scores. In the past decade, we have made great strides. While only 5100 students were enrolled in advanced math courses in 1983, more than 75 000 were enrolled in 1991. While the percentage of high school seniors who went on to attend colleges in Arkansas was under 38.2 in 1982, by last year the percentage increased to 51.3. In addition, Arkansas now ranks fifth in the nation in the ratio of computers to students in schools.

In the first 100 days of a Clinton–Gore Administration, we'll give Congress and the American people a real educational reform package. This package would include fully funding Head Start and other programs; establishing tough national standards and a national examination system to measure if those standards are met; and working to achieve by the year 2000 what the nation's governors set forth at their 1989 education summit in a report titled "National Education Goals"—one of those goals being that students should be knowledgeable in math, science, language, history and geography when they graduate from any American high school.

HOUSE COMMITTEE AND CARNEGIE PANEL SEEK MORE RELEVANCE FROM RESEARCH

With the end of the cold war and with the dismal outlook for the funding of science and technology, a critical mass is developing in Washington that traditional assumptions about government support of research must be reexamined. Demands that publicly funded research should yield more immediate economic and social benefits come from highly placed yet strangely disparate sources—from Frank Press, president of the National Academy of Sciences, to Barbara Mikulski, the Maryland Democrat who heads the Senate subcommittee that rules over the budgets of the National Science Foundation and NASA. The directors of two agencies principally engaged in basic research, NSF and the National Institutes of Health, are crusading to remake themselves more relevant (PHYSICS TODAY, September, page 53). The latest clamor for relevance comes from George E. Brown Jr, chairman of the House Committee on Science, Space and Technology, and from a task force of the prestigious Carnegie Commission on Science, Technology and Government.

When he released his report on the "health of research" on 15 September, Brown insisted that he was not arguing for more "directed" programs, such as those funded by the Department of Defense and Department of Agriculture. He was concerned, he stated in a brief introduction to the staff-written report, that while government support had contributed to "the world's most innovative and productive scientific research system," this did not ensure that the US could deal with "wide-ranging societal crises . . . in our educational system, our environment, our manufacturing sector, our health care system, our inner cities, our financial institutions, even our system of government." As Brown put it, "This paradox—growing knowledge, accompanied by growing societal crises—implies a complex, nonlinear relationship between advances in knowledge and advances in society."

Brown's report is in itself the introduction to a far-reaching examination of some dogma: that research performed by individual investigators is the best way to produce new ideas; that basic research should be carried

out mainly at universities; that undirected, unfettered research is the principal source of the knowledge eventually leading to technological invention and economic growth.

Questions relating to those rubrics will come up as Brown's House committee seeks to determine whether the research policy designed 45 years ago is still appropriate for applying science and technology to society's current goals. Over the next year, the subcommittee on science chaired by Representative Rick Boucher, a Virginia Democrat, will conduct a series of hearings to debate the basic premise of US science policy. In this connection, the conclusions of the Carnegie Commission urging Congress, the White House Office of Science and Technology Policy and the Office of Management and Budget to take an active role in establishing Federal science and technology goals and to monitor the progress of Federal departments and agencies in attaining them are sure to be challenging and unsettling. —IRWIN GOODWIN

WASHINGTON INS & OUTS

TWO NEW FACES AT CSIS; CHANGES AT SPACE COUNCIL, DOD

Harold Brown, who has held many prominent positions in government and academe since earning his PhD in physics from Columbia University in 1949, has joined the Center for Strategic and International Studies, a Washington think tank, as counselor in residence. From 1952 to 1961 Brown was director of the Lawrence Radiation Laboratory at Livermore, where work concentrated on nuclear explosives and controlled fusion; from 1961 to 1965 he was director of defense research and engineering at the Pentagon. President Lyndon Johnson then appointed him Secretary of the Air Force, a post Brown held until the end of Johnson's Administration. For the next eight years Brown was president of Caltech. Seeking to fill a sensitive Cabinet chair with someone of strong technical capabilities who had the respect of the Pentagon and Capitol Hill, President Jimmy Carter, on entering the White House in 1977, selected Brown as his Defense Secretary. When Carter lost his bid for reelection, Brown joined The Johns Hopkins University School of Advanced International Studies, first as Distinguished Visiting Professor, then as chairman of its Foreign Policy Institute. He also became a partner in the New York investment banking house of E. M. Warburg, Pincus and Co, and a member of the boards of IBM, CBS, Cummins Engine, AMAX, Philip Morris and Mattel.

Another new member of CSIS is **Peter D. Zimmerman,** whose title is senior research associate. Prior to joining CSIS, he was a member of the physics faculty at George Washington University. A nuclear physicist who received his PhD from Stanford in 1969, Zimmerman was on the faculty at UCLA and Louisiana State University and has worked at Fermilab, the Institute for Defense Analyses, and the Carnegie Endowment for International Peace.

CSIS is an independent, nonpartisan study group founded in 1962 to analyze issues in economics, military security and science and technology. Among its principal members are Fred C. Ikle, former director of the US Arms Control and Disarmament Agency and under secretary of Defense for policy in the Reagan Presidency; James R. Schlesinger, at various times Secretary of Energy, Secretary of Defense and director of the CIA; and Dov Zakheim, assistant secretary of Defense for policy matters in the Reagan years.

In June **Brian D. Dailey** took over the influential post held by **Mark J. Albrecht,** who was executive director of the National Space Council, chaired by Vice President Dan Quayle. Dailey had been a member of the Republican staff of the Senate Armed Services Committee. One of Dailey's first duties at the Space Council was to accompany NASA's new administrator, Daniel S. Goldin, to Russia in July to discuss a collaboration in space research.

Albrecht has become senior manager in the Washington office of Science Applications International Corp, a science and technology consultancy based in San Diego. SAIC is one of the principal contractors for the Pentagon's Strategic Defense Initiative Organization. Albrecht worked there as a policy analyst in 1981 after earning his PhD in international relations and working for a year with the Central Intelligence Agency. The same week Albrecht joined SAIC the company was awarded a $150-million contract from NASA to provide support services for atmospheric sciences research and technology.

One characteristic of the position of director of research and laboratory management at the Pentagon is rare turnover. So when **Ted G. Berlincourt,** the genial director since 1986, retired in October, it didn't come as a surprise that his successor turned out to be **Leo Young,** who had held the director's job for five years until Berlincourt came on the scene. Young was then promoted to the Office of the Secretary of Defense, then headed by Caspar Weinberger. While there Young virtually single-handedly turned out all three of DOD's annual critical technologies plans, mandated by Congress.

After Berlincourt received a PhD in physics from Yale in 1950, he joined the Naval Research Laboratory in Washington. A few years later he moved to California to work on electronics devices for North American Aviation. From 1970 to 1972 he was chairman of the physics department at Colorado State University and then returned to Washington to be director of mathematics and physical sciences at the Office of Naval Research. The post he held at the Defense Department is responsible for most basic research programs within DOD labs and at universities.

Young came to the Pentagon after a much longer journey. Born in Vienna, Austria, he got a master's degree in physics from Cambridge University in 1950 and taught at Bradford Technical College in England before becoming head of Decca Radar's microwave lab. He emigrated from Britain in 1953 to work at Westinghouse Electric as a microwave researcher, and in 1957 he earned a PhD in electrical engineering from Johns Hopkins. In 1960 he became head of the microwave technology program at the Stanford Research Institute. Then in 1973 Young signed up at the Naval Research Lab. His Pentagon career began in 1981 when he was named director of research and lab management. Well-informed and well-regarded, Young was elected in 1980 to serve as president of the Institute for Electrical and Electronics Engineers.

With Berlincourt's departure, Young returns to his former post. But this time, if all goes according to DOD's plans—no matter who is elected President—the research programs for the three services are to be consolidated and provided with larger budgets. In that event, Young is certain to be given greater responsibilities.

—IRWIN GOODWIN ■