and Woodruff for "courageous efforts to provide the government with reliable and objective science advice on critical issues affecting national security and arms control policy." Through detailed reviews and public testimony, Kidder, a senior physicist at Lawrence Livermore National Laboratory, argued that the US could limit nuclear testing without jeopardizing national security. As a senior official at Livermore, Woodruff objected to the misrepresentation of the Excalibur x-ray laser project, a key component of the Strategic Defense Initiative.

After earning a PhD in physics from Ohio State University in 1950, Kidder worked for the California Research Corporation. He joined Livermore in 1956 and was associate leader of the theoretical division there until retiring in 1990.

Woodruff earned a BS in physics from San Jose State University in 1968 and then joined Livermore, where he was responsible for research projects in advanced nuclear explosive design. He joined Los Alamos National Laboratory in 1990, where he is now the program director for nonproliferation and arms control.

ASA HONORS BLACKSTOCK AND COLLINS AT OTTAWA MEETING

At its meeting in Ottawa, Canada, in May, the Acoustical Society of America bestowed awards on two of its members. During a ceremony at the Canadian Museum of Civilization, the Gold Medal, ASA's highest honor, was given to David T. Blackstock of the University of Texas, Austin, and the R. Bruce Lindsay Award went to Michael D. Collins of the Naval Research Laboratory.

ASA cited Blackstock for "contributions to the understanding of finite-amplitude sound propagation and worldwide leadership in nonlinear acoustics." Blackstock has been instrumental in laying the foundation for modern approaches to nonlinear acoustics theory; he is noted in particular for developing the low-amplitude nonlinear theory of simple waves, which became a framework for existing models of finite amplitude sound. In one application of his approach he proved that solutions for finite-amplitude waves in the preshock region and for sawtooth shock waves are actually limiting cases of a single, more general solution for the propagation of finite-amplitude sound. Blackstock's activities in the international acoustics community include serving as chair of the International Commission on Acoustics, and he served as ASA president in 1982–83.

Blackstock earned a PhD in applied physics from Harvard University in 1960. For the next three years he worked for General Dynamics Electronics in Rochester, New York, after which he joined the electrical engineering faculty at the University of Rochester. In 1970 he became a faculty research scientist at the Applied Research Labs of the University of Texas, Austin, and since 1987 he has also been a professor of mechanical engineering there.

David T. Blackstock

Collins was cited for "exceptional contributions to numerical modeling of complex acoustical phenomena and nonlinear inversion methods." An expert in ocean acoustics and acoustical inverse methods, Collins is recognized for his work on elastic, range-dependent parabolic equation methods. He developed a technique to simultaneously focus and localize acoustic radiators in complex ocean environments.

Collins earned a PhD in applied mathematics from Northwestern University in 1988 and then joined the acoustics division of the Naval Research Lab.

MEDALISTS HONORED BY FRANKLIN INSTITUTE

The Franklin Institute of Philadelphia awarded its 1993 medals on 5 May. Among the medalists were Leroy L. Chang, who received the Stuart Ballantine Medal, and Herbert Walther and Serge Haroche, who shared the Albert A. Michelson Medal.

Chang, dean of science and a professor of physics at the Hong Kong University of Science and Technology, was cited for "his pioneering contributions to the scientific study and technological development of quantum well and superlattice heterostructures in semiconductor physics." In 1972 Chang built a molecular beam epitaxy system with which he was able to construct superlattices and quantum wells from alternating layers of GaAs and GaAlAs less than 100 Å thick. He showed that electrons moved via resonant transmission in the resulting semiconducting devices, thus proving the formation of quantum states and opening the way to precisely controlled layered materials with prescribed electronic and optical properties.

Chang earned his PhD in electrical engineering from Stanford University in 1963 and then joined the research staff at IBM's Thomas J. Watson Center. Except for the academic year 1968–69, when he was on the electrical engineering faculty at MIT, Chang was at the Watson Research Center until he took early retirement; for the latter part of his career there he was manager of quantum structures in the department of semiconductor physics and devices. In February 1993 he assumed his present position in Hong Kong.

Walther, codirector of the Max Planck Institute for Quantum Optics, in Garching, Germany, and a professor of physics at the University of Munich, and Haroche, a professor of physics at the Ecole Normale Supérieure in Paris, were recognized for "their contributions to quantum optics, especially for the successful demonstration of micromaser action and the experimental verification of fundamental quantum mechanical effects in the interaction of light and matter." Walther invented the micromaser, in which a few atoms at a time pass through a small resonating cavity and give off microwave radiation from single-photon transitions in excited atoms. Haroche developed