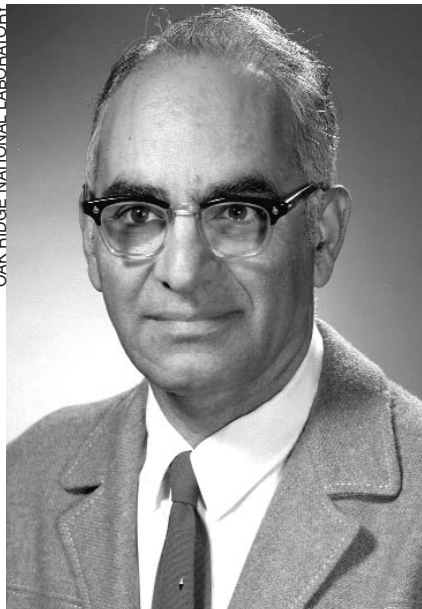




Henri Arthur Levy

ORNL's Graphite Reactor for diffraction studies on various crystalline powders. Henri quickly followed their example and set up a neutron diffraction instrument for chemical studies. In 1949, Selmer Peterson joined ORNL to work with Henri on a study of potassium hydrogen fluoride, which was of interest because the bifluoride ion would eventually prove to have a strong centered hydrogen bond between the fluorine atoms. Because their initial powder experiments were inconclusive, they proceeded with one of the first single-crystal neutron diffraction studies and produced a precise analysis of potassium hydrogen fluoride.

Henri and Peterson made other studies of hydrogen-bonded materials, including a detailed study of several phases of the ammonium halides. Their single-crystal study of heavy ice showed conclusively that Pauling's

postulate of disordered hydrogen bonding was correct. As a result, the Antarctic Place-names Commission later honored Levy and Peterson, along with others who had worked on water and ice, by naming islands in Antarctica's Crystal Sound after them. Henri also made important studies of liquids by both x-ray and neutron diffraction, many of them in collaboration with Alfred Narten, also of ORNL. Notable was their 1967 x-ray study of water over the temperature range from 4 to 200°C.

Henri and his coworkers developed automatic data-collection equipment and computer programs to control experiments and analyze results. For the early single-crystal neutron diffraction work, he designed a mechanical device that permitted the experimenter to preset angles for rotation of the sample about one axis so that the intensities of 20 reflections could be measured automatically.

When one of the early electronic computers became available at ORNL in 1954, Henri's group quickly put it to use for various crystallographic calculations. When the Oak Ridge Research Reactor came on line, Henri and his coworkers developed a three-circle diffractometer controlled by punched paper tape from the computer. The resulting data counts were punched on tape for automatic processing. When minicomputers became available in 1965, Henri's group programmed the PDP-5 computer to control a four-circle Picker diffractometer, first as an x-ray instrument and then for neutron crystallography at ORNL's High Flux Isotope Reactor Facility.

Henri and I developed and distributed a full-matrix, least-squares structure refinement program that was modified so often that the 1979 version listed nine authors. By 1981, that program had been cited more than 3000 times. A companion pro-

gram permitted the calculation of various molecular parameters with their standard errors. We also created a method for correcting observed bond distances for the thermal motion of the atoms involved.

In 1978, Henri retired at the then mandatory age of 65. However, he continued to develop methods for combining electron microscope images to produce three-dimensional information.

Henri served as an officer of the American Crystallographic Association, first as secretary (1961-63), then as president-elect (1964), president (1965), and past president (1966). He was also a member of the US National Committee for Crystallography.

Henri joined the Smoky Mountains Hiking Club in 1945 and maintained his membership for the rest of his life. While hiking with this group, he met his future wife, Bettie Juresco. He later proposed to her on the Appalachian Trail.

Undoubtedly, Henri's work has had a profound influence on our knowledge of the atomic and molecular structure of matter. Techniques that he pioneered are still being used to advance this knowledge.

William R. Busing
Oak Ridge, Tennessee

Dirk ter Haar

Dirk ter Haar, emeritus reader in theoretical physics at Oxford University, died peacefully on 3 September 2002 in the Dutch city of Drachten following a family birthday celebration. The cause of death was pulmonary embolism. He contributed to diverse areas of theoretical physics and played a leading role in the dissemination of the subject.

ter Haar was born in Oosterwolde, the Netherlands, on 22 April 1919, the

son of a pastor and one of the first female law graduates in the Netherlands. In 1939, he received his bachelor's degree in mathematics and physics from the University of Leiden, from which he also received his master's (1941) and doctoral (1948) degrees. His doctoral thesis entitled "Studies on the Origin of the Solar System" was written under the supervision of Hendrik Kramers.

In 1946, ter Haar became a research fellow at the Institute for Theoretical Physics (now the Niels Bohr Institute) in Copenhagen, and from 1947 to 1950 was a visiting associate professor of physics at Purdue University. He was appointed lecturer in theoretical physics at the University of St. Andrews in 1950. Six years later, he went to Oxford as a university lecturer in theoretical physics, and in 1959, he became a university reader there and a fellow of Magdalen College. ter Haar received his DSc in 1960 from Oxford.

His research interests spanned a wide area, including astrophysics and statistical, condensed matter, and plasma physics. He had an encyclopedic knowledge of physics and was quick to take up promising new areas of research. He played a major role in communicating recent advances within the physics community and regarded his writing of review articles and books as an activity as important for the advancement of science as his original papers. Perhaps ter Haar's best known work is *Elements of Statistical Mechanics*, first published by Rinehart in 1954. He was a tireless editor and translator; among the books he translated is *Quantum Mechanics* (North-Holland, 1957) by Kramers.

Because of his knowledge of Russian, ter Haar often learned of advances by Soviet scientists before they were generally accessible to most Western scientists, and he translated



Dirk ter Haar

and edited many Soviet works, among them the collected works of Lev Landau and of Pyotr Kapitsa.

ter Haar was a founding editor of the journals *Physics Letters* (1962) and *Physics Reports* (1971), and was general editor of the *International Series of Monographs in Natural Philosophy*, published by Pergamon Press. He retired from his posts as university reader at Oxford and fellow of Magdalen College in 1986.

In recognition of his work, ter Haar was elected to membership in the Royal Society of Edinburgh in 1952. In 1966, he was elected a corresponding member of the Royal Dutch Academy of Arts and Sciences.

ter Haar placed a great deal of emphasis on teaching at both the undergraduate and graduate levels. He devoted a large proportion of his time to lectures and undergraduate tutorials. His policy with graduate research

was to throw his students into the deep end: He would assign a broad topic such as "problems in the theory of collective behavior" and leave it up to his students to not only solve the thesis problems themselves, but to come up with the problems in the first place. At the same time, he was extremely solicitous about the well-being of his students and their families, as we can attest from our personal experiences as his former students. In particular, many of his students from other countries looked up to him as a surrogate father.

ter Haar would not tolerate sloppy thinking. Many students will remember two plaques in his office: "Behold the turtle, it advances only when it sticks its neck out" and "Why be difficult when, with a little effort, one can become impossible?" Those of us who had the privilege of being tutored or supervised by him cherish the memory of a supportive and loyal friend.

Frederick K. Lamb

Anthony J. Leggett

University of Illinois at Urbana-Champaign

Christopher J. Pethick

NORDITA

Copenhagen, Denmark ■

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