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maser emission from red giant stars. In 1974 Barrett and his research team discovered in the Orion molecular cloud the first source of maser emission from interstellar methanol molecules.

In the early 1970s Barrett and his colleagues developed a technique of medical imaging known as microwave thermography. It uses very sensitive receivers developed for radioastronomy to measure noninvasively the temperature structure several millimeters beneath the skin. This technique has proved to be capable of detecting breast cancer tumors by means of their elevated temperature.

In 1977 Barrett wrote the undergraduate physics text *Electromagnetic Vibrations, Waves, and Radiation* with George Bekefi. Barrett retired from MIT in 1987.

In all of his work, Barrett combined an infectious enthusiasm, a pioneering spirit and a practical, commonsense logic. He was admired by his students for his clarity, consistency and friendly manner, and he taught by example. He trained many of the radioastronomers now working in the US. In appreciation of his work and its impact on astronomy, a symposium was held at MIT in 1987. He will be remembered fondly by his many students, colleagues and friends.

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David C. dePackh

Physicist and inventor David C. dePackh died on 27 August 1990 in Hollywood, Maryland. He was 68.

Though not widely known in physics circles, Dave nevertheless made noteworthy contributions to accelerator physics, plasma theory and beam dynamics theory. At the same time he exhibited a keen ability in the experimental side of all of these disciplines.

Dave was born in Chicago in 1921. He graduated at age 18 from the University of Chicago with a degree in physics and then moved to Washington, DC, to begin his career at the Naval Research Laboratory. He remained at NRL until he retired in 1974.

My earliest experience with Dave followed the end of World War II, when we worked at NRL on an air-core synchrotron concept. We at-

tempted to meld radar-derived pulsed-power techniques and microwave cavities to produce a compact accelerator, which we dubbed the Cavitron. Though no working model emerged from this collaboration, that sally into accelerator work launched Dave into the theoretical and experimental investigation of periodically focused electron accelerators. Dave's work with what became known as dePackh coils predated much of the now-famous work on alternating-gradient focusing in particle accelerators. A prized possession of mine is a handwritten technical note, dated 30 July 1952 and signed by Edwin McMillan, entitled "Focusing by dePackh Coils." In this note McMillan rederived Dave's theoretical expressions describing the focusing properties of Dave's novel accelerator configuration and confirmed his conclusions.

As an outgrowth of his early work with these coils, Dave initiated pioneering studies aimed at developing a high-current, small-aperture betatron-synchrotron. This novel accelerator used air-core coils and fast-rise, single-turn injection of a high-perveance electron beam to achieve high currents. Dave not only developed the beam stability theory for this accelerator but also guided its design, fabrication and operation. It was successfully demonstrated in 1962.

In 1967 Dave and his group transferred to the NRL plasma physics division, where he performed early studies of the stability of relativistic electron beams propagating in plasma. During this period he also formulated the "water bag" model of plasma behavior, a concept that has now found its way into many areas in plasma theory. Dave's coworkers at NRL recall with pleasure his good humor, his broad knowledge and his diverse interests.

Following his retirement Dave launched into a second career, aimed at such environmentally related issues as solar energy, and in particular, innovative approaches to small-scale solar energy systems. Ever active mentally, from 1974 to the time of his death he also composed string quartets, wrote plays, sang in concerts, translated ancient Persian poetry and worked on number theory. To each of these he brought his intense individuality and his remarkable genius, a genius recognized by all of us who had the privilege to know him.

RICHARD F. POST

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