

Herbert Mahr

March 25, 1929 — March 10, 1982

Herbert Mahr, professor of physics for twenty years, died at his home after a prolonged illness. He is survived by his wife, Ruth, and three young children: Thomas, Andrea, and Peter. Beyond the loss to his family and the Department of Physics, his Forest Home neighbors lost one of their liveliest participants, and the community at large, one of its active citizens.

“Bib” Mahr was born in Fürth, Germany, and took his Doctor of Philosophy degree in Erlangen. His first teaching position was at the university in Tucumán, Argentina. Two years later, in 1959, he came to Cornell, following the suggestion and seemingly the footsteps of his former classmate R. O. Pohl. He served as a research associate in the Laboratory of Atomic and Solid State Physics and in 1962 was appointed assistant professor of physics.

Mahr’s research activities centered on the use of optics in the experimental investigation of crystalline solids. His work began with optical studies in insulators, using classical sources of ultraviolet radiation, but it then burst ahead vigorously into new problems and new techniques with the advent of the laser in the mid-sixties. The very intense light provided by the laser brought many new properties and processes to the fore. Rather than interacting with photons singly, an atomic site might now interact with two photons simultaneously.

His first laser study was of two-photon absorption in a pure crystal. Soon after, he and his students demonstrated another new phenomenon, spontaneous parametric light scattering, in which one photon turns into two while still conserving energy and momentum. Mahr was also fascinated with very short laser pulses, and he spent much of his career using them to explore ultrafast processes in materials. He was a leader in developing techniques for applying picosecond pulses (pulses a trillionth of a second in duration) to solid-state physics research. Recently he had been working on an elegant but difficult scheme in an attempt to create a vacuum-ultraviolet laser. He spent significant sabbatical years in the general area, working with Nobel laureate C. H. Townes at Berkeley in 1969, trying out a concept to use a laser and nonlinear “up-conversion” to the visible of faint infrared starlight and, in 1976 in London, working on the new and important ultra-violet, excimer lasers.

Mahr was always inquisitive scientifically, seeming continually to have something novel on his mind. Not content to work in established or conventional areas, he was quick to see to the heart of a new idea and to realize how it might be used to explore a new domain of interest. His approach in experiment was simple and direct, and he and

his coworkers were frequently first with influential and suggestive new results. He worked closely with his students and other coworkers in the laboratory and had deep concern for their welfare.

Bib Mahr's enthusiasm and energy carried over into teaching, where he held strong views. He felt that for an experimental science, we do too much lecturing, that students should actually observe and study the phenomena directly. He developed a new course, the modern optics laboratory, where students without formal lectures learned optics in a hands-on way, using experiments he devised from retired equipment and notes that he had developed. The students benefited greatly from his own keen interest and time given unsparingly. For many years he also taught one of the "physics for poets" courses, in which he tried to introduce nonscientists to some of the beauty and utility of physics.

Bib's enthusiasm and strong convictions were expressed in nonacademic ways as well. He had a strong interest in youth, both in recreation and in schooling. Enjoying soccer, he frequently organized games for neighborhood children and adults and was one of the mainstays of the weekly Sunday faculty matches on Upper Alumni Field. He did much to foster community activities and family socializing in Forest Home and was a frequent visitor and vocal participant at Ithaca town meetings. Concerning society at large, he struggled with the dilemma of the need for some kind of social organization and structure on the one hand and the ideal of a genuine democracy in day-to-day life on the other. He was intellectually open and inquiring but also held strong convictions; argument was vigorous and straightforward, be it relative to some national policy, traffic in Forest Home, or a department proposal he felt to be unwise. Even in his illness Bib Mahr was a courageous and caring person. His intellectual vitality and abiding concern for those around him kept him outside of himself. He will be remembered not only as scientist, teacher, and friend, but as an unusually socialized and civilized human being in the very best sense of those terms.

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