in many fields of pure research but also he was not uninterested in practical applications in industry. He felt the importance of teaching not only in the classroom but in writing stimulating books and beyond that in the administration of his university. At the same time he never lost his interest or taste for the other aspects of life: his family, the arts and his obligations as a citizen of his country.

Bitter and I were graduate students at Columbia during the exciting period 1925–28 when the world of physics was reborn with the invention of quantum mechanics. It was a wonderful time to be a graduate student with a lifetime before one for research and study and the exciting task of remaking the old physics and bringing

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on the new. One somehow pities those who were born too late or too early to share in the excitements of those revolutionary times. Bitter writes of those days in his delightful little book, *Magnets, The Education of a Physicist*.

We both did our dissertations with Professor A. P. Wills whose field was magnetism. Bitter's dissertation was on the magnetic susceptibility of gases and mine on the magnetic susceptibility of crystals. He later moved to ferromagnetism and the solid state while I moved over to molecular beams which are a very attenuated form of gas, but our primary interests never strayed very far from the charms of magnets and magnetism.

Bitter's family background was more in the arts and in the theatre than in science; his father was the famous sculptor, Karl Bitter, whose lovely bronze surmounting the Fountain of Plenty in the Plaza is one of the landmarks of New York. Perhaps this is one reason why his science was imbued with the wholeness of physics and showed great sensitivity both technically and esthetically to the variety of its aspects.

An experimental physicist, his methods were always elegant, such as his discovery of the simple way of exhibiting magnetic domains. His interest in high magnetic fields led him to a magnetic design which displays the same quality of simplicity, elegance and practicality. The National Magnet Laboratory at MIT in Cambridge will remain as a memorial to this phase of Bitter's scientific interest, his inventiveness and practicality.

Bitter's pioneering work in optical and magnetic resonance was another example of his imagination, insight, and his instinct for the important problem of physics. His application of the combination optical and magnetic resonance methods to study hyperfine structure and isotope shift was original work which gave new possibilities for research in this important field. These pioneer researches demonstrated the great utility of Kastler's invention of 'optical pumping.'

A quiet and reserved man, his great qualities were fully appreciated by only a few, but his contributions to physics will continue to advance the science for a long time to come.

I. I. Rabi
Columbia University

Mabel Katherine Frehofer, Was Professor at Goucher

On 10 May Mabel Katherine Frehofer died suddenly of a heart attack at the age of 80. She received her BA from Bryn Mawr College in 1908 and her MA from the University of Wisconsin in 1909. She was a demonstrator in physics at Bryn Mawr College from 1910 to 1914, assistant professor at the University of Wisconsin from 1914 to 1916 and instructor at Mt. Holyoke College from 1916 to 1918. She received her PhD from Johns Hopkins University in 1919, after which she went to the National Bureau of Standards to fill the positions of assistant and associate physicist from 1919 to 1923. From there she returned to teaching, becoming professor of physics at Wilson College (1924–25) and then to Goucher College, where she remained until her retirement as professor emeritus of physics in 1952.

Paul C. Aebersold Dies, Was Authority on Radioisotopes

Paul C. Aebersold, a pioneer in the peaceful uses of atomic energy for medical and other purposes, died on 29 May. He was formerly director of the Division of Isotopes Development at the Atomic Energy Commission.

He received an AB at Stanford and as a graduate student at the University of California was a member of a group under Ernest O. Lawrence that developed the cyclotron. He participated in the production and application of the first radioactive materials (sodi-

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um and phosphorous) administered to human beings in the late 1930's. After receipt of his doctorate in biophysics in 1938, Aebersold continued his work with radioisotopes and also investigated properties of biological reactions resulting from fast-neutron beams. As a research associate in the Radiation Laboratory at Berkeley, he was in charge of operating the 60-inch cycloton.

In 1946 Aebersold was asked to transfer from Los Alamos Scientific Laboratory to Oak Ridge to become chief of the isotopes branch, in the Manhattan Engineering District's Division of Research.

Aebersold and the isotope-development program were transferred to AEC headquarters in 1957, where he continued until his retirement. AEC chariman, Glenn T. Seaborg, in tribute said, "Paul Aebersold made many valuable contributions to the nation's