

companying the Commission to its new location will be **John M. Fowler**, director, and staff physicist **Ben A. Green Jr.**

William Markowitz Given Top Navy Science Award

William Markowitz, professor at Marquette University, received the Navy's highest scientific award, the Captain Robert Dexter Conrad gold Medal, at the 124th meeting of the American Astronomical Society. Markowitz, who was director of the Time Service of the US Naval Observatory from 1953 until 1966, was cited by the Secretary of the Navy for his contributions to the fields of astronomy, chronometry, geodesy, communications and navigation. The Conrad Award is named in honor of Captain Robert Dexter Conrad, who was head of the planning division of the Office of Naval Research when it was founded in 1946.

H. Richard Crane Awarded Davisson and Germer Prize

The American Physical Society's Davisson and Germer Prize was given to University of Michigan physicist H. Richard Crane at the summer meeting of the APS in Toronto. The prize of

\$2500, sponsored by Bell Telephone Laboratories, is awarded biennially for outstanding research on the electron. It was presented to Crane for inventing a unique and direct method of measuring the g factor, the ratio of the magnetic moment and spin of the free electron.

The method consists of trapping polarized electrons in a magnetic field



CRANE

and then scattering them through a gold foil into a Geiger counter. The number scattered into the counter depends on their final direction of polarization. A plot of the intensity versus the trapping time is a cosine curve whose frequency is the difference between the orbital and spin precession frequencies. This beat frequency is a direct measure of the g -factor anomaly. In this way, Crane was able to

measure the g factor to an accuracy of two parts in 10^8 .

Crane, who was past president of the AAPT, was a pioneer in the development of high-energy accelerators, and during World War II did extensive work leading to the design of the proximity fuse. He is now working on the measurement of the positron g factor.

Reynolds Receives NAS J. Lawrence Smith Medal

John H. Reynolds, professor of physics at the University of California at Berkeley, was awarded the National Academy of Sciences J. Lawrence Smith Medal for outstanding achievement in the investigation of meteoric bodies. The award is based principally on Reynold's studies of xenon isotopes in meteorites, which established with comparative precision the timing of certain events occurring in the primitive solar system before the earth was formed. By measuring the decay in meteorites of radioactive I^{129} into Xe^{129} , he has established, according to one theory of element formation, that the time between the last addition of elements to the solar system and the formation of meteorites (and, by extension, of the earth and other planets) was about 60 million years—less time than was thought possible.

Salwa Nassar, College Head, Dies After Long Illness

Salwa Nassar, president of Beirut College for Women, died on 17 Feb. after a prolonged bout with leukemia. Nassar, known on both a national and international scale as prominent mathematician and nuclear physicist, received her BA degree with distinction at American University of Beirut in 1938. Following one year of teaching physics in Iraq, Nassar attended Smith College in the US, where she received her MA. Her PhD degree was obtained from the University of California at Berkeley.

In 1945 Nassar joined the faculty of Junior College, as Beirut College for Women was then called. During 1945–49 she established a science department at BCW and in 1950 joined the faculty of American University of

Beirut, where she served in the physics department as professor and chairman. In 1965 she took a leave of absence to preside at BCW.

For many years Nassar's pet idea was to found the Lebanese National Council for Scientific Research. She began her efforts in 1952; in 1962 the council was established. Since 1955 Nassar represented Lebanon in more than 10 international conferences, including the Atoms for Peace conferences organized by the UN.

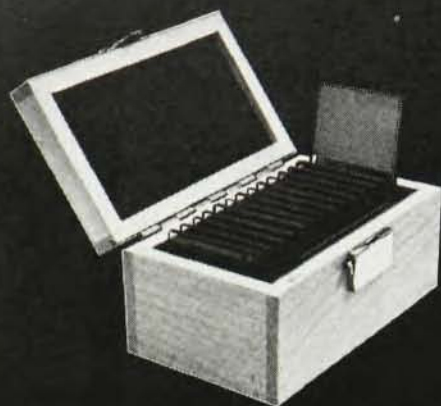
Francis Bitter, Authority on Magnetism, Was MIT Physicist

Francis Bitter, a leading authority on magnetism and a member of the faculty of the Massachusetts Institute of Technology for 33 years, died at the Cape Cod Hospital on 26 July. He was born in Weehawken, N. J. and

received his bachelors degree from Columbia University in 1924. After a year of study in Berlin, he returned to Columbia, where he was awarded the doctorate in 1928. Bitter joined the Westinghouse Research Laboratories in 1930. Under a Guggenheim Fellowship he spent 1933–34 at Cambridge University, after which he returned to the US to become associate professor at MIT. He became full professor in 1951 and was appointed associate dean of science in 1956. He resigned in 1960 to devote full time to the planning of the National Magnet Laboratory. He was 65 years old.

At the request of PHYSICS TODAY, I. I. Rabi wrote the following:

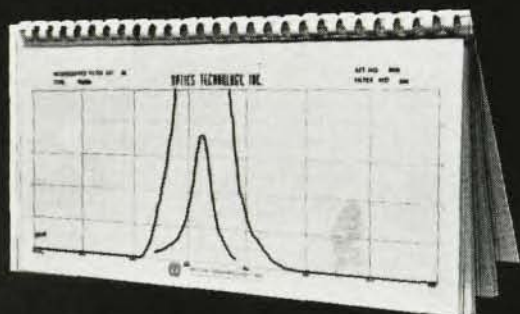
Francis Bitter was an example of the whole man which our colleges try so hard to produce and are so rarely successful. As a scientist he worked



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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



BITTER

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-



AEBERSOLD

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 cyclotron.

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 chairman, Glenn T. Seaborg, in tribute said, "Paul Aebersold made many valuable contributions to the nation's