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Dr. Bertram E. Warren, a recognized authority on the use of x-rays to probe the structure of matter, retires at the end of this month after 47 years at the Massachusetts Institute of Technology as student and professor.

As Professor Emeritus, Dr. Warren will continue teaching and research on a part-time basis this summer and fall. In January, 1968, he will go to Paris, France, under a Fulbright grant to lecture at the College du France for six months.

In the Paris lectures, Dr. Warren will review recent advances he and his associates at M.I.T. have achieved in x-ray diffraction which have made the process an even more valuable tool in mapping the atomic patterns of materials.

A native of Waltham, Mass., Dr. Warren came to M.I.T. in 1920 as a student and was graduated in 1924. He was a Malcolm Cotton Brown Fellow in 1924-25 and received the master of science degree at the end of that year. He then was appointed an instructor in physics while studying for the doctor's degree.

It was during this period that, almost by accident, he was led to what was then the new field of x-ray diffraction. Only 10 years before, scientists had learned that by exposing materials to x-ray beams and measuring the rays that are diffracted, they could determine how atoms in elements and compounds fit together geometrically.

While Dr. Warren was a graduate student, the late M.I.T. President Samuel Stratton arranged for the British scientist, Sir Lawrence Bragg, a pioneer in x-ray diffraction, to present a series of lectures at M.I.T. Dr. Warren was assigned the task of building wooden replicas of crystal lattices to illustrate the Bragg lectures.

"I've been involved in x-ray diffraction ever since," says Dr. Warren.

He studied at the University of Gottingen and the Technische Hochschule in Stuttgart, Germany in 1926-27 and returned to M.I.T. where he received the doctor's degree in 1929. He was again made a Malcolm Cotton Brown Fellow and spent 1929-30 studying and working with Sir Lawrence Bragg in his laboratory at Manchester, England.

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Upon his return to M.I.T., Dr. Warren was made an assistant professor of physics, was promoted to associate professor four years later in 1934, and was made a full professor in 1939.

In England, and later when he returned to M.I.T., Dr. Warren studied the atomic structure of silicate minerals which occur in profusion in nature and which he helped classify and arrange into an order based on crystal pattern. Later, Dr. Warren spent more than a decade using x-rays to determine the structure of a variety of non-crystalline materials.

During World War II, Dr. Warren applied his general knowledge of physics to the development of radio-controlled bombs for the government.

Following the war, he returned to x-ray studies, concentrating on studies of imperfections in metal crystals. "I was at that so long people thought I was a metallurgist," he recalls.

In the last few years, he and his students have developed powerful new methods of detecting only the diffracted radiation that has structural significance and filtering out insignificant radiations that previously confused experimental results. In addition, they have developed new methods of handling experimental data -- with the result that x-ray diffraction has become a precise means of examining complex non-crystalline matter.

In 1957, under Fulbright sponsorship, Professor Warren lectured at the College du France on the x-ray diffraction studies of imperfections in metal crystals. His forthcoming lectures will cover non-crystalline materials and the new techniques.

Professor Warren is a member of the American Physical Society, the American Crystallographic Society, and American Academy of Arts and Sciences. The American Institute of Mining, Metallurgical and Petroleum Engineers named him the 1964 Institute of Metals Lecturer. At present he is Vice President of the International Union of Crystallography.

Both of Dr. Warren's sons have followed careers in technology. Dr. Bruce A. Warren is an oceanographer at the Woods Hole Oceanographic Institute and Robert A. Warren is a civil engineer in San Fransicco. Dr. Warren and his wife, Elna, make their home at 71 Chester St., Arlington.

- 30 -

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