

last October at the age of 80. Born in Sèvres, France, Brillouin obtained his PhD in 1921 at the University of Paris, where he became professor in 1928. In 1932 he was appointed professor at the Collège de France, Paris. He remained there until 1939, when he became general director of the French National Broadcasting System, a position that he held for two years.

In 1941 he came to the US as a visiting professor at the University of Wisconsin, and from 1942 to 1943 he held a professorship at Brown University. During World War 2 he worked as a research scientist for the applied-mathematics panel of the National Defense Research Committee at Columbia University and presided over the Free-French School of Higher Education in New York.

Brillouin was professor of applied mathematics at Harvard during 1947-49 while continuing as an honorary professor at the Collège de France until 1948. He then established an education program in electronics for the International Business Machines Corporation at Poughkeepsie, New York, and from 1952 he was a staff

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BRILLOUIN

member at the IBM Watson laboratory at Columbia University. He retired from this position in 1954, remaining as an adjunct professor at Columbia and working on special projects for the US Navy until his death.

Brillouin published hundreds of articles in more than 40 journals both in Europe and in the US, as well as many books, of which at least two, "Wave Propagation in Periodic Structures" (McGraw-Hill 1946, reprinted, Dover 1953) and "Science and Infor-

mation Theory" (Academic Press, 1962, 3rd printing 1967) have become classics.

His early work on propagation of electromagnetic waves made it easy for him to make the transition to quantum mechanics. He became one of the founders of solid-state theory, to which sufficient witness is borne by the name "Brillouin Zones" given to the allowed regions in momentum space for electron waves in solids. He also made many contributions to the engineering of radio antennas and to transmission of electric waves in cables, as well as to studies of the motion of electron beams in magnetrons and in travelling-wave tubes.

His grasp of statistical mechanics, both classical and quantum, made him one of the first to apply Claude Shannon's information theory to physics. He contributed both to its use as an approach to fundamental quantum mechanics (which is essentially statistical) and to its original use in describing the capacity of information channels. Here also, he applied the most abstruse theory to practical problems of design and arrangement of computing machines.

I knew him personally since he came to work for IBM and can attest to the kindness and modesty that accompanied his brilliance and intuition.

LLEWELYN H. THOMAS
North Carolina State University

Randall of Michigan; Applied Infrared Studies to Bacteria

Harrison Randall, who was professor emeritus of physics at the University of Michigan, died 10 Nov. following surgery for a broken hip sustained in a fall at his home about a month earlier. Born in Burr Oak, Michigan, on 17 Dec., 1870 he was educated at the University of Michigan where in 1902 he received the second PhD in physics awarded by the university. From that time until his retirement in 1940 he was a member of the Michigan physics department and became chairman in 1917.

Following a year of study in Germany with Friedrich Paschen at the University of Tübingen, Randall initiated an infrared-research program at Michigan in 1910. To develop the laboratory he brought a glass blower and instrument makers from Germany. With the help of his students and skilled technicians he designed and

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built new and improved equipment, set up a ruling engine to produce coarse blazed gratings, grew his own crystals for prisms, produced his own thermopiles and introduced many new techniques and procedures. His laboratory attracted world attention.

As physics chairman he developed one of the leading departments in both experimental and theoretical physics; that he could do this, in a period when state funds were limited and before the days of federal support, demonstrated both ability and determination. The summer theoretical symposia that he initiated at the university in 1928 continued until World War 2. For these sessions he brought to the campus each summer distinguished lecturers from the US and from abroad, including Paul Dirac, Enrico Fermi, Arthur Sommerfeld, Werner Heisenberg, Hendrik Kramers, Wolfgang Pauli and Niels Bohr. The symposia attracted each year 25-50 visiting faculty and 50-75 graduate students. These summer sessions undoubtedly contributed greatly to the rapid development of theoretical physics in the US. Their influence on Randall's department is

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RANDALL

evident: twice as many PhD's were awarded in the decade of the '30's as in the preceding 30 years.

During World War 2 Randall headed one of four US and British groups that collaborated to determine the structure of the penicillin molecule. Following his retirement in 1940 he started, together with members of the Michigan bacteriology department, a new program to study and identify bacteria by infrared methods. He

continued this work until his 95th birthday. In 1960 he presented an invited paper on his results at the Washington meeting of the American Physical Society. In 1953 he received the Ives Medal of the Optical Society of America, partly for this work and partly for his early achievements.

Randall's research career covered two generations, and his bibliography of 63 scientific publications extends from 1896 to 1963. In 1937 he served as president of the American Physical Society. He was an honorary member of the Optical Society of America. His contributions to the development of equipment and techniques for the study of infrared molecular spectroscopy and to the strengthening of theoretical physics in the US were outstanding.

RALPH A. SAWYER

*Chairman of the Governing Board
American Institute of Physics*

Paul Scherrer; Directed Swiss Physics Institute

A few months before his 80th birthday, Paul Scherrer died in Zürich as the result of a fall. He was born on 3 Feb., 1890 in St Gallen, Switzerland and studied in Zürich, Königsberg and Göttingen. Working in Göttingen with Paul Debye while still a student, he discovered the "Debye-Scherrer" x-ray method, which opened the way for studying the structure of polycrystalline materials. In 1916 he received his PhD, and in 1920 he followed Debye to Zürich as professor of experimental physics at the Swiss Federal Institute of Technology (ETH). In 1927 he succeeded Debye as director of the Physics Institute. In this prestigious position he exerted a profound and long-lasting influence on the development of physics in Switzerland.

His institute was for many years a leading center in experimental solid-state and nuclear physics. Before 1945, when support for physics was still meager, he was able to gather enough funds to construct three accelerators. After 1945 his influence led Switzerland to establish fission research and technology. Later he was instrumental in attracting CERN to Geneva. Through his former students, who can be found in all parts of the world, his influence was and still is felt in the community of physicists. After his retirement from ETH in



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