Julian H. Webb FREE

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Physics Today **42** (7), 87–88 (1989);
https://doi.org/10.1063/1.2811100

and leadership in materials and technology for submicrometer device fabrication."

▷ Edward J. Kramer (Cornell University), for "pioneering investigations of the fundamental aspects of fracture and diffusion in polymers."

▷ Shiro Matsuoka (AT&T Bell Laboratories, Murray Hill, New Jersey), for "pioneering contributions to the methodology for prediction and explanation of the aging and strain history of mechanical properties of solid engineering polymeric materials."

▷ John C. McDonald (Contel Corp, New York, New York), for "leadership in and contributions to telecommunications technology for industry and government."

▷ Robert E. Newnham (Pennsylvania State University), for "contributions to the development of composite materials for electronic applications."

▷ Henry I. Smith (Massachusetts Institute of Technology), for "contributions to submicron-structure technology and research and for leadership in teaching and promoting submicron structures."

▷ Philip A. Thompson (Rensselaer Polytechnic Institute), for "contributions to the understanding of the dynamic behavior of non-ideal fluids and for the discovery of liquefaction shock waves."

▷ Robert M. White (Control Data Corp, Minneapolis, Minnesota), for "technical contributions and leadership in the area of magnetic engineering."

▷ Jerry M. Woodall (IBM Thomas J. Watson Research Center, Yorktown Heights, New York), for "outstanding contributions to the preparation of compound semiconductor structures and devices for high-speed and optoelectronic applications."

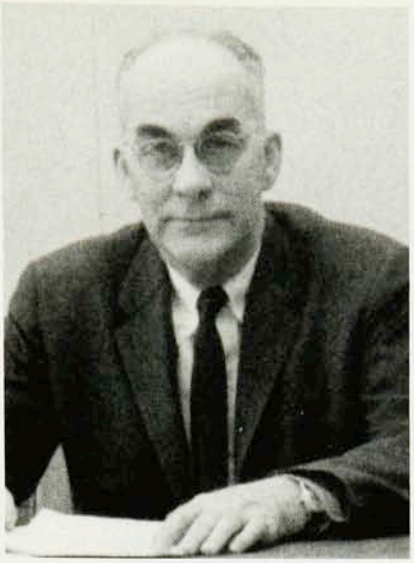
▷ Israel J. Wygnanski (University of Arizona), for "outstanding research in fluid mechanics, especially the understanding of turbulent shear flow."

OBITUARIES

Julian H. Webb

Julian Hale Webb, known for his many contributions to the understanding of the photographic process, died on 28 April 1988 at the age of 85. Webb spent most of his career with the Eastman Kodak Company. He retired in 1967 as director of the physics division of the Kodak Research Laboratories, a position he had held for ten years.

Born in Anderson, South Carolina, in 1902, Webb studied electrical engi-



Julian H. Webb

neering at Clemson College. He continued his studies at the University of Wisconsin, receiving a master's degree in electrical engineering in 1925 and a PhD in physics in 1929. His thesis research with Warren Weaver was in mathematical physics. Webb's graduate student contemporaries at Wisconsin included Lee DuBridge and Guy Suits.

In 1931, after two years as an instructor in physics at Williams College, Webb joined the research laboratories of Eastman Kodak. At Kodak Webb became interested in the physics of latent-image formation—the fundamental basis of the photographic process. He was a pioneer in the application of the quantum mechanics of crystalline solids to silver halides and to the photographic process.

Webb's experimental work was characterized by a strong analytical foundation. His early publications discussed an experimental study of the photographic intermittency and reciprocity-failure effects. These effects, which are responsible for the dependence of photographic speed on the individual values of the intensity and time of exposure instead of just the product of the two, greatly complicated the practical application of photography. These effects are now largely under control in commercial photographic emulsions. Webb was able to use insight gained from these studies to separate the effects of the electronic and ionic processes involved in latent-image formation. His subsequent experiments supported the Gurney–Mott quantum mechanical theory of latent-image formation and permitted the understanding of many important photographic phenomena, including reciprocity failure, intermittency, the Herschel effect, solarization, dye sensitization and, above all, latent-image formation, in terms of concepts that pointed the way to improved photographic films.

During World War II Webb worked on the electromagnetic separation of uranium isotopes in the Manhattan Project, spending time in Berkeley and Oak Ridge. During this time he also contributed to the development of a process to mold high-precision optical elements, which has become important in the large volume manufacture of high-quality glass lenses.

With the end of the war Webb again turned his attention to studying the formation of the photographic latent image. He concentrated on experimental studies of photographic effects in order to develop a statistical model for latent-image formation. From this model and the known size-distribution of grains in an emulsion, he confirmed that one to ten absorbed photons can render a photographic grain developable. In 1949 he concluded that two silver atoms can form a stable sub-latent-image site. This led to the useful suggestion that preexposure of astronomical plates to low-intensity light, to form stable sub-latent-image specks, can greatly increase the sensitivity of the plates.

Webb also became interested in the formation of image tracks by energetic particles and in nuclear track emulsions, and these interests led to his solving several serious fallout-related problems that occurred in the manufacture of film. In one such instance, during late 1945, spots began to appear mysteriously in x-ray film. An affected film would typically show from 10 to 100 small, black spots after processing. By a careful set of experiments, which had to be carried out quickly because of the urgency of the problem, Webb showed that the spots were caused by the presence of a radioisotope in cardboard packaging for the x-ray film made by a particular paper mill in Indiana. He deduced that the isotope (probably Ce^{141}) had been produced in the first atomic bomb test in July 1945. It was subsequently washed as fallout into the Wabash River, from which process water was taken by the paper mill. This discovery permitted solution of the fogging problem and minimized its impact on medical diagnostics.

During the 1950s Webb assumed increasing responsibility for the management of the physics division of the Kodak Research Laboratories. He played a central role in strengthening the solid-state physics and analytical bases for photographic science, to complement an already strong photographic chemistry effort at Kodak. He established the solid-state physics laboratory and, with George Higgins, built a strong program in what is now known as image science, the information theoretic approach to image structure and the analysis of imaging system performance.

The work of Julian Webb was instrumental in making practical photography available to us for our profession and our pleasure.

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A. Vibert Douglas

A. Vibert Douglas, an astrophysicist and university educator, died in Kingston, Ontario, on 2 July 1988 at age 93. One of Canada's most distinguished citizens, she was made a member of the Order of the British Empire by King George V in 1918 for her work in the War Office, and an Officer of the Order of Canada in 1967. Her great zeal for astronomy, keen interest in her students and involvement in fostering international relations made her widely admired and loved.

Born in Montreal, Douglas started her university education at McGill University, interrupted it for war work and then returned to receive her bachelor's degree in 1919 and her MS a year later. Her postgraduate work at the Cavendish Lab of Cambridge University with Rutherford and her work with Arthur Eddington, also at Cambridge, whetted her interest in astronomy, and in 1926 she received her doctorate in that field from McGill. She remained on the McGill staff for 17 years. She and John

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