high-level noise impulses; a spring-operated miniature voice system for the GI Joe toy of the late 1960s; and improvement in the optics of a kaleidoscope. Clay was also a patent reviewer for *JASA* from 1980 to 1994.

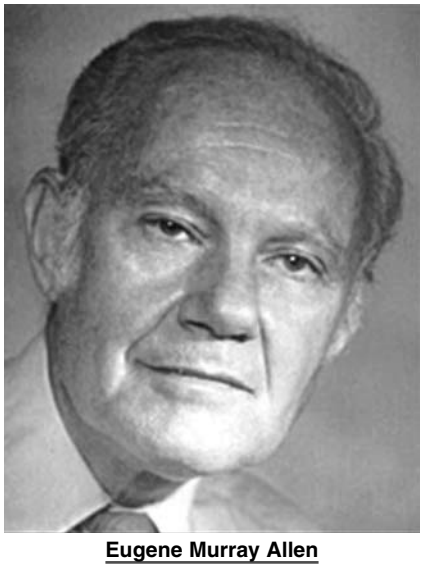
His life was saddened when his son died in a car accident in 1977 the at age of 19. Clay had planned for the two of them to work together after his son had graduated from college. He kept active, though, and spent the next 27 years on Chebeague Island with his second wife. He did consulting work, and wrote articles and obtained patents into the last decade of the century, yet still found time for gardening.

Clay gave much to the acoustics community. All who knew him personally were richer for it.

Robert M. Hoover
Houston, Texas
Ira Dyer
Massachusetts Institute of Technology
Cambridge
David T. Blackstock
University of Texas at Austin

Eugene Murray Allen

Eugene Murray Allen, best known for his achievements in and scientific impact on the field of color physics, died on 18 January 2005 in his hometown of Bethlehem, Pennsylvania, following a long illness. He and his wife, Beatrice, would have celebrated 69 years of marriage only five days later. Allen greatly influenced fields as varied as sorption, separations and catalysis, analysis of electronic and vibrational spectra at interfaces, and printing technologies for which he was known worldwide. Because most of these systems, especially interfaces, are of nanometer and subnanometer dimensions, he was a pioneer of nanoscience long before nanotechnology became today's flourishing field.



Eugene Murray Allen

Allen was born Emmanuel Kaplan in Newark, New Jersey, on 7 November 1916. His early striving for a broad scientific background is apparent from his choice of educational institutions and fields. After graduating from Columbia University in 1938 with a bachelor's degree, he opted to study mathematics at the Stevens Institute of Technology in Hoboken, New Jersey. He concurrently did war-related work at the Picatinny Arsenal in Dover, New Jersey. In 1944 he received his MS from Stevens. He then studied chemistry, specializing in spectrophotometric physics, at Rutgers University while working at American Cyanamid Corp in Boundbrook, New Jersey. He received his PhD in 1952.

Six years later, American Cyanamid bestowed on Allen its Senior Research Award, which enabled him to spend six months in England studying the effect of ionizing radiation on textiles. In 1967 he took the directorship of the Color Science Laboratory at Lehigh University's Center for Surface and Coatings Research; he held that post until his retirement in 1981. He greatly contributed to the well-being and international recognition of the center.

To his colleagues and students, Allen was an expert adviser and guide who not only practiced his science, but always reached for wider connections between science, the arts, and the humanities through the language of mathematics, the development of human perception of physical phenomena, and music. At Lehigh's chemistry department and the Center for Surface and Coatings Research, he continued active research even after his retirement, and was a delightful partner in scientific discussions on a wide variety of subjects. He inspired friends and colleagues to study Chandrasekhar's radiative transfer, opened for us links between astrophysics and physical chemistry of colloidal dispersions, and introduced systematic use of computers in the art of color matching.

Allen's work continues to influence the application of computer color-matching programs that are routinely used today. His articles that described the mathematical methods for applying Kubelka–Munk equations to computer color matching laid the foundation on which all subsequent methods are based. Although others in industry had previously used and partially described such formalism, Allen's complete, matrix-based descriptions placed the methods within the grasp

of a multitude of users. His 1964 generalization of colorant formulation to fluorescent materials was also salient.

In addition to those accomplishments, Allen wrote a paper on observer metamerism, which occurs when a pair of color samples matches under one condition for one observer but does not match under another condition for another observer. His paper eventually evolved into a Commission Internationale de l'Éclairage, or CIE, standard (the "standard deviate observer") for quantifying observer differences in color matching. He was the first to develop, in the 1960s, the formalism of color-mismatch regions to quantify the color mismatches that can occur with different light sources and perceptions by different observers.

Allen received a number of awards for his achievements. In 1982 the Federation of Societies for Coatings Technology awarded him the Armin J. Bruning Award. In 1983 he received the Godlove Award, the Inter-Society Color Council's highest honor. He also served on several ISCC committees.

The Lehigh professionals and faculty colleagues became lifetime family friends of Eugene and Beatrice Allen. Only a few weeks before Eugene's death, a couple of other colleagues and I attended a piano recital given by one of Beatrice's students at the Allen house. We sat with Eugene, who was listening and nodding in approval of the student's performance of particularly challenging passages. Next time his chair will be empty, but our memories of this wonderful man remain, and we will look for his nod of approval whether in music or in science.

Kamil Klier
Lehigh University
Bethlehem, Pennsylvania

Susan Caroline Bayliss

Susan Caroline Bayliss was due to join Queen Mary College, University of London, as a professor of nanotechnology. Sadly, she was involved in a fatal car accident near Manchester, UK, on 16 October 2004, just two weeks before she would have taken that position.

Born in Ludlow, England, on 2 December 1954, Sue studied physics at King's College London and graduated, with honors, in 1976 with a BSc. She worked for her PhD under Yao Liang at the University of Cambridge and submitted her thesis on symmetry dependence of optical transitions in layered materials. She obtained her doctorate in 1980 and remained in

Susan Caroline Bayliss

Cambridge as a research fellow at Lucy Cavendish College until 1985.

For the next five years Sue was a postdoc at Leicester University, where among other things she used her expertise in optical spectroscopy to study light transmission through adult and neonatal eyelids in vivo for a local hospital. That ability to cross boundaries between disciplines had become the trademark of her research ever since. Sue then accepted a lectureship at Loughborough University; she remained there until 1994. During her tenure at Loughborough, she developed her close association with the Daresbury Laboratory synchrotron radiation source and applied a range of structural methods for materials research.

Her research matured and she established her reputation as a capable scientist and original thinker at De Montfort University, where she accepted a job in 1994 as a senior lecturer. She worked in areas at the forefront of modern science: on combined structural and optical methods using synchrotron radiation under high pressure and on porous light-emitting silicon and bioelectronic systems. Her collaboration with biologists resulted in a series of pioneering publications on the interaction of nanostructured silicon with living neurons.

In 1997 Sue was appointed a professor at De Montfort—and was one of the few female professors in physics in the UK at the time. She developed numerous links with researchers from Canada, France, Russia, Sweden, and the UK, which led to friendships and exchange trips. Her contributions to many areas of science were recognized: She was a member of several bodies that define the strategy of UK and European science and was an elected member of the European High Pressure Research Group Committee, an organization that promotes high-pressure research in Europe through annual meetings and awards.

Sue shared her fascination with the properties of light through a series of lectures she delivered to local schools. Topics ranged from glowworms to luminescent nanostructures, and the series proved to be quite a success.

An open-minded person who inspired her colleagues and students, Sue opposed fitting people into categories. Beyond science, she had a passion for sport and an ear for music. She played piano and flute, and sang in a rock band. An accomplished rower since her Cambridge years, she had fun racing rowing machines against men in a local gym, finishing first most of the time.

Sue never stopped exploring. She was young in spirit and grasped life with all her heart. Her inner energy and unorthodox approach to life and science, best reflected in the following poem she wrote, provided an enviable example for those who came into contact with her:

I can't leave behind what I want to
All I can do is force a forget
Act indifferent and substitute
Some of me, for embitterment

But enough. None will know
So why should I be fretful?
I have to do far too much now
To waste time being reflectful.

Andrei V. Sapelkin
Queen Mary College, University of London

Fred Wallace Billmeyer Jr

Fred Wallace Billmeyer Jr, renowned educator, author, editor, and authority on polymer science and the science of color, died of a stroke following a four-year battle with Parkinson's disease, in Clifton Park, New York, on 12 December 2004.

Born in Chattanooga, Tennessee, on 24 August 1919, Fred attended Caltech and earned his BSc in chemistry there in 1941. He pursued graduate work at Cornell University, where, under Nobel laureate Peter Debye, he studied light scattering in synthetic rubber and its relation to particle size and molecular weight. In 1945 Fred was granted a doctorate.

He subsequently joined the plastics department of the DuPont company in Wilmington, Delaware, where he developed methods of coloring synthetic materials, measuring molecular-