WE HEAR THAT

IN BRIEF

Edward Stone was honored in November with the 1999 Carl Sagan Award, presented annually by the American Astronautical Society and the Planetary Society. Stone is the David Morrisroe Professor of Physics at Caltech, a vice president of Caltech, and director of the Jet Propulsion Laboratory.

In September, **Lene Hau**, a member of the Rowland Institute for Science in Cambridge, Massachusetts, and an adjunct professor of atomic physics at the University of Aarhus in Denmark, began her appointment as a Gordon McKay Professor of Applied Physics and a professor of physics at Harvard University. And Stanford University's **Charles Marcus** will be joining the Harvard faculty this month as a professor of physics.

John Weaver, currently a professor of chemical engineering and materials science at the University of Minnesota, Twin Cities is moving this month to the University of Illinois at Urbana-Champaign, where he will be the head of the materials science and engineering department.

The 1999 Holweck Medal and Prize was presented in October to **Oriol Bohigas** of the Nuclear Physics Institute in Orsay, France, for his pioneering work on quantum chaos. The award, made jointly by the UK's Institute of Physics and the French Physical Society, is given to a French physicist in odd-numbered years and to a British physicist in even-numbered ones.

Richard Ellis, the former director of the Institute of Astronomy and the Plumian Professor of Astronomy and Experimental Philosophy at the University of Cambridge, England, relocated in December to Caltech, where he is a professor of astronomy and deputy director of the Palomar Observatory.

OBITUARIES

Edwin Thompson Jaynes

Edwin Thompson Jaynes, an innovator in many fundamental aspects of theoretical physics, died after a long illness on 30 April 1998 in St. Louis.

Ed was reared in Iowa. Born on 5 July 1922 in Waterloo, he grew up in Parkersburg. His father died when he was very young, but left a large library and a piano—legacies that stimulated a lifelong involvement with learning and music. Ed attended nearby Cornell College and then the University of Iowa, where he earned a BA in physics in 1942.

After graduating, Ed worked on the theory and application of microwaves—first for Sperry Gyroscope Co and then as a US Navy officer at the Naval Research Laboratory in Washington, DC.

After being discharged from the Navy, he moved to California, where he worked for a summer in the group designing the first linear electron accelerator and enrolled as a graduate student at the University of California's Berkeley campus. In 1947, he transferred to Princeton University, where, in 1950, he completed his PhD thesis on ferroelectricity under the guidance of Eugene Wigner. A modified version of his thesis was published by the Princeton University Press as the inaugural volume of its Investigations in Physics series.

Ed spent the next decade at Stanford University's Microwave Laboratory and physics department. In 1960, he moved to St. Louis to accept a senior faculty appointment at Washington University. He was Wayman Crow Professor of Physics from 1975 to 1992, when he retired following a heart attack.

EDWIN THOMPSON JAYNES

Ed's searching mind ranged widely over many disciplines within and outside physics. However, his major contributions lay in four areas—namely, applied classical electrodynamics, information theory and statistical mechanics, quantum optics and neoclassical radiation theory, and probability theory and statistical inference. Because it challenged prevailing orthodoxy, much of his work was controversial, and, in some cases, remains so today. But all of it bears the mark of an extraordinary intellect that sought new foundations for understanding nature.

In 1957, Ed published his first two papers interpreting statistical mechanics in terms of information theory. He derived the Gibbs probability distribution from a principle of maximum entropy subject to the constraints of prior knowledge. Thus, statistical mechanics was, in Ed's view, a form of statistical inference based on partial information, rather than a physical theory. Published in *Physical Review*, against the advice of the referee, this approach has spurred a continuing debate between camps known now as subjectivists and objectivists. Over the years, Ed's subjectivist view has gained many adherents, not least because of the opportunities it opens in nonequilibrium statistical mechanics and in manifold applications of the maximum entropy principle outside physics.

Extending this early work, Ed synthesized the ideas and results of Thomas Bayes, Pierre-Simon Laplace, Harold Jeffreys, Richard Cox, and Claude Shannon into a consistent modern framework of probabilistic reasoning. Vastly influential, these ideas were published in a beautifully composed and argued series of papers that appeared in conference proceedings (it was commonplace for mainstream journals to reject Ed's manuscripts). Among these papers is "How the Brain Does Plausible Reasoning," which originally appeared in 1959 as a report from the Stanford

Microwave Laboratory.

When he died, Ed left a nearly complete book manuscript entitled "Probability Theory: The Logic of Science," which, in on-line and preprint form, has been widely read and studied. This monumental work exposes the foundations of what he called the calculus of inductive reasoning with a clarity and elegance that will continue to enlighten and delight his readers for many generations to come.

Ed characteristically insisted that some of the thorniest conceptual problems in physics—notably, in statistical physics and quantum theory—arise from a mistaken identification of probabilities as physical quantities, rather than as representations of the available information on a system, that is, from a confusion between the ontological and the epistemological. Like Albert Einstein, Ed was repelled by the Copenhagen interpretation of quantum mechanics and what he viewed as an incursion of mysticism into science. His dissatisfaction with quantum mechanics, with the uncertainty principle, and with the divergences arising in quantum electrodynamics, spurred him to reformulate QED to avoid the quantization of the electric field. His first work on neoclassical radiation theory, published with Fred Cummings in 1963, is probably Ed's most cited and most notorious paper. Whatever the final fate of Ed's campaign to exorcise the demons of quantum physics, there is no doubt that this paper stimulated many advances in technique and understanding in the early days of quantum optics. Certainly, the Jaynes–Cummings model remains as one of the most useful solvable models in all of physics.

A superb lecturer, Ed was a compelling and inspiring teacher. Every lecture was a new creation that reflected his own evolving understanding of science. He attracted many of the best students; with his continuing guidance, many have themselves become leaders in their fields.

Socially, Ed could be rather shy, but he was a generous and openhearted person. For many years, he hosted in his large home a weekly gathering of faculty, students, and their families. He was a gifted pianist, and impromptu musical performances on his splendid grand piano highlighted many of those occasions. Ed also enjoyed having faculty and student colleagues join him for outings at his rural Ozarks farm. Those of us who participated in those activities have fond remembrances of the freshness, intellectual excitement, and iconoclastic pleasure that we felt when we were in Ed's good company.

With Ed's passing, science has lost a uniquely provocative mind always ready to challenge our understanding of the deepest issues. His colleagues have lost a wise and trusted friend who will be greatly missed.

JOHN W. CLARK
RICHARD E. NORBERG
G. LARRY BRETTHORST
Washington University
St. Louis, Missouri

Gregory Eugene Stillman

Gregory Eugene Stillman, a renowned researcher who specialized in semiconductor materials and devices, died of cancer on 30 July 1999 in Urbana, Illinois. At the time of his death, he was a professor of electrical engineering at the University of Illinois at Urbana-Champaign and a member of the university's Center for Advanced Study.

Stillman was born on 15 February 1936 in the rural Nebraskan town of Scotia. He earned a BS in electrical engineering in 1958 at the University of Nebraska. After graduating, he served in the US Air Force for five years as an officer and pilot in the Strategic Air Command.

In 1963, he entered the University of Illinois's graduate school, where he earned a MS in 1965 and a PhD in 1967—both in electrical engineering. For his thesis research, he synthesized and studied III–V compounds and devices, thus embarking on what was to be his 35-year involvement with III–V semiconductors.

In Stillman's PhD work and that of his fellow student M. George Craford, we find the first study and identification of the notorious DX center in III–V semiconductors. The phenomenon (called DX for "donor unknown") was first noticed in 1962 by engineers at General Electric Corp who were working on GaAsP (gallium-arsenide-phosphide), a material used for the prototype III–V alloy laser and light-emitting diode. Accounting for the DX center—which is a donor-related defect near the direct–indirect crossover of III–V alloys—remains an active area of research.

After completing his doctoral work, Stillman took his talents to the applied physics group at MIT's Lin-