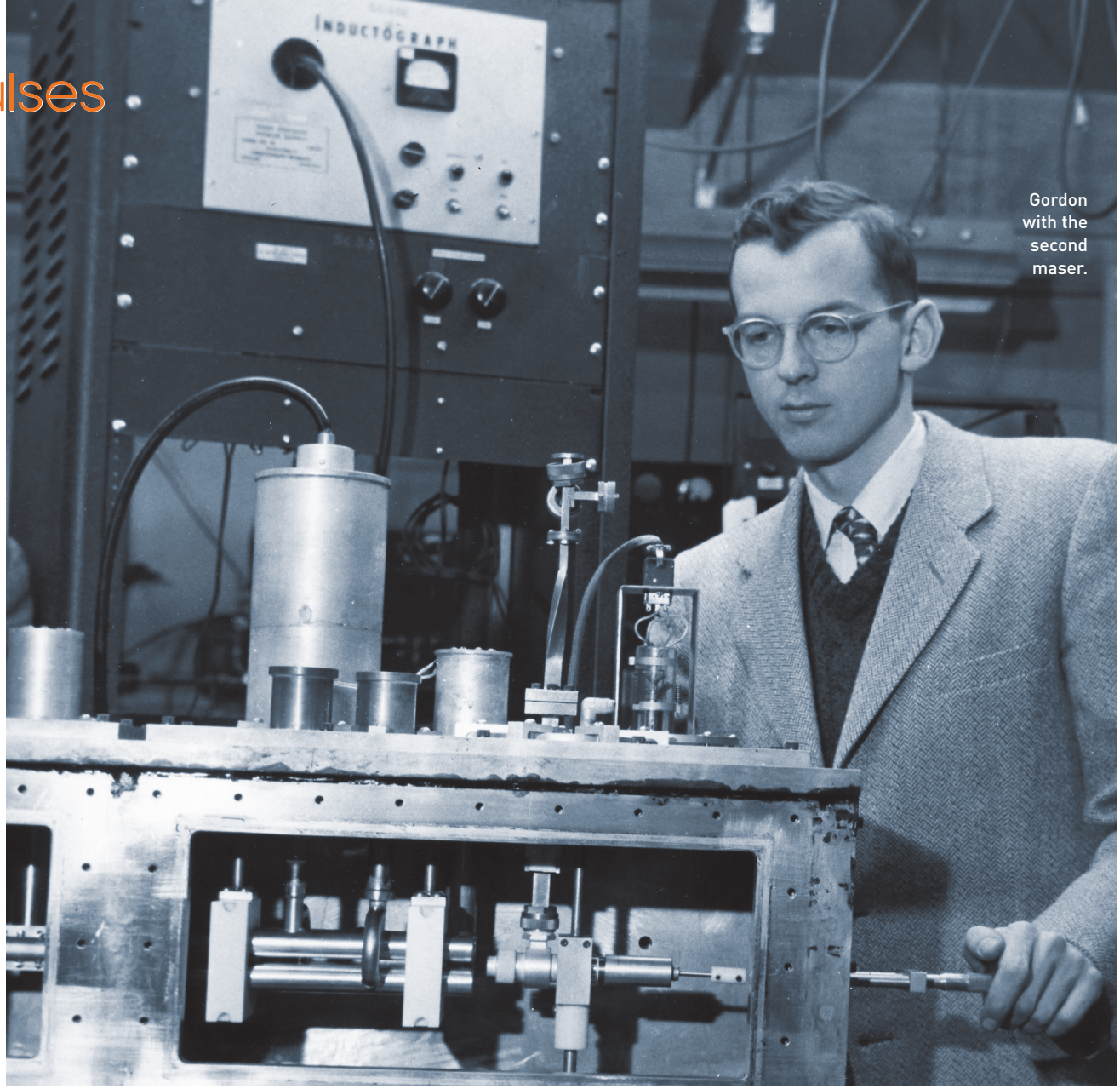


Gordon with the second maser.

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CONVERSATIONS

# Remembering **James P. Gordon**

Colleagues share their memories of a legend and friend.

James Gordon was known for his contributions to quantum electronics and photonics, including the first demonstration of the maser. He was also well-known as a remarkable friend and colleague. At this year's CLEO conference, Gordon's life will be celebrated during a symposium with speeches from some of his close collaborators and friends. *Optics & Photonics News* spoke with four of the seven esteemed presenters, who shared a few of their memories of Gordon prior to the symposium.

Gordon, an OSA Honorary Member and Fellow Emeritus, passed away on 21 June 2013 at the age of 85. He served as head of the quantum electronics research department at AT&T Bell Labs from 1958 to 1980. He remained at Bell Labs until retiring in 1996. Gordon's work greatly affected the field of optics and photonics, and the time he gave to OSA has made an immeasurable impact on the Society.

A Ralph Waldo Emerson quote displayed in his office read: "There is no limit to what can be accomplished if it doesn't matter who gets the credit." Fitting words for a brilliant man whose career was marked by great collaborations.

U.S. Department of Energy

## Steven Chu

*Stanford University and 1997 Nobel Prize in Physics recipient*

I met Jim in 1983 at Bell Labs in Holmdel, N.J., but I had heard about him well before I started. He had the reputation of being an incredibly smart theoretical physicist.

At Holmdel, I planned on constructing a novel electron spectrometer. While planning the design, I came across Gordon's radiation trap paper in *Physical Review*. In this paper, published in 1980, Gordon and Arthur Ashkin discuss how they applied quantum theory to the problem of creating a stable optical trap for sodium atoms. This theoretical work set the foundation for my research on cooling and trapping atoms with light. In 1987, Bill Phillips and I tried to get him involved with our atom-cooling experiments, but he had already moved on to researching soliton transmission and optical fibers.

During my time at Bell Labs, Jim and I became friends. We played tennis together. I got to know his family, and they came to visit when I moved to Stanford. Jim was a wonderful person. He was kind and very soft-spoken—but when he talked, everyone listened.

> "He was kind and very soft-spoken—but when he talked, everyone listened."
>
> *—Steven Chu*

W.J. Tomlinson

## Linn Mollenauer

*Bell Labs (retired)*

My interaction with Jim began in late 1979, when Roger Stolen and I set about to be the first to observe solitons in optical fibers. I realized that we desperately needed some help with theoretical understanding. The fundamental issue here was the rather intimidating "nonlinear Schrödinger equation," or as Jim like to refer to it, "Maxwell's equations in disguise."

The relationship between Jim and me continued for more than two decades of scientific studies and inventions involving solitons—the most significant of which was their potential use in ultra-long-haul optical fiber communications. Jim was a wonderful person to work with. He was never too busy to listen carefully to whatever puzzle would be brought to him, and, more often than not, he would return in a few days with a beautifully written model and solution. He was also highly respectful and appreciative of the many half-baked ideas presented to him, and extremely patient and generous with his time in explaining theoretical subtleties.

For all that he was greatly appreciated and loved by many, not the least of which was myself. He will be greatly missed!

Shtaif

## Mark Shtaif

*Tel Aviv University*

When I met Jim at a Bell Labs Crawford Hill Picnic in late 1997, I was an obstreperous new postdoc embarking on a research career, and he was a recently retired intellectual titan. Having an inadequate sense of propriety and an outsized reverence for titans, I proposed that we establish a consulting relationship with weekly meetings at our department.

Those meetings quickly grew into a friendship that continued until the very last days of his life. We discussed a broad range of subjects, not all related to science. But when it came to science, I would

> "Jim Gordon was a fine person and a great scientist. He was also brave in doing research."
>
> *—Charles Townes*

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call him whenever there was something fundamental that I wanted to understand, and he would contact me with ideas that he wanted to test. He would send me his notes and we would then discuss them—a fascinating process that opened my eyes to a variety of subjects and illuminated angles that I could not have learned from any book.

Jim was a modest person and he often didn't realize the impact of his own work. Once, after attending a large optical communications conference in 2004, I wrote to him that phase-noise was identified as a major problem and many talks were dedicated to the implications of the "Gordon-Mollenauer effect." He wrote back, "Of course, I am glad to hear this, but can you please tell me what the Gordon-Mollenauer effect is?"

Later that same year, I mentioned to him that measurements in modern quantum information science are modeled by means of a positive operator called POVM. When we looked it up on Wikipedia together, it turned out to be the same concept that he had introduced with W.H. Louisell in 1966—almost four decades earlier.

Jim was not only one of the most uniquely brilliant people that I have met, but also one of the kindest and most charming ones. I frequently think of him and miss him dearly.

## Charles Townes

*University of California, Berkeley, and 1964 Nobel Prize in Physics recipient*

Jim Gordon was a fine person and a great scientist. He was also brave in doing research. When he worked for me as a graduate student trying to build the first maser, the chairman of the physics department and the previous chairman both told him it would not work and that he should stop, because the project was wasting the department's money. Both of them had Nobel Prizes, so presumably weren't stupid physicists. But Jim proceeded with his work and, about four months after they told him it wouldn't work, it did. From the maser also came the laser.

Jim didn't get the Nobel Prize with me, presumably because he was a student when the maser first worked, but I think he deserved it. He went on to do other important work. We should all celebrate him and his contributions. OPN

*A "Special Symposium in Memory of James P. Gordon" will be held Monday, 9 June 2014, from 18:30 to 20:30 as part of the CLEO technical program. This memorial tribute will be open to the public. For the story of the first maser in Gordon's own words, read his OPN article "Reflections on the First Maser" in the May 2010 issue.*

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