

ton used to probe the electronic structure of semiconductors (see *PHYSICS TODAY*, February, page 46). More recently Auston has been working on a different means of transforming optical pulses into electronic signals, namely, photoconducting antennas.

Auston received both his BASc (1962) and his MASc (1963) from the University of Toronto, and got his PhD (1969) in electrical engineering from the University of California at Berkeley. After graduate school, he joined the technical staff at AT&T Bell Laboratories, where he eventually became head of the high-speed materials and phenomena research department. Since 1987 Auston has been a professor of electrical engineering and of applied physics at Columbia.

IN BRIEF

Jack Crow, a condensed matter experimenter, has left his professorship at Temple University in Philadelphia to become a professor of physics and director of the Center for Materials Research and Technology at Florida State University in Tallahassee.

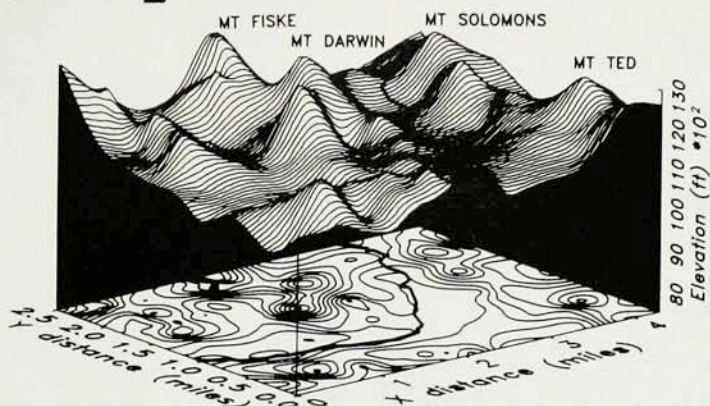
OBITUARIES

Stephen B. Fels

Stephen B. Fels, a senior research physicist at the National Oceanic and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory, died on 22 October 1989 after a courageous struggle against cancer. As one of the world's pioneers in the mathematical modeling of atmospheric radiative-transfer processes, Fels had contributed to more accurate weather forecasting and better modeling of the impact of the greenhouse gases on Earth's climate. His published papers span particle physics, geophysics, planetary atmospheres, atmospheric dynamics and radiative transfer.

Fels completed both undergraduate and graduate work at Harvard University, earning his PhD in physics in 1967. After spending four years doing high-energy theory at the University of California, Los Angeles, Fels received a fellowship to switch to atmospheric physics. In 1971 he split his time between the department of geophysical sciences of the University of Chicago and the National Center for Atmospheric Research in Boulder, Colorado. In 1972, he became a visiting scientist in Princeton University's Geophysical Fluid Dynamics Program (now called the Program in

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Stephen B. Fels

Atmospheric and Oceanic Sciences), and he joined the permanent staff of the NOAA Geophysical Fluid Dynamics Laboratory in 1974.

Soon after arriving at GFDL Fels began his pivotal research on atmospheric radiative transfer and its interaction with dynamical processes. He developed a computer code that calculates with great accuracy the transmission functions for atmospheric infrared radiation. By considering each spectral line in turn, the code produces atmospheric infrared cooling rates whose accuracy is limited only by the accuracy with which the absorption rates for individual spectral lines are measured in the laboratory. This detailed code is now the fundamental standard for the worldwide "Intercomparison of Radiation Codes in Climate Models," an effort of the World Climate Research Programme to compare all the radiative-transfer codes in the world's major mathematical models of greenhouse-gas-induced climate change.

The physical insight gained from the program's detailed results enabled Fels to develop approximation methods that allowed for accurate radiative calculations which were 1000 times faster than those achieved by the traditional methods. These methods are now incorporated into weather and climate models at major research and operational centers in America and abroad. Most significantly, the radiation code is now running as part of the Medium-Range Forecasting Model at the National Meteorological Center, where it has contributed significantly to well-recognized improvements in five-day weather forecasting. The code has also been incorporated into the operational forecast model at the Australia-

lian Numerical Meteorology Research Centre.

Fels studied the interaction of radiative and dynamical processes in such phenomena as stratospheric circulation, stratospheric climate change and the Antarctic "ozone hole." He also investigated the atmospheric circulation of Venus and explored whether its thermal tides were related to the strong superrotation seen in its upper atmosphere.

In addition to doing research, Fels was a lecturer with the rank of professor at Princeton. His talent and dedication as a teacher gained him great popularity among the students. He combined an infectious enthusiasm for science with a passionate insistence on clear and quantitative thinking. His quick wit enlivened conversations with students and colleagues alike.

Those of us who were privileged to know and work with Stephen Fels are grateful for the all-too-brief time he was with us. We miss his intellectual vitality, his immense scientific and personal integrity and his widely appreciated sense of humor.

JERRY MAHLMAN
NOAA Geophysical Fluid Dynamics
Laboratory
Princeton, New Jersey

Harry J. White

Harry James White died on 14 November 1988 in Carmel, California. He was a pioneer in studying the electrical breakdown in gases, in designing radar and high-voltage equipment and, especially, in investigating electrostatic precipitation and air-pollution-control devices.

White was born on 29 July 1905 in Fremont, Nebraska. He received a BS in electrical engineering from the University of California at Berkeley in 1928, then pursued graduate work in physics at the same university. Working with his thesis adviser, Ernest O. Lawrence, White did seminal research on formative time lags of spark discharges in gases, using Kerr cells and transmission lines to measure nanosecond time intervals. He received his PhD in 1933.

In 1935 White began a productive and happy relationship with the Research Corporation. (The Research Corporation is a nonprofit, research-supporting institution whose income, until 1958, came primarily from the manufacture and sales of electrostatic precipitators.) His research there on electrostatic precipitation continued until 1960, interrupted only by White's war work at the MIT Radi-