

Your Best Source

FOR

"Off-The-Shelf"

OPTICS

IN THE U.S.A.



ROLYN OPTICS

738 Arrowgrand Circle
Covina, California 91724

Circle number 48 on Reader Service Card

Need a Radar ...
... Pulse Modulator
... Indicator Group
... RF Source ...

NOW!

... for your R&D lab?

We have it. Off-the-shelf
from our 250,000 sq. ft. inventory.
We'll even fully test it
and trial-run it for you.

Name your specifications
and have it operating in your lab
... in 60 days!

Send for FREE 24-page
catalog and facilities guide.



**Radio
Research
Instrument
Co., Inc.**

2 Lake Avenue Extension, Danbury, CT 06810
Tel: (203) 792-6666 • Tlx: 962444 Radar Dury

Circle number 49 on Reader Service Card

imaging devices. From 1977 through 1980 he managed the Lincoln Laboratory GEODSS Experimental Test System at Socorro, New Mexico, where he was responsible for the experimental development of electro-optical sensor systems for space surveillance.

Krag was a fine solid-state experimentalist, but also pursued a wide range of interests, including wildlife, horticulture, cabinet-making and photography. Above all he is remembered for his courage in battling cancer. Even from his hospital bed he directed the installation of a new telescope he helped design; the night before he died he learned his project was successful.

H. J. ZEIGER

J. G. MAVROIDES

Lincoln Laboratory, MIT

William G. Pfann

William G. Pfann, a noted researcher in the science of materials, died October 1982, only weeks after he retired from Bell Laboratories. He had joined Bell Labs at the age of 18; when he retired, he had been there 47 years.

Pfann received a bachelor's degree in chemical engineering from Cooper Union in 1940. Early in his career he helped develop "catwhisker" crystal detectors for use in radar receivers. He is best known for his work on purification of materials by zone leveling and zone refining, and the growth of single crystals by zone melting. Indeed, his classic *Zone Melting*, published in 1958, has served to educate two generations of materials scientists. In this field, Pfann's contributions made possible the development of today's semiconductor technology by allowing the preparation of high-purity germanium and

PFANN



silicon, whose properties could be subsequently modified by impurity doping. His interest in freezing phenomena never flagged; during the last few years he was interested in their application to the preservation and storage of whole human blood.

Less well known is his work on electrical contact erosion, in which he discovered a method of eliminating the "contact bridge" erosion problem, and his conception and development of the first transistor to be manufactured (type A). He also contributed basic patents and papers on alloying and diffusion methods of transistor fabrication.

Pfann's personality and ideas have left an indelible mark on Bell Labs and on materials scientists around the world. His energy, his high standards of honesty in experimentation and his unprejudiced approach to the new, the untried, and even the heretical helped define the word "scientist" for a large number of his acquaintances.

KENNETH A. JACKSON

HARRY J. LEAMY

RICHARD S. WAGNER

Bell Laboratories, Murray Hill

Philip Shorer

Philip Shorer died on 28 September 1982 in Cambridge, Massachusetts. Well embarked on a distinguished career, he died of a painful illness at the age of 30. At the time of his death he was on leave of absence from Harvard College Observatory, working as a research associate at the Radiation Laboratory, University of Notre Dame.

Shorer was born on 9 December 1951 in New York. After undergraduate years at Stevens Institute of Technology, he joined the department of physics at Harvard University in 1974. He completed his PhD degree in 1979, with Alexander Dalgarno as his thesis adviser. Shorer spent the following year with Phillip Burke at the Daresbury Laboratory in the United Kingdom. He returned to Harvard as a research associate until August 1981, when he left for a year to work at the Radiation Laboratory.

In his short career, he had exerted a major influence on theoretical studies in atomic physics. In particular, in collaboration with Walter Johnson, Shorer carried out highly sophisticated applications of the relativistic random phase approximation to predict the energy level structures, radiative transition probabilities and photoionization cross sections of highly ionized atomic systems where relativistic effects are large.

ALEXANDER DALGARNO

Harvard College Observatory □