

Our new, slower, cheaper array processor.

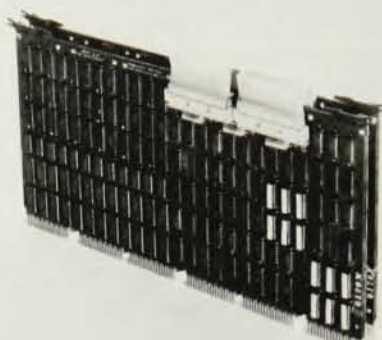
Our new MSP-3X is only about half as fast as our MSP-3. But at \$4950 its price is also less than half that of any other array processor on the market.

"Slower," of course, is relative: MSP-3X lets your PDP-11 computer perform arithmetic and signal analyses 20 to 50 times faster than it can alone. A 1024-point real Fast Fourier Transform in 14.3 milliseconds, for example.

That's plenty of speed for most analyses of vibration, sonar, communications, radar, medical image, and dozens of other kinds of data.

And you needn't sacrifice convenience, either. Operation is simple and reliable, based on straightforward execution of an extensive library of functions, accessed through Fortran calls. And MSP-3X's two hex boards simply plug into your PDP-11.

All in all, MSP-3X is a most intelligent trade-off. Write us for detailed specifications.



MSP-3X array processor

Computer Design & Applications, Inc.

377 Elliot Street
Newton, MA 02164 (617) 964-4320

Circle No. 47 on Reader Service Card

THE RESEARCH S-GUN

Designed specifically for research applications; the Research S-Gun has the highest power density of all magnetrons.

Central Anode—can be biased to collect secondary electron.

Thick magnetic targets (typ. .25 in.).

Target utilization is 65% or more, with total reclaim.

Voltage, current and rate can be held constant to $\pm 2\%$ over life of cathode.



Sputtered Films, Inc.
9 Ashley Ave., Santa Barbara, CA 93103 (805) 963-1751

Circle No. 48 on Reader Service Card

obituaries

work of functional integration. This work will be completed by his collaborators.

Everyone who was acquainted with Andre soon came to appreciate his ingrained politeness, his deep kindness and his unassuming ways. He never looked for or went after personal power, but contented himself in quietly devoting his entire life to the pursuit of a little more clarity and precision in his chosen area of physics.

BERT SCHROER

*Institut für Theoretische Physik der
Freien Universität, Berlin*

*(on leave from University of São Paulo,
São Carlos)*

A. L. L. VIDEIRA

*Pontificia Universidade Católica
do Rio de Janeiro*

David Herr Rank

David Herr Rank, retired professor and past chairman of the Penn State Physics Department died on 17 January. He was 74 years old. Rank, who received the Optical Society Ives Medal in 1969, had worked extensively in the fields of optics, spectroscopy and quantum electronics.

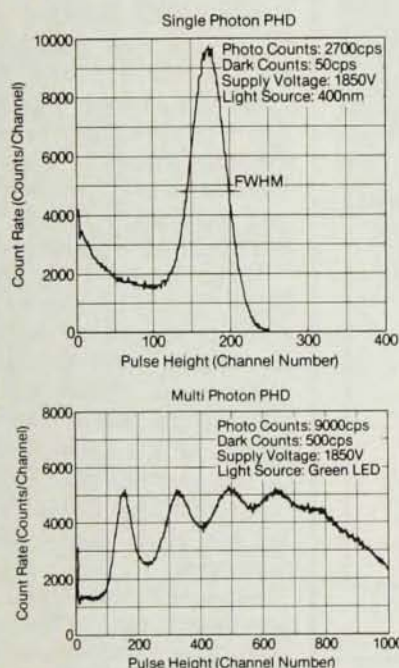
Born the son of a doctor in Annville, Pennsylvania, he received his undergraduate education at Lebanon Valley College. In 1930 he enrolled as a graduate student at the then Pennsylvania State College, received his PhD degree in 1939, and continued to work in Penn State's Physics Department until his retirement in 1972. At the time of his death he was the director of product development of the Edmund Scientific Corporation.

By the time of his graduation, he published nine papers on such subjects as heavy water, spectroscopic instrumentation and Raman spectroscopy. In 1942 his application of the recently invented photomultiplier tube to spec-

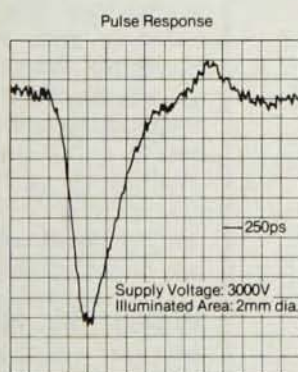
RANK



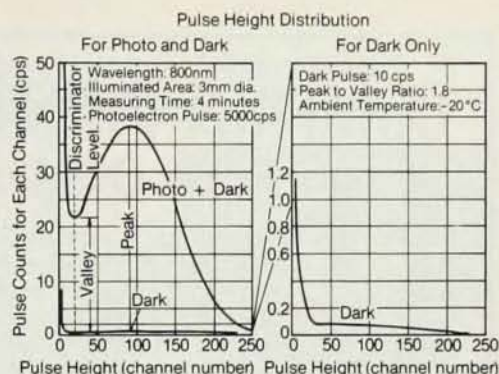
PRECISION PHOTOMULTIPLIER TUBES FOR HIGH ENERGY PHYSICS



R1262— A GaAsP high gain first dinode PMT capable of excellent single and multi-photon discrimination.



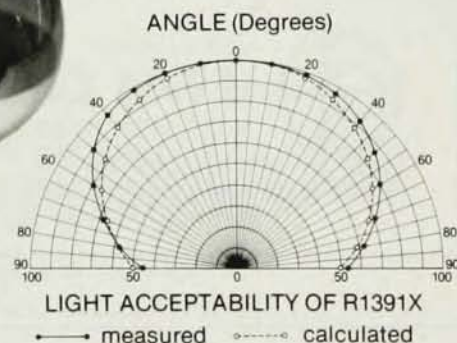
R1294X— A Microchannel Plate PMT for use in high magnetic field environments offering 350 picosecond rise time and excellent gain stability beyond 10^{11} coulomb accumulated charge. The R1294X also provides immunity to after-pulsing.



R943-03— A photon counting PMT with a GaAs (Cs) photocathode which is ideal for plasma or laser fusion diagnostics and fluorescent spectroscopy. The R943-03 provides a typical dark count rate of 10 counts per second (at -20°C) and a 2.2 nanosecond rise time.



R1391— A 5" hemispherical PMT providing good quantum efficiency, timing characteristics and light acceptance significantly greater than 2π solid angle.



R647— A 1/2" end-on photomultiplier workhorse for CAT scanners and the ideal choice when high density detector packing is required.

Take advantage of Hamamatsu's state-of-the art hemispherical photomultiplier tubes for precise detection of Cerenkov light in photon decay or neutrino-type experiments. Use our more traditional end-on PMT's in calorimeter, hodoscope and plasma applications.

CALL OR WRITE FOR LITERATURE

HAMAMATSU

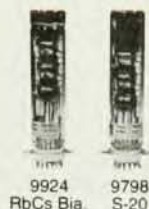
HAMAMATSU CORPORATION • 420 SOUTH AVENUE • MIDDLESEX, NEW JERSEY 08846 • PHONE: 201/469-6640
International Offices in Major Countries of Europe and Asia.

Circle No. 49 on Reader Service Card

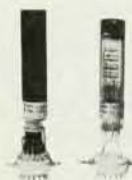
PHYSICS TODAY / MAY 1981

99

COMPACT PHOTOMULTIPLIERS FOR OEM AND R&D



9924 RbCs Bia
9798 S-20



9826 Bia
9882 S-20

The new RbCs 9924 and the S-20 9798 are 30mm dia. PMTs designed for high cathode sensitivity and low dark current characteristics in a tube of small dimensions. These have been proven ideal for OEM and R&D applications in which cost and space limitations are a factor. The 9924 provides for a 20 to 50% improvement in blue and green sensitivity. The 9798 with S-20 cathode and UV glass window provides a spectral range of 200 to 850nm. Both are available from stock and are mechanically and electrically interchangeable with other 30mm PMTs such as the 9824, 9524, R268, R374, and C31059.

The 19mm dia. types are the 9826 and 9882 with bi-alkali and S-20 cathodes respectively. The compact size allows for simplified OEM and R&D packaging, and the fast linear focussed dynode structures and high gain of the 9826 makes it useful for high energy physics experiments (hodoscopes, etc.).



The QL-30 family of PMT housings provides the ultimate in simplicity and versatility when operating any 19mm or 30mm PMT. RFI shielding, mounting flanges, and custom voltage divider networks are routinely supplied. OEM and R&D inquiries are invited.

Contact:



NORTH AMERICA:

EMI GENCOM INC.

80 EXPRESS STREET, PLAINVIEW, NEW YORK 11803
(516) 433-5900, TWX: 510-221-1889

ELSEWHERE: **Electron Tube Div., THORN EMI Ltd.,**
BURY STREET, RUISLIP, MIDDLESEX, HA4 7TA ENGLAND

Circle No. 50 on Reader Service Card

Why Airco superconductors are available by the megametre.

Because we have the world's largest, most efficient superconductor plant to produce them in, in any quantity you need from a metre to a megametre.

We also have the industry's most advanced on-line production quality-control program to produce better tapes, braids, cables, sheathed and reinforced systems, and magnets.

Now we are making over 100,000 metres of superconductors for the MFTF-B fusion experiment at Livermore. And we're finishing large orders for Brookhaven, Fermilab, MIT, Oak Ridge, Saclay, Karlsruhe and the U.S. Navy, which gives us more capacity for you.

If you want to know more about us, ask for our capability brochure. It's titled "Airco Superconductors." Ask us and we'll also send you free reprints of all the major technical papers we have written on superconductors and their use.

Write Airco Superconductors, 600 Millik Street, Carteret, New Jersey 07008. Phone (201) 541-1300. Or TWX AIRCO SUP CRET.

Circle No. 51 on Reader Service Card



obituaries

trospectroscopy marked the beginning of investigations in Raman spectroscopy that gained him an international scientific reputation. He invented methods for determining accurately the depolarization factors, quantities that must be known if the correct assignments of vibrational bands in Raman spectra are to be obtained.

Around 1952, Rank changed his research program from Raman to high-resolution infrared spectroscopy, the field for which he is perhaps best known. His infrared investigations, which set new standards for wavelength accuracy and resolution, enabled him to study fine structures that had not previously been observed, to measure shapes of lines and collision-induced shifts, pressure narrowing, and quadrupole effects. Some of his work related to planetary atmospheres.

When lasers, both pulsed and cw, came into his laboratory in 1964, Rank and his coworkers exploited them to investigate various light scattering phenomena. Three nonlinear optical phenomena were discovered in the course of his investigations: optical mixing in stimulated Brillouin scattering, stimulated Rayleigh wing scattering and stimulated thermal Rayleigh scattering.

Rank also concerned himself with lens design, optical testing, and optical materials. His success as an experimental physicist resulted partly from his skill as a designer and his exacting optical craftsmanship. Several master opticians began their training as his apprentices. His optical designs can be found in such everyday products as surveying instruments, medical cystoscopes, magnifying lenses on butcher-shop scales and highway retroreflectors.

T. KING McCUBBIN JR.
T. A. WIGGINS

The Pennsylvania State University

Walter M. Nielsen

Walter M. Nielsen, James B. Duke Professor Emeritus of Physics at Duke University and chairman of the Department of Physics from 1938 to 1961, died in Durham, N. C. on 8 January. Before World War II, he was active in cosmic-ray research, conducting counter studies of electromagnetic showers and measuring the lifetime of the mu meson. These experiments were carried out in Linville Caverns and on Mt. Mitchell in North Carolina and on Mt. Evans in Colorado. He spent a year at the Bartol Research Foundation as a National Research Council Fellow. After the war, he concentrated mainly on the develop-