situation, the conditions for research worsened. As he was the only theoretical physicist at the university, a heavy teaching load was imposed upon him, and he had to carry it without any assistant or secretary. During and immediately after the Second World War the working conditions became even worse, bringing his research to a complete standstill.

Although the situation improved some years after the war, Hückel's weak health prevented him resuming his former research activities. Instead he concentrated on teaching and advising his assistants. Due to his very friendly nature he enjoyed great popularity among students and assistants. After his retirement in 1962 he obtained several honors for his scientific work: the Society of German Chemists and the German Physical Society jointly bestowed upon him the Otto Hahn Award; he became a member of the German Academy of Scientists "Leopoldina" of Halle and a foreign member of the Royal Society, as well as honorary doctor at the Universities of Stuttgart and Uppsala.

Five years ago his memoirs appeared. Written in Hückel's witty and ironical style, they reflect much of his critical attitude to problems of daily life. His friends have lost a warm-hearted personality, the scientific community one of the pioneers of quantum theory.

K. SUCHY Institute for Theoretical Physics University of Düsseldorf

Milton Grandison White

Milton Grandison White, Eugene Higgins Professor of Physics, Emeritus, at Princeton University died on 16 October 1979

White was born in Claremont, California, on 12 January 1910. He attended Sacramento Junior College and the University of California at Berkeley, where he received his AB in 1931 and his PhD in 1935. A Coffin fellow, he was a student of Ernest O. Lawrence, the inventor of the cyclotron. His thesis was based on an investigation of proton–proton scattering and was the first nuclear-physics research performed using a cyclotron.

Upon completion of his graduate work, White was awarded a National Research Council postdoctoral fellowship. At that time, the only cyclotrons were at Berkeley. Recognizing the potential of nuclear research, he wanted to build one elsewhere to enable him to pursue an independent career. Of the various universities he considered, only Princeton agreed to provide the needed funds. This cyclotron was the first to operate outside of Berkeley. White, his associates and their students carried out a vigorous program of fundamental research in nuclear physics until the start of the Second

CO-NETIC Magnetic Shields



for Photomultiplier Tubes



MAGNETIC SHIELD DIVISION

PERFECTION MICA CO. 740 North Thomas Drive Bensenville, III. 60106, USA Phone 312 / 766-7800 TWX 910-256-4815 Send for NEW PM-4 catalog of magnetic shields for over 650 PMT's. Includes recommended shield for each tube, metric & English dimensions of shields and application information.

Circle No. 46 on Reader Service Card



Circle No. 47 on Reader Service Card

FORGED BODY CYLINDER VALVES





DURABLE, COMPACT DESIGN RESISTS DAMAGE DUE TO ROUGH HANDLING • Service ratings to 3000 psi and 250°F · Non-rotating, soft stem tips for gas tight, repetitive shut off • Positive stem retraction and safety back seating • Orifice sizes to 218" and C, to .53 • Integral rupture discs available for safety • 100% factory tested • Viton O-Ring seal • Available in brass and 316SS, with SWAGELOK or NPT end connections • Stocked locally for immediate delivery.

STAINLESS STEEL SAMPLE CYLINDERS



SAFE CONTAINMENT OF CORROSIVE, TOXIC, HAZARD-OUS OR EXPENSIVE FLUID SAMPLES • 40 cc to 1 gal. capacities · Formed from 304L stainless steel tubing, eliminating seams or welds . Meet applicable D.O.T. specifications for pressure service . Easy cleaning, no 'pockets" to trap residue . One gal. cylinder available with neck rings, end caps and carrying handle . WHITEY "DK" Cylinder Valves, on one or both ends, assure gastight shut off . Valves also available with integral rupture discs for overpressure pro-

tection, plus dip tubes for specific cylinder filling . Stocked locally for immediate delivery.



BAR STOCK SHUT-OFF VALVES





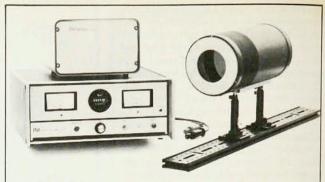
SAVE SPACE, WEIGHT AND COST . Compact design with relatively large end connections Safety-designed with integral bonnet ● Pressures to 6000 psi ● Temperatures to 600°F ● All 316SS construction with 1/4" and 1/2" pipe end connections . Packing adjustable in line . 100% factory tested • Stocked locally for immediate delivery.

Swookok® TM Crawford Fitting Company @1979 Markad Service Co./all rights reserved



WHITEY CO., 318 Bishop Rd., Highland Hts., Ohio 44143

Circle No. 48 on Reader Service Card



PRA's new arc lamp systems. More power at less cost per watt.

- 2 to 6 times more useable power for given lamps over conventional systems
- Water cooled
- Sealed to significantly reduce ozone health hazard
- Designed to allow direct imaging into monochromators without the use of lenses
- Allows for use of lower-powered lamps for Reduced **Operating Cost**

The regulated power supplies are:

- Modulatable up to 25 KHZ
- Pulsed mode operation and optical feedback capability
- Highly regulated 0.1% ripple under full load
- Low RF, filtered single pulse starters

The supplies can power most arc lamps from 75W - 1000W.



Photochemical Research Associates Inc.

45 Meg Drive, London, Ontario Canada N6E 2V2 (519)686-2950 Telex 064-7597

Circle No. 49 on Reader Service Card

Surface Analysis Problems?



- Thin Layer Contamination
- Catalyst Poisons
- Intergranular Corrosion
- Microelectronic Failures
- Bond Separations
- Coating Characterization

Research ■ Production ■ Quality Control ■ Patent Protection

STRUCTURE PROBE

SPECIALISTS IN MATERIALS RESEARCH

Complete Surface Analysis Research Services

AES Auger Electron Spectroscopy

Scanning Auger Microprobe

ESCA Electron Spectroscopy for Chemical Analysis

Ion Scattering Spectrometry

SIMS Secondary Ion Mass Spectrometry

Other Services Available

SEM ■ TEM ■ EDX ■ WDX ■ XRD ■ DTA Quantimet Quantitative Image Analysis Automated Particle Size Analysis

Philadelphia Area

535 East Gay Street Wast Chester, PA 19380 (215) 436-5400

230 Forrest Street

New York Area Connecticut Area 1100 Main Street Metuchen, NJ 08840 Suite 306 (201) 549-9350

Bridgeport, CT 06604 (203) 333-5400

obituaries

World War.

In 1940 White went to MIT, where he and a small number of physicists from other universities organized the Radiation Laboratory, the center for the development of radar in this country. It grew rapidly in size from the initial handful of men to thousands of scientists, technicians, and administrators. White was a vigorous and effective leader in this endeavor, first as head of the Transmitter Components Division and later as head of the Airborne Systems Division, which developed all of the varied types of airborne radars, including radar bombsights and long-range radars to provide early warning of air attacks on naval forces. He received the Army-Navy Certificate of Merit for these important contributions to the US war effort.

When he returned to Princeton, he directed the rebuilding of the Princeton cyclotron. With new techniques, the energy was increased from 5 MeV to 18 MeV.

In 1949 White was named Higgins Professor of Physics. Shortly afterwards. while on leave of absence, he directed the early phase of the construction of the Cosmotron, a three-GeV proton synchrotron at the Brookhaven National Laboratory. This experience stimulated his desire to build a high-energy facility at Princeton. Starting in 1955 he directed the design and construction of the Princeton-Pennsylvania Accelerator (3 GeV). He served as its director until it was decommissioned in the early 1970's. During its lifetime this laboratory provided the facilities for a lively and rewarding research program. Many of the physicists who are presently in the forefront of research in elementary-particle physics throughout the country were trained on experiments at the Prince-

WHITE



DIGITAL TEMPERATURE INDICATORS/CONTROLLERS FOR SILICON DIODE THERMOMETERS



MODEL 3900

Temperature Range: 1K to 400K

Resolution: 1K

Accuracy: ± 1.5K

COMPLETE RANGE OF CONTROLLERS AVAILABLE

Model 3610 Germanium and Platinum RTDs

Model 3700 Chromel/Gold Thermocouple

Model 3800 Silicon or Gallium Arsenide Diode

Model 3950 Silicon Diode Resolution: .1K



632 SOUTH 'F' STREET LAKE WORTH, FL. 33460 TELEPHONE 305/585-9451 TELEX 51-3474

Send for New Catalog of Sensors, Readouts and Controllers

Circle No. 51 on Reader Service Card

From the compact H-10 to the unequaled THR-1500, Instruments SA designs and builds monochromator systems that will meet both your experimental and budgetary requirements. All monochromators feature our Holographic Gratings, the undisputed industry standard for quality, Call us today.





Instruments SA, Inc., J-Y Optical Systems Division, 173 Essex Avenue, Metuchen, N.J. 08840 (201) 494-8660, Telex 844516. In Europe, Jobin Yvon, Division d'Instruments SA, 16-18 Rue du Canal, 91160 Longjumeau, France, Tel. 909.34.93 Telex JOBYVON 842-

Circle No. 52 on Reader Service Card

J-Y Optical Systems Division

SPECTRON INSTRUMENT

Delivers Measurement Solutions

FAST SPECTRAL SCANNER WITH LIVE DISPLAY



And our CE395 offers more unusual features — a very low price and very simple operation. Please contact us for details on our full line of instruments.

SPECTRON INSTRUMENT

Microdensitometers, Spectral Scanners, Photometers, Automated Inspection & Measurement Systems Spectron Instrument Corp 1342 West Cedar Avenue Denver, Colorado 80223 Telephone (303) 744-7088 TWX 910-931-2298

Circle No. 53 on Reader Service Card

Europhysics Conference Abstracts Series 4, Volumes A-K

Titles	1980
4A Structure and Motion in Polymeric Glasses Noordwijkerhout, NL	21-25 April
4B Symposium on Sputtering Vienna, A	28-30 April
4C Physics in One Dimension Fribourg, CH	25-29 August
4D Atomic and Molecular Physics of Ionized Gases Dubrovnik, YU	1-3 Sept.
4E Atomic Spectroscopy (EGAS) Pisa, I	2-5 Sept.
4F Heating in Toroidal Plasmas Como, I	3-12 Sept.
4G Computing in High Energy and Nuclear Physics Bologna, I	9-12 Sept.
4H European Solid State Device Research Conference York, GB	15-19 Sept.
4 I Optical Systems and Applications Utrecht, NL	23-25 Sept.
4K Nuclear Physics : Methods in Materials Research	23-26 Sept.

These pre-proceedings are mailed just before or after each conference.

Subscriptions to European Physical Society

Series 1, 7 volumes Series 2 & 3, 7 vols. each	175 Sw.Fr. 200 Sw.Fr.	POB 69	
Series 4, 10 volumes Subscribers to previous volumes	250 Sw.Fr.	1213 Petit-Lancy 2	
special price of	225 Sw.Fr.	Switzerland	

obituaries

ton-Pennsylvania Accelerator. When federal funding ceased, White found private funding that enabled a small group to modify the machine for heavy-ion acceleration. The heavy-ion beam was used to study the feasibility of using such beams for cancer therapy. This pioneering work stimulated continuing research in this field at other laboratories.

In 1972, White took charge of the AVF Cyclotron Laboratory at Princeton and spearheaded the effort to keep this facility alive. His management skill and enthusiasm gave a sharpened sense of direction and increased vigor to the program. He was a driving force in its continued operation until he retired.

For many years, White served on the board of trustees of Associated Universities, Inc, the consortium of universities that operates Brookhaven National Laboratory and the Greenbank National Radio Astronomical Laboratory. He became a member, and later chairman, of the board of trustees of Universities Research Association, the organization of 53 universities throughout the country that operates the Fermi National Accelerator Laboratory. Following his retirement from Princeton in 1978, he was elected the URA president. He was very active in the presidency, visiting the laboratory at least weekly and monitoring all of its work closely. He was working at Fermilab the day before he died.

Milton White will be remembered for his warmth and cheerfulness. Nothing seemed to dim his optimism. The hardships he faced appeared to strengthen his resolve to carry out what he believed in.

FRANK CALAPRICE
RUBBY SHERR
FRANK SHOEMAKER
Princeton University

Roger Peter Bastide

Roger Bastide, a senior physicist at Varian/Extrion, died on 18 February 1980 at the age of 54.

Bastide was born in Rio de Janeiro on 4 July 1925. During World War II, he served with distinction in the United States Army as one of the youngest tank commanders in General George Patton's army.

After the war, Bastide studied physics at MIT, subsequently joining the Acoustics Laboratory where he stayed until 1956. He left to join High Voltage Engineering Corp at the beginning of the "hey day" of tandem accelerator technology. He quickly displayed skill in the arcane are of ion-source technology. Bastide's skill in coaxing maximum performance out of different negative-ion sources made him well-known in all nuclear-physics laboratories. During the time he worked

Darmstadt, D