

calendar

This is a complete calendar. It lists all physics-related meetings known to us. For the next two months we will publish only new information (partial calendar); in the third month (April) we will again publish a complete calendar as far into the future as we have information. During months with a partial calendar, readers can add new entries to their last complete calendar.

Information in the calendar is compiled from a file maintained in the PHYSICS TODAY office. Readers are invited to write or telephone for general calendar information beyond what we print. For complete information concerning an entry, readers are advised to consult the contact and the original PHYSICS TODAY reference.

Abbreviations:

AAPT—American Association of Physics Teachers

AAS—American Astronomical Society

ACA—American Crystallographic Assoc.

APS—American Physical Society

ASA—Acoustical Society of America

OSA—Optical Society of America

S OF R—Society of Rheology

AEC—US Atomic Energy Commission

AIAA—American Institute of Aeronautics and Astronautics

ANS—American Nuclear Society

AVS—American Vacuum Society

IAEA—International Atomic Energy Agency

IEEE—Institute of Electrical and Electronics Engineers

IOP—The Institute of Physics (formerly IPPS)

IUPAP—International Union of Pure and Applied Physics

NBS—National Bureau of Standards

ORNL—Oak Ridge National Laboratory

Coding:

date subject ☐ HOST ☐ Location (Contact) [submission deadline] *Physics Today* ref.
• new listing ♦ new information

JANUARY 1972

4-6 Solid State Physics ☐ IOP ☐
Manchester, UK 8/71

10-12 Surface Physics of Semiconductors ☐ IOP ☐ Southampton, UK 8/71

17-21 • Liquid Crystals ☐ GORDON RESEARCH CONFERENCES ☐ Santa Barbara, Calif. (A. M. Cruickshank, Gordon Research Conferences, Pastore Chemical Laboratory, Univ. of Rhode Island, Kingston, R. I. 02881) 1/72

24-28 • Polymers ☐ GORDON RESEARCH CONFERENCES ☐ Santa Barbara, Calif. (A. M. Cruickshank, Gordon Research Conferences, Pastore Chemical Laboratory, Univ. of Rhode Island, Kingston, R. I. 02881) 1/72

26-28 Fundamental Interactions at High Energy ☐ CENTRE FOR THEORETICAL STUDIES ☐ Coral Gables, Fla. 12/71

30-4 Power ☐ IEEE ☐ New York, N. Y. 8/71

31-3 ☐ APS-AAPT ☐ San Francisco

31-4 Information Theory ☐ IEEE, INTERNATIONAL UNION OF RADIO SCIENCE ☐ Pacific Grove, Calif. 11/71

FEBRUARY 1972

7-9 Integrated Optics ☐ OSA ☐ Las Vegas, Nevada 8/71

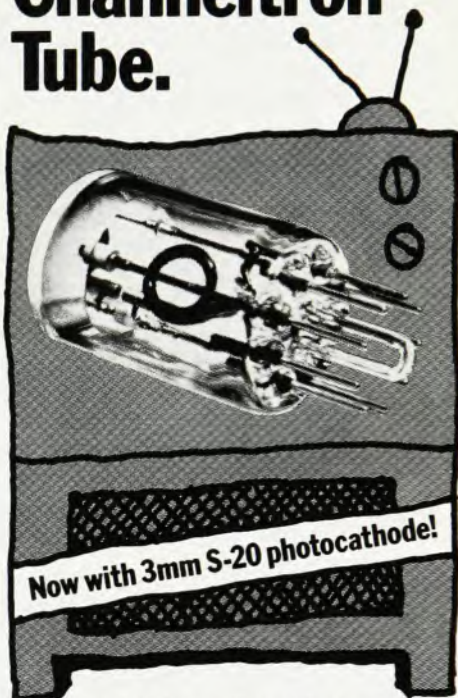
14-17 • Nuclear Physics ☐ AUSTRALIAN INSTITUTE OF NUCLEAR SCIENCE AND ENGINEERING ☐ Canberra, Australia (E. A. Palmer, Australian Institute of Nuclear Science and Engineering, Private Mail Bag, P. O. Sutherland, N. S. W. 2323, Australia) 1/72

16, 17 • ☐ GEOTHERMAL RESOURCES COUNCIL ☐ El Centro, Calif. (R. G. Bowen, Oregon Dept. of Geology and Mineral Industries, 1069 State Office Bldg., Portland, Ore. 97201) 1/72

16-18 Solid-State Circuits ☐ IEEE ☐ Philadelphia, Pa. 12/71

21-3 Elementary-Particle Physics ☐ INSTITUTE FOR THEORETICAL PHYSICS OF THE UNIV. OF GRAZ ☐ Schladming, Austria 12/71

Catch all the great single photo-electron events! On the Channeltron[®] Tube.



The Bendix Channeltron Photon Counter Tube is now available with a 3mm active photocathode and has the same high performance as the original BX 7500.

And catch these other special features: a typical dark count rate of less than twenty photo-electrons per second at room temperature, narrow pulse height distribution.

Then, too, the BX 7500 has a wide counting plateau because of its narrow pulse height distribution. No resistor divider network is necessary. It's relatively insensitive to external magnetic and electrostatic fields. And, of course, there's the quietness and efficiency of the Channeltron Electron Multiplier.

So if you're looking for the best way to detect low light level information, tune in on the Channeltron Tube.

Write: The Bendix Corporation
Electro-Optics Division
Marketing Department
Galileo Park
Sturbridge, MA 01518

(617) 347-9191

SEE US AT BOOTH #158



Circle No. 79 on Reader Service Card

Visit our booth (#508) at the 20th Annual Physics Show, San Francisco

CSCC*/Nb₃Sn

- niobium-tin superconductor of the best quality and lowest price.
- superconducting ribbon widths 0.050, 0.090, 0.250, 0.500".
- current carrying capacity at 100 kG from 100 amp to 2000 amp.
- special sizes and configurations manufactured at minimal extra cost.
- design and construction of large superconductive devices.

*Licensee under patents of RCA Corporation

CSCC/Cryogenics

- design of cryogenics installations and interconnection with large superconductive devices.
- design and contracting of large helium refrigerator/liquefier systems.
- cryogenics consultants.
- specialists on problems of installation and commissioning.

WRITE FOR OUR BROCHURE

CANADA SUPERCONDUCTOR AND CRYOGENICS COMPANY LIMITED
COMPAGNIE SUPRACONDUCTEUR ET CRYOGÉNIE DU CANADA LIMITÉE



205 Ave. St. Denis, St. Lambert, Quebec, Canada. Telephone (514) 671-0751

Circle No. 80 on Reader Service Card

LASER, OPTICAL, & ELECTRONIC MATERIALS

High-quality, in-stock materials

SINGLE CRYSTAL SAPPHIRE PARTS — substrates for microcircuitry, windows, lenses, etalons, spacers, insulators, delay lines, wear pads, protective covers.

LASER OPTICS — including ruby, neodymium doped materials, niobate compositions, glass, quartz, as well as sapphire sleeves, optical flats, and Lucalox® spacers.

OPTICAL PRODUCTS — single crystals, fused quartz, ceramics, metals, and glass for probing in the IR, visible, and UV spectra.

PURE CALCINED ALUMINA POWDERS — standard and low agglomerate types for polishing and as a component in ceramics.

QUALITY POLISHING PITCH — five grades of quality Swiss-made pitch are available — 55-very soft, 64-soft, 73-medium, 82-hard, and 91-very hard.

For the answer to your material problems, contact Adolf Meller Co., P.O. Box 6001, Providence, R.I. 02904. Telephone: 401-331-3717.



MELLER

Circle No. 81 on Reader Service Card

TRANSDUCER LAB



Line Pressure to 3,000 PSI
Accepts Corrosive Liquids
and Gases, Both Sides.

**MULTIPLE RANGE
PRESSURE
TRANSDUCER
MODEL DP 15TL**

**AC OUTPUT
1/2% ACCURACY**

Interchangeable Diaphragms
For the Ranges:
±1, ±5, ±20, ±75, ±250,
±1,000, ±3,000 PSID

From Stock \$400.00

**Easy range changes in your laboratory...
operates with**

**CD 12
TRANSDUCER
INDICATOR**

4 Digit Readout
±10 VDC Output
Selectable Frequency Response
X10 Scale Expansion
Short Circuit Proof.

Output Impedance: 10 ohms nominal.
Output: 0 to ±10 VDC (10 ma into 1k ohm load).
From Stock: CD 12 \$450.00

Compatible with all variable reluctance transducers



Validyne
ENGINEERING CORPORATION

18819 Napa Street
Northridge, Calif. 91324
Phone (213) 886-8488

Circle No. 82 on Reader Service Card

FEBRUARY 1972

23-25 • **Applied Vacuum Science and Technology** □ SOUTHEASTERN SECTION OF AVS □ Clearwater, Fla. (D. M. Holloway, GE Co, Neutron Devices Dept., P. O. Box 11508, St. Petersburg, Fla. 33733) 1/72

28-1 • **Gas Phase Molecular Structure** □ NATIONAL SCIENCE FOUNDATION, CENTER FOR STRUCTURAL STUDIES OF UNIV. OF TEXAS □ Austin, Tex. (J. E. Boggs, Dept. of Chemistry, Univ. of Texas, Austin, Tex. 78712) 1/72

28-1 **Vacuum Physics** □ VACUUM PHYSICS GROUP OF THE AUSTRALIAN INSTITUTE OF PHYSICS □ South Australia 8/71

MARCH 1972

1-3 **Scintillation and Semiconductor Counters** □ IEEE □ Washington, D.C. 9/71

2, 3 □ DIVISION ON DYNAMICAL ASTRONOMY OF AAS □ College Park, Md. 11/71

6-10 **Neutron Inelastic Scattering** □ IAEA □ Grenoble, France 10/71

9-14 **High Voltage Technology** □ UNION OF GERMAN ELECTRICAL ENGINEERS, IEEE POWER ENGINEERING SOCIETY □ Munich, Germany 10/71

20-22 **Physical Electronics** □ AVS □ Albuquerque, N. M. 12/71

20-23 □ IEEE □ New York 9/71

20-24 **Hydrogen in Metals** □ GERMAN BUNSEN SOCIETY, NUCLEAR RESEARCH CENTER, JÜLICH □ Jülich, Germany 9/71

20-24 • □ DIVISION FOR PLANETARY SCIENCES OF AAS □ Kailau-Kona, Hawaii (D. Morrison, AAS Division for Planetary Sciences, Institute for Astronomy, 2840 Kolo-walu St, Honolulu, Hawaii 96822) 1/72

22-24 • **Accuracy in Spectrophotometry and Luminescence Measurement** □ NBS ANALYTICAL CHEMISTRY DIVISION □ Gaithersburg, Md. 12/71

23, 24 □ NEW MEXICO CHAPTER OF AVS □ Albuquerque, N. M. 12/71

27-29 • **Ferroelectrics and their Applications** □ IOP □ Edinburgh, UK (Meetings Officer, IOP, 47 Belgrave Square, London SW1X 8QX, UK) 1/72

27-29 **Engineering Aspects of Magneto-hydrodynamics** □ ARGONNE NATIONAL LABORATORY, UNIV. OF ILLINOIS □ Argonne, Ill. 11/71

27-30 □ APS □ Atlantic City, N. J. 10/70

27-31 **New Trends in Radiation Protection** □ FRENCH SOCIETY FOR RADIATION PROTECTION □ Bordeaux, France 12/71

APRIL 1972

4-7 □ ACA □ Albuquerque, New Mexico 8/71

5-7 **High Energy Collisions** □ IUPAP, RUTHERFORD HIGH-ENERGY LAB □ Oxford, UK 11/71

5-7 • **Phase Analysis** □ IOP □ Hull, UK (Meetings Officer, IOP, 47 Belgrave Square, London SW1X 8QX, UK) 1/72

6, 7 • **Diffusion in Polymer Systems** □ IOP □ Aberdeen, UK (Meetings Officer, IOP, 47 Belgrave Square, London SW1X 8QX, UK) 1/72

6-8 □ LOW TEMPERATURE DIVISION OF EUROPEAN PHYSICAL SOCIETY □ Freudenstadt, Germany 9/71

7, 8 • □ SOCIETY OF PHYSICS STUDENTS (ZONE 10) □ Fayetteville, Arkansas (T. O. Callaway, Dept. of Physics, Univ. of Arkansas, Fayetteville, Arkansas 72701) 1/72

8-12 □ AAS □ Seattle, Wash. 9/71

9-13 **Magnetism** □ MAGNETICS GROUP OF JAPAN SOCIETY FOR THE PROMOTION OF SCIENCE, MAGNETICS GROUP OF IEEE, INSTITUTE OF ELECTRICAL ENGINEERS OF JAPAN □ Kyoto, Japan 8/71

10-12 **Acoustical Holography** □ IEEE, QUANTUM INSTITUTE OF THE UNIV. OF CALIF. □ Santa Barbara, Calif. 9/71

10-12 **Thin Films** □ IOP □ York, UK 10/71

10-14 **The Impact of Computers on Physics** □ COMPUTATIONAL PHYSICS GROUP OF THE EUROPEAN PHYSICAL SOCIETY □ Geneva, Switzerland 6/71

10-14 **Nuclear Activation Techniques in the Life Sciences** □ IAEA □ Ljubljana, Yugoslavia 12/71

11-13 **Industrial Measurement and Control by Radiation Techniques** □ INSTITUTE OF ELECTRICAL ENGINEERS, INSTITUTE OF ELECTRICAL AND RADIO ENGINEERS, IPPS, INSTITUTE OF MEASUREMENT AND CONTROL, IEEE UK AND REPUBLIC OF IRELAND SECTION □ Surrey, UK 10/71

11-14 □ OSA □ New York, N. Y.

12-14 **Machine Perception of Patterns and Pictures** □ IOP □ Ted-dington, UK 8/71

13 **Astronomical Techniques for Atmospheric Determination** □ AAS, UNIV. OF WASHINGTON □ Seattle, Wash. 12/71

17-19 **Ultrahigh Vacuum** □ VACUUM GROUP OF IOP □ Swansea, UK 12/71

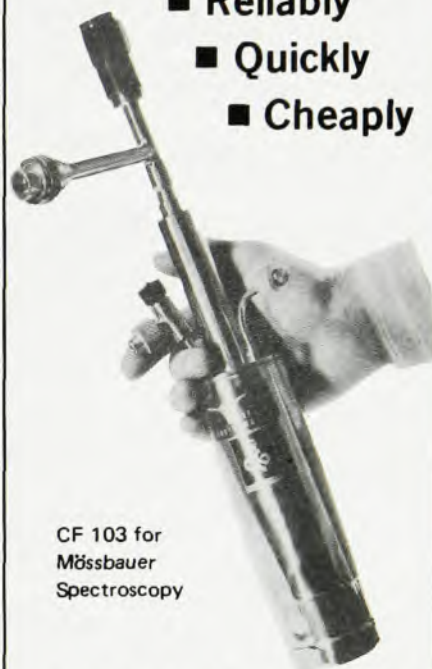
17-19 **Nuclear Physics** □ UNIV. OF BIRMINGHAM □ Birmingham, UK 9/71

17-20 **Atomic and Molecular Physics** □ IOP SUBCOMMITTEE ON ATOMIC AND MOLECULAR PHYSICS □ Sussex, UK 10/71

BIOLOGISTS! CHEMISTS! PHYSICISTS!

reach cryogenic
temperatures

- Reliably
- Quickly
- Cheaply



CF 103 for
Mössbauer
Spectroscopy

with Oxford Instruments
**Continuous Flow
Cryostat**

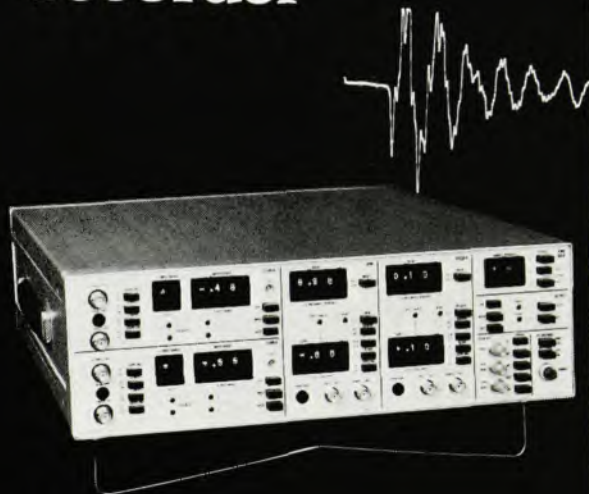
Featuring:

- Small size
- Low LHe consumption
- Rapid sample change
- No vibrations
- Use in any orientation
- Safe, low pressure operation
- Cycle: 300 - 3°K - 300 in 20 minutes
- Suitable for IR, UV, Raman, X-ray and other applications

for further information contact:

OXFORD INSTRUMENTS
100 Cathedral Street
Annapolis, Md. 21401
Tel. (301) 268-2350

Meet our new #8100 transient recorder



It's the world's fastest data acquisition system.

This is the world's fastest high resolution recorder for capturing high speed, single event or recurring signals in *real time*.

It is perhaps the world's only instrument ideally suited to measuring non-repetitive signals. It is ideal for electronic troubleshooting, shock and vibration studies, explosives testing, kinetic energy and plasma physics analysis, sonar applications, and many more.

The Model 8100 lets you capture the signal, digitize it at rates up to 100 MHz, store it in memory, then transmit it in digital form, or reproduce it as a repetitive analog signal. You can observe the stored waveform on a scope, make permanent records on a strip chart recorder, or feed the digital data directly to your computer for analysis. You can even record the data preceding your trigger signal for cause-effect or "leading edge" studies.

This kind of fast data acquisition is priceless in many applications—wherever single event or repetitive signals occur in electronics, physics, chemistry, life sciences.

The model 8100 gives 8 bits of resolution at word conversion rates to 100 MHz and stores 2000 data points in internal memory. \$9500.00. Other models available.

For full information, write or call today. Biomation, 1070 East Meadow Circle, Palo Alto, California 94303. (415) 321-9710.

biomation

Circle No. 84 on Reader Service Card

SPRINGER TRACTS IN MODERN PHYSICS

Ergebnisse der exakten
Naturwissenschaften

Editor: G. Möhler

Editorial Board:
P. Falk-Vairant,
S. Flügge, J. Hamilton,
F. Hund, H. Lehmann,
E. A. Niekisch, W. Paul

Vol. 55

49 fig. and 33 tables
V. 290 pp. 1970. Cloth
DM 78,—; ca. US \$ 23.90
Low Energy Hadron Interactions
Invited Papers presented
at the Ruhestein-Meeting,
May, 1970
Compilation of Coupling
Constants and Low Energy
Parameters
D. Morgan, J. Piśut,
G. C. Oades, B. R. Martin,
A. D. Martin, G. Kramer,
H. Pilkuhn, C. Michael,
M. Gordin, W. Pfeil,
D. Schwela

Vol. 56

4 fig. II, 215 pp. 1971. Cloth
DM 78,—; ca. US \$ 23.90
G. Lüders and K.-D. Usadel:
The Method of the Correlation
Function in Super-
conductivity Theory.

Vol. 53

7 fig. III, 106 pp. 1970. Cloth
DM 38,—; ca. US \$ 11.70
A. O. Barut: On the S-
Matrix Theory of Weak
Interactions. H. Primakoff:
Weak Interactions in Nuclear
Physics. G. v. Gehlen:
Weak Interactions at High
Energies. R. Gatto: Cabibbo
Angle and SU_x x SU_y
Breaking.

Vol. 54

46 fig. V, 176 pp. 1970. Cloth
DM 56,—; ca. US \$ 17.10
K. Fischer: Magnetic Impu-
rities in Metals: The s-d Ex-
change Model.
J. Daniels, C. v. Festerberg,
H. Raether, K. Zeppenfeld:
Optical Constants of Solids
by Electron Spectroscopy.
S. Hess: Depolarisierte
Rayleigh-Streuung und
Strömungs-Doppel-
brechung in Gasen.

Vol. 58

48 fig. IV, 265 pp. 1971. Cloth
DM 88,—; ca. US \$ 26.90
W. Kundt: Survey of Cos-
mology.
J. Feitknecht: Silicon Car-
bide as a Semiconductor.
K. Dettmann: High Energy
Treatment of Atomic
Collisions.

K. H. Schramm: Dynami-
sches Verhalten von Me-
tallen unter Stoßwellen-
belastung.

Vol. 59

154 fig. III, 222 pp. 1971. Cloth
DM 78,—; ca. US \$ 23.90
**Symposium on Meson-,
Photo- and Electro-
production at Low and
Intermediate Energies**
Bonn, September 21-26, 1970
With contributions by
M. Ademollo, H. Fischer,
L. Foà, G. v. Gehlen,
G. v. Holtey, D. Luke,
D. Schwela, P. Söding,
C. Verzegnassi, G. Wolf

Vol. 60

61 fig. IV, 233 pp. 1971. Cloth
DM 78,—; ca. US \$ 23.90
J. Weiss: Conformal Invari-
ance and the Energy-Mo-
mentum Tensor.
R. V. Mendes and Y. Ne'e-
man: Representations of the
Local Current Algebra.
A. Constructional Approach.
M. Weinstein: Chiral
Symmetry. An Approach to
the Study of the Strong
Interactions.
K. Dietz: Dual Quark Models
Chung-I-Tan: High Energy
Inclusive Processes.
J. Drees: Deep Inelastic
Electron-Nucleon Scattering.
J. J. DeSwart, M. M. Nagels,
T. A. Rijken, and P. A.
Verhoeven: Hyperon-
Nucleon Interaction.
P. D. B. Collins: How
Important are Regge Cuts?

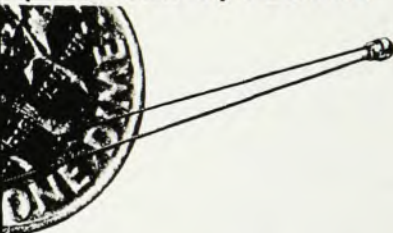
Visit our booth - 501 at the
20th Annual Physics Show.

**Springer-Verlag
New York
Heidelberg
Berlin**
175 FIFTH AVENUE
NEW YORK, N.Y. 10010

Circle No. 85 on Reader Service Card

LAKE SHORE CRYOTRONICS, INC.
Announces

THE SMALLEST
**FULL RANGE
CRYOGENIC SENSOR**
◀ 1° TO 400°K/TG100FP



WITH:

Precision: .01°K nominal
Small Size: .050" D. x .030" high
Stability: No degradation measurable
Calibration Service: 0.3 to 400° K
Heat Dissipation: 1.5 x 10⁻³ watts max.

Phone: 716-992-3411



**LAKE SHORE
CRYOTRONICS, INC.**
9631 SANDROCK RD. EDEN, N. Y. 14057

Circle No. 86 on Reader Service Card

A NEW BLACK BODY RADIATION SLIDE RULE

all new scales recomputed using the 1968
values of the radiations constants.



a 10 inch precision professional quality
magnesium alloy slide rule

SCALES (in 2 colors)

**18 SCALES ON
ENERGY SIDE**

**16 SCALES ON
PHOTON SIDE**

electro optical industries, inc.
p.o. box 3770
santa barbara, california 93105
(805) 964-6701

Circle No. 87 on Reader Service Card

LOUDSPEAKER DESIGN ENGINEER

JBL is the acknowledged leader in the
design and manufacture of innovative
products for the home high fidelity
market.

The Transducer Engineering facility
at JBL is now expanding to meet the
increasing needs of a diversified and
growing market. There are immediate
openings for Engineering personnel
with specific experience in loud-
speaker theory, design and construc-
tion.

Several challenging positions are
available which offer continuing re-
search and development opportuni-
ties in the original design of loud-
speakers and loudspeaker systems.
The range of responsibility includes
administration, research, conceptual
design, prototype construction, manu-
facturing support and cost goal
achievement.

Minimum Requirements:
B.S. in EE, ME or Physics, and
two or more years transducer en-
gineering experience.

Salary and level of assignment
based on qualifications.

SEND RESUME TO:

Vice President,
Engineering Administration

JAMES B. LANSING SOUND, INC.
3249 Casitas Avenue
Los Angeles, California 90039

AN EQUAL OPPORTUNITY EMPLOYER

NEW LISTING OF SHORT COURSES AND SCHOOLS

24-28 JANUARY

**Electron Microscopy in the Material
Sciences** □ SYRACUSE UNIVERSITY □
Syracuse, N. Y. (R. R. Belge, *Syracuse
Univ., University College, 610 E. Fay-
ette St., Syracuse, N. Y. 13202*)
[1/18/72]

8-18 JUNE

**Diffraction Production Processes at
High Energy** □ INSTITUTE OF NUCLEAR
PHYSICS, IOP, JAGELLONIAN UNIV. □
Tatra Mountains, Poland (E. Obryk,
*Institute of Nuclear Physics, Cracow
23, ul. Radzikowskiego 152, Poland*)
[3/31/72]

13-27 AUGUST

**Relativity, Astrophysics and Cosmol-
ogy** □ THEORETICAL PHYSICS DIVISION
OF THE CANADIAN ASSOCIATION OF
PHYSICISTS □ Banff, Alberta, Canada
(W. Israel, *Dept. of Mathematics,
Univ. of Alberta, Edmonton 7, Alberta,
Canada*)

APRIL 1972

17-21 **Dosimetry Techniques Applied to
Agriculture, Industry, Biology
and Medicine** □ IASA □ Prague,
Czechoslovakia 11/71

17-21 □ ASA □ Buffalo, N. Y. 6/70

17-21 **Inner-Shell Ionization Phenom-
ena** □ ORGANIZING COMMITTEE
INTERNATIONAL CONFERENCE ON
INNER-SHELL IONIZATION PHE-
NOMENA, AEC, IUPAP, GEORGIA
STATE COLLEGE □ Atlanta, Geor-
gia 9/71

18-20 **Trends in On-Line Computer-
Control Systems** □ INSTITUTION
OF ELECTRICAL ENGINEERS □
Sheffield, UK 12/71

24-26 **Speech Communication and
Processing** □ IEEE GROUP ON
AUDIO AND ELECTROACOUSTICS,
AIR FORCE CAMBRIDGE RESEARCH
LABS □ Boston, Mass. 7/71

24-27 □ APS □ Washington, D. C.

27, 28 **Low-Energy Electron Diffrac-
tion** □ ELECTRON AND ATOMIC
PHYSICS DIVISION OF APS □ Wash-
ington, D. C. 9/71

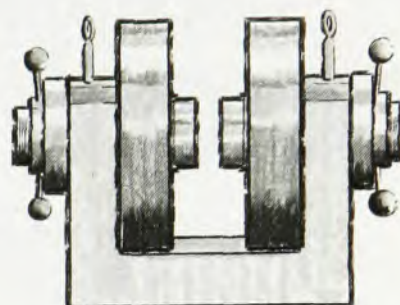
28 • □ SOCIETY OF PHYSICS STUDENTS
(ZONE 8) □ Platteville, Wiscon-
sin (H. Hensley, *Dept. of Physics,
Wisconsin State Univ., Platteville,
Wisconsin 53818*) 1/72

28, 29 **Experimental Meson Spectros-
copy** □ UNIV. OF PENNSYLVANIA
□ Philadelphia, Pa. 9/71

30-4 **Environmental Progress in Sci-
ence and Education** □ INSTITUTE
OF ENVIRONMENTAL SCIENCES □
New York, N. Y. 11/71

MAY 1972

1-3 **Applied Superconductivity** □
IEEE, AIP, DEPARTMENT OF NAVY,
NSF, NASA □ Annapolis, Md. 9/71



The small magnet with big performance

Varian's V-4005 precision labora-
tory electromagnet stands alone among
4-inch magnets.

The C-frame V-4005 is built by the
best magnet craftsmen in the business
to the same high quality as Varian's
large research magnets. This
assures you of:

- * A precision air gap continuously
adjustable from 0 to 4.3 inches,
and accessible for easy use.
- * Field intensities unmatched by any
other 4-inch magnet.
- * The only 4-inch magnet to offer an
optional field regulated power supply
that uses the same Fieldial™ Hall effect
regulator as Varian's larger magnets.
- * A wide selection of pole caps,
including constant force caps for
magnetic susceptibility experiments.
- * In sum, an ideal magnet for
general laboratory and classroom use,
as well as Hall effect, susceptibility,
Zeeman effect, and basic NMR and
EPR studies.

You can buy other small magnets
for less money, but none whose
performance compares to that of
the V-4005.

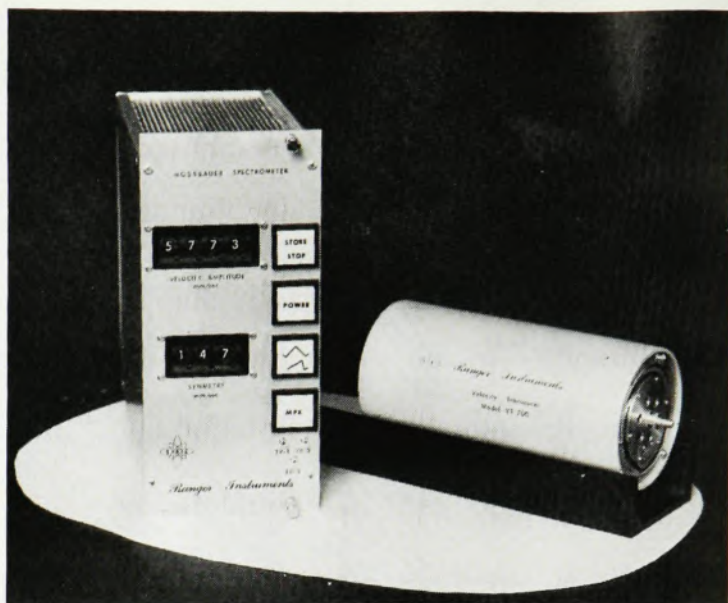
For more information or a quote,
write Varian, Analytical Instrument
Division, 611 Hansen Way,
Palo Alto, California 94303.

varian 
analytical instrument division

SEE THE VARIAN BOOTH AT THE APS
MEETING IN SAN FRANCISCO.

Circle No. 88 on Reader Service Card

RANGER INSTRUMENTS INTRODUCES FOURTH GENERATION MÖSSBAUER EQUIPMENT



The Ranger Mössbauer Spectrometer features....integrated circuit technology....Digital switching for easy range selection and reproducibility....Constant acceleration motion in either the symmetrical or fly-back mode....a Multiplexing option and a built-in Moire' interferometer. You'll also like our new Conversion Electron Detectors....our 220 Khz Data Acquisition System and our 1.2° K Cryogenic Sources.

Visit our booth (No. 115) at the 1972 Physics Show in San Francisco.

BOX 863, ALVA, OKLA. 73717

Circle No. 89 on Reader Service Card

The UnPlotter

**the first graphic digitizer
for less than \$8,000.**

You have plotted and gathered stacks of graphic data. Convert it to computer format using the Ruscom Digitizer from Electronic Systems.

The practical solution: The Ruscom Digitizer reads any X-Y coordinates such as strip charts, graphs, X-rays, maps, and engineering drawings. And drives any of the computer peripherals you can list. Which creates computer compatible inputs faster and infinitely more accurate than hand recording. Yet superby cheaper than ultra-sophisticated methods.



Specifications: 0.01" accuracy, resolution and repeatability. Keyboard entry and display are standard.

Contact Electronic Systems today for complete details on the Ruscom Digitizer. The UnPlotter for any budget.

ELECTRONETIC SYSTEMS

62 ALNESS STREET, DOWNSVIEW, ONTARIO, CANADA
TELEPHONE (416) 636-3673 ■ TELEX 02-21374

Circle No. 90 on Reader Service Card

2-5 **Titanium** ☐ ORGANIZING COMMITTEE OF THE SECOND CONFERENCE ON TITANIUM ☐ Cambridge, Mass. 5/71

7-11 **Quantum Electronics** ☐ IEEE, AIP, OSA, APS ☐ Montreal, Canada 10/70

7-12 ☐ ELECTRONICS DIVISION OF THE ELECTROCHEMICAL SOCIETY ☐ Houston, Tex. 12/71

15-18 **Neutron Dosimetry in Biology and Medicine** ☐ SOCIETY FOR RADIATION AND ENVIRONMENTAL RESEARCH ☐ Neuherberg, Germany 12/71

15-19 **Thin Films** ☐ INTERNATIONAL THIN FILM COMMITTEE, ITALIAN PHYSICAL SOCIETY, ITALIAN ELECTRICAL AND ELECTRONIC ASSOCIATION ☐ Venice, Italy 7/71

21-24 **Underground Transmission** ☐ IEEE POWER ENGINEERING SOCIETY ☐ Pittsburgh, Pa. 10/71

22-25 **Microwaves** ☐ IEEE ☐ Chicago, Ill. 9/71

JUNE 1972

4-6 • **Mass Spectrometry** ☐ AMERICAN SOCIETY OF MASS SPECTROMETRY, COMMITTEE E-14 OF AMERICAN SOCIETY FOR TESTING AND MATERIALS ☐ Dallas, Tex. (F. E. Saalfeld, Naval Research Laboratory, Code 6110, Washington, D. C. 20390) 1/72

5-7 ☐ APS ☐ Albuquerque, New Mexico 12/71

11-14 **Nuclear Reactors and Radioisotopes** ☐ CANADIAN NUCLEAR ASSOCIATION ☐ Ottawa 11/69

12-17 ☐ HEALTH PHYSICS SOCIETY ☐ Las Vegas, Nev. 10/71

12-17 • **Pollution: Engineering and Scientific Solutions** ☐ SOCIETY OF ENGINEERING SCIENCE, ENVIRONMENTAL PROTECTION AGENCY, NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION, WASHINGTON UNIV. ☐ Tel Aviv, Israel (E. Y. Rodin, Dept. of Applied Mathematics, Washington Univ., St. Louis, Mo. 63130) 1/72

14-16 ☐ HEAT TRANSFER AND FLUID MECHANICS INSTITUTE ☐ Northridge, Calif. 11/71

18-22 ☐ AMERICAN NUCLEAR SOCIETY ☐ Las Vegas, Nev. 10/71

19-22 • **Vacuum Metallurgy** ☐ VACUUM METALLURGY DIVISION OF AVS, PITTSBURGH CHAPTER OF AMERICAN SOCIETY FOR METALS ☐ Pittsburgh, Pa. (W. H. Pfeifer, Battelle Memorial Institute, Columbus Labs, 505 King Ave, Columbus, Ohio 43201) [2/72] 1/72

20-23 **Thermophysical Properties of Solids at High Temperature** ☐ G. COLONNETTI METROLOGICAL INSTITUTE OF THE NATIONAL RESEARCH COUNCIL OF ITALY, INDUSTRIAL UNION OF TURIN ☐ Turin, Italy 12/71

A is for Actinium-227

In between are 103 other radionuclides in our current stock, all described in a 28-page catalog. It's the widest line available.

That makes us the handiest source of radionuclides, but not necessarily the best. What makes us the best is our determination to ship the highest quality compounds in the safest, most convenient package. We do this by subjecting our nuclide solutions to the most rigorous quality control in the industry. Production-processing and analytical data accompany each shipment, including an X-ray or gamma spectrum if it's a photon emitter.

Ask for the catalog and keep it handy. Besides the radionuclides, it describes our custom irradiation services, gamma and beta reference source sets, radionuclide generators, and classroom isotope generators.

Leak-proof combi-vial with protective sleeve



NEU New England Nuclear

575 Albany Street, Boston, Mass. 02118
Customer Service: (617) 482-9595

S JBC AL PT R&I

Z is for Zinc-65

SEE US AT BOOTH #112-113

Circle No. 91 on Reader Service Card

new from RUSSIA!



Soviet Journal of Quantum Electronics

SOVIET JOURNAL OF QUANTUM ELECTRONICS

The American Institute of Physics has added to its list of 13 major Russian journals that are translated from cover to cover, the journal *KVANTOVAYA ELEKTRONIKA*. New in 1971, this journal is edited by Academician N.G. Basov, who shared the 1964 Nobel Prize in physics for development of the laser with Charles H. Townes and A. Prokhorov.

This bimonthly journal covers experimental and theoretical work on quantum electronics and its applications in science and technology: lasers, interaction of coherent radiation with matter, holography, nonlinear optics, and related topics. The editors say, "We hope to concentrate, to a significant degree, the fundamental publications on quantum electronics in a single publication."

The importance that the Russians attach to this journal is indicated by the fact that they are printing more than twice as many copies as they print of their famous *ZHURNAL EKSPERIMENTAL'NOI I THEORETICHESKOI FIZIKI*, which we publish as *SOVIET PHYSICS-JETP*.

Volume I (July 1971 - June 1972) of *SOVIET JOURNAL OF QUANTUM ELECTRONICS* covers the 1971 issues of *KVANTOVAYA ELEKTRONIKA*.

Annual Subscription Prices

U.S. and poss.
Canada and Mexico \$50

Europe, Middle East,
North Africa (air freight) \$55

Elsewhere \$53

To: Department S
American Institute of Physics
335 East 45th Street, New York, New York 10017

Please enter my subscription for Volume I (July 1971 - June 1972) of *SOVIET JOURNAL OF QUANTUM ELECTRONICS*.

NAME _____

ADDRESS _____

City _____ State _____ ZIP Code _____

Check enclosed ☐

Please bill ☐

New CM SERIES Cryo Refrigerators offer 1.8°K to 150°K



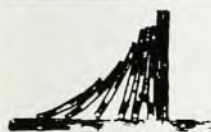
Now . . . CRYOMECH'S series CM closed cycle cryorefrigerators easily attain 1.8°K to 150°K with the flick of a switch! CRYOMECH'S "know-how", technical background, unique patented design and simplicity of internal operation (only one cold moving part) offers you this dependable unit at low cost . . . without sacrificing quality in workmanship or materials.

- Cold head guaranteed 5000 hrs.
- Compressor guaranteed 3000 hrs.
- Compact and vibration free
- Reliable and easily applied

Write or call today
for more information

Est 1965
CRYOMECH
INC.

314 AINSLEY DR. JAMESVILLE, N. Y. 13078, USA
PHONE 315 - 475 - 9692
Circle No. 92 on Reader Service Card



Bind Your Journal Issues Into Valuable Vigilant Volumes

Pertinent information you sometimes desperately need is too often in the Journal issue you cannot find. Single copies have a way of getting lost, misplaced or destroyed. It is better for you to let us permanently bind each journal into semi-annual or annual volumes—then your reference source is always complete, organized and instantly at your service. We call them "Vigilant Volumes"; they so carefully store and provide on instant notice so much knowledge of timely value.

The cost per "Vigilant Volume," by official commission from the journal publishers is but \$5.95 per volume, permanently hard bound in washable buckram, gold embossed with period dates, journal name and special insignia—plus your name stamped in gold leaf. "Vigilant Volumes" are handsome library additions too, real conversation pieces. These volumes are bound in the authorized colors.

HOW TO ORDER

Simply ship your journal issues to us via parcel post, together with your name, address, and remittance of \$5.95 per volume. Within 45 days after receipt, bound volumes will be shipped to you prepaid.



PUBLISHER'S
AUTHORIZED
BINDERY
SERVICE

(Binders of All Journals)

4440 West Roosevelt Rd. Chicago, Ill. 60624

JUNE 1972

20-24 • Many-Body Reactions □ INSTITUTE OF NUCLEAR PHYSICS, INSTITUTE FOR NUCLEAR RESEARCH □ Tatra Mountains, Poland (A. Bialas, Institute of Nuclear Physics, Cracow 23, Radziszewskiego 152, Poland) 1/72

21-23 • Coherence and Quantum Optics □ AIR FORCE OFFICE OF SCIENTIFIC RESEARCH, UNIV. OF ROCHESTER □ Rochester, N. Y. (L. Mandel, Dept. of Physics and Astronomy, Univ. of Rochester, Rochester, N. Y. 14627) [5/72] 1/72

21-23 • Role and Value of Measurement □ ELECTRONICS DIVISION OF THE AMERICAN SOCIETY FOR QUALITY CONTROL, GROUP ON INSTRUMENTATION AND MEASUREMENT OF IEEE, METROLOGY DIVISION OF INSTRUMENT SOCIETY OF AMERICA, NBS, NATIONAL CONFERENCE OF STANDARDS LABS, PRECISION MEASUREMENT ASSOCIATION □ Boulder, Colo. (G. Goulette, Univ. of Colorado, 130 Academy Bldg., 970 Aurora Ave, Boulder, Colo. 80302) 1/72

22-24 □ AAPT □ Albany, N. Y. 6/70

26-28 Effects of Radiation on Structural Metals □ AMERICAN SOCIETY FOR TESTING AND MATERIALS □ Los Angeles, Calif. 10/71

26-29 Precision Electromagnetic Measurements □ IEEE □ Boulder, Colo. 10/71

26-29 □ AMERICAN ASSOCIATION OF PHYSICISTS IN MEDICINE □ Philadelphia, Pa. 11/71

26-30 • Microscopy □ INTER/MICRO-72 □ Chicago, Ill. (W. M. McCrone, INTER/MICRO-72, 451 E. 31st St, Chicago, Ill. 60616) [2/72] 1/72

JULY 1972

3-5 Band Structure in Solids □ SOLID STATE PHYSICS SUB-COMMITTEE OF IPPS □ Exeter 10/70

10-14 Rarefied Gas Dynamics □ STANFORD UNIV. □ Stanford, Calif. 10/71

17, 18 Failure of Fiber-Reinforced Composite Materials □ MATERIALS AND TESTING GROUP OF IOP □ Guildford, UK 12/71

18-21 Cyclotrons □ Vancouver, B. C., Canada 10/70

19-21 Defects in Semiconductors □ IOP □ Reading, UK 8/71

19-22 • Calorimetry □ ORGANIZING COMMITTEE OF 27TH CALORIMETRY CONFERENCE □ Park City, Utah (J. M. Sturtevant, Dept. of Chemistry, Yale Univ., New Haven, Conn. 06520) 1/72

25-28 • Magnetism □ MAGNETISM SECTION OF CONDENSED MATTER DIVISION OF EUROPEAN PHYSICAL

Pyroelectric IR Detectors

for: radiometry—
spectroscopy—
pulse studies—
heterodyne detection—
laser diagnostics—
rapid pyrometry.
... at ROOM TEMPERATURE



kT-1000 Series Fast Response Detectors

- nanosecond response time
- kilowatt peak powers
- near-to-far IR response
- eight decades of linearity

kT-4000 Series Radiometric Detectors

- insensitive to ambient temperature
- visible-to-far IR response
- 100 microsecond response time
- no bias or poling required
- high detectivity



**laser
precision
corp.**

Yorkville, N.Y. 13495
Tel. (315) 797-4449

... making light work
Circle No. 93 on Reader Service Card



Energy Bands



The Lincoln Laboratory, a research center of the Massachusetts Institute of Technology, is engaged in research and development in advanced electronics, with emphasis on applications to national defense and space exploration. The program of research extends from fundamental investigations in selected areas, through technological development of devices and components, to the design and development of complex systems. All qualified applicants will receive consideration for employment without regard to race, creed, color or national origin. Lincoln Laboratory, Massachusetts Institute of Technology, Box 15, Lexington, Massachusetts 02173.

Solid State Physics
Digital Signal Processing
Radio Physics
Radar Systems
Optics
Computer Systems
Re-entry Physics
Space Communications

A description of the Laboratory's work will be sent upon request.

SOCIETY □ Bochum, West Germany (D. Wagner, Chairman, Organizing Committee of Magnetism Meeting, Dept. of Physics, Ruhr Univ., Bochum, West Germany) 1/72

- 25-29 Physics of Semiconductors □ IUPAP, POLISH ACADEMY OF SCIENCES, UNIV. OF WARSAW □ Warsaw, Poland 10/71

AUGUST 1972

- 14-17 Materials Technology □ BRAZILIAN NATIONAL RESEARCH COUNCIL, ORGANIZATION OF AMERICAN STATES, FORD FOUNDATION □ Rio de Janeiro, Brazil 10/71
- 14-18 Physics and Chemistry of Ice □ ROYAL SOCIETY OF CANADA □ Ottawa, Canada 1/71
- 20-25 Combustion □ PENNSYLVANIA STATE UNIV., COMBUSTION INSTITUTE □ University Park, Pa. 8/71
- 20-26 Low-Temperature Physics □ IUPAP, NBS, UNIV. OF COLO. □ Boulder, Colo. 10/71
- 21-25 Extended Atmospheres and Circumstellar Matter in Spectroscopic Binary Systems □ INTERNATIONAL ASTRONOMICAL UNION □ Victoria, B. C., Canada 2/71
- 21-25 Liquid Crystals □ LIQUID CRYSTAL INSTITUTE □ Kent, Ohio 12/71
- 21-26 Magnetic Resonance and Related Phenomena □ EUROPEAN PHYSICAL SOCIETY □ Turku, Finland 10/71
- 21-26 Theoretical and Applied Mechanics □ NATIONAL RESEARCH COUNCIL □ Moscow, USSR 9/71
- 27-7 □ INTERNATIONAL UNION OF CRYSTALLOGRAPHY □ Kyoto, Japan 1/71
- 28-1 Few-Particle Problems in Nuclear Interaction □ IUPAP, US NATIONAL SCIENCE FOUNDATION, AEC, UNIV. OF CALIF. AT LOS ANGELES □ Los Angeles, Calif. 12/71

SEPTEMBER 1972

- 3-8 Properties of Liquid Metals □ JAPAN INST. OF METALS, PHYSICAL SOC. OF JAPAN □ Tokyo 10/70
- 4, 5 • Electro-Optics Systems in Flow Measurement □ DEPARTMENTS OF MATHEMATICS AND ELECTRONICS AT UNIV. OF SOUTHAMPTON □ Southampton, UK (C. Greated, Dept. of Mathematics, Univ. of Southampton, Southampton SO9 5NH, UK) 1/72

DECEMBER 1972

- 18-22 • Relativistic Astrophysics □ ORGANIZING COMMITTEE ON RELATIVISTIC ASTROPHYSICS □ New York (A. Cameron, Belfer Graduate School of Science, Yeshiva Univ., New York, N. Y. 10033) 1/72 (Note corrected date.) □

Excellence*...

in Educational Science Instrumentation

- Student-proof ruggedness
- reliable simplicity ■ low-cost ■ adaptable
- tried and proven



A complete line of educational instrumentation and accessories for teaching Nuclear Science.

That's our line — our only line.

**Backed by a 3 year warranty*

the Nucleus
INC.
P. O. Box R
Oak Ridge, Tennessee 37830

Visit us in
San Francisco,

Booth 231

Circle No. 94 on Reader Service Card

WALKER // MAGNION?

Yes, these two well known names in magnetics have been brought together within the Scientific Division of O. S. Walker Company, Inc., combining their technologies to provide the finest in laboratory magnetic systems.

Combined we now offer:

GREATER SOPHISTICATION IN LOW-COST SYSTEMS.
REDUCED COST OF STANDARD AND SPECIAL SYSTEMS.
CONTINUED ADVANCEMENT IN THE STATE OF THE ART.

A comprehensive product line.

LABORATORY ELECTROMAGNETS — 4" to 15", variable and fixed gap.
ASSOCIATED POWER SUPPLIES — field regulated, current regulated and unregulated.
ESR/EPR SYSTEMS AND ACCESSORIES.
AIR CORE SOLENOIDS — Plasmaflux and specials.
CUSTOM COILS — computer designed for custom requirements.
MAGNETIC TEST INSTRUMENTATION — Gaussmeters, (NMR and Hall), Fluxmeters, Hysteresis measuring systems.

WALKER
SCIENTIFIC
DIVISION

O. S. WALKER COMPANY, INC.
ROCKDALE ST., WORCESTER, MASS. 01606
(617) 853-2323

Visit us at booth 106 at the Physics Show, January 31st-February 2nd
Circle No. 95 on Reader Service Card