## Calendar

Material for inclusion in the calendar and meeting sections should be received 6 weeks prior to the date of the issue in which it is to appear. which it is to appear.
Further information
can be obtained by
writing to the addresses indicated in parentheses.

### Tanuary

- Am. Astronautical Soc., Sheraton Hotel, Dallas (A. S. Sibilia, Chance Vought Aircraft, Dallas, Tex.)
- Vougil Australe, Dates, 1ex.)
  Instrument Soc. of Am. InstrumentAutomation Conf. at Sheraton-Jefferson Hotel and Exhibit at Kiel Auditorium, St. Louis, Mo. (W. H. Kushnick, 313 Sixth Ave., Pittsburgh 22, Pa.)
- OSA Rochester Sect. (Dielectric Waveguide Modes in the Visible by E. Snitzer), Rochester Museum of Arts & Sciences (J. H. Altman, Kodak Research Lab, Rochester 4, N, Y.
- Am. Meteorological Soc., ann. mtg., NYC (K. C. Spengler, 45 Beacon St., Boston 8, Mass.)
- Mathematical Assoc. of Am. & Am. Mathematical Soc., joint mtg., Willard Hotel, Washington, D. C. (For MAA: H. M. Gehman, U. of Bufalo, Bufalo 14, N. Y.; or AMS, 190 Hope St., Providence 6, R. I.)
- 26-27 Western Spectroscopy Conf., ann., Asilomar, Pacific Grove (R. C. Hawes, Applied Physics Corp., 2724 S. Peck Rd., Monrovia, Calif.)

### February

- Military Electronics Conv. spons'd by PGME of IRE, Biltmore Hotel, Los Angeles (J. J. Myers, Haffman Electronics Corp., 371? S. Grand Ave., Los Angeles, Calif.)
- American Physical Society, Hotel New Yorker, NYC (K. K. Darrow, 538 W. 120 St., New York 27, N. Y.)
- American Association of Physics Teachers, Hotel New Yorker, NYC; send abstracts to M. Correll, DePauw U. Greencastle, Ind. (F. Verbrugge, U. of Minnesota, Minneapolis 14, Minn.)
- apolis 14, Minn.)
  (through April 28) Course on Design, Construction, & Operation of Nuclear Reactors, Chalk River (W. R. Livingston, Chalk River Reactor School, Chalk River, Ont., Canada)

  OSA Rochester Sect. (Gamma-Ray & X-Ray Air Luminance by A. Skumanich), U. of Rochester Faculty Club (J. H. Altman, Kodak Research Lab, Rochester 4, N. Y.)

  SAS New York Sect. Hotel New
- SAS New York Sect., Hotel New Yorker, NYC (P. Lublin, General Telephone & Electronics Labs, Bay-side, N. V.)
- Physics Club of Chicago (Balloon Telescopy by J. A. Hynek), Younk-er's Restaurant, Chicago (E. L. Bussell, The Welch Scientific Co., 1515 Sedgwick St., Chicago 10, Ill.) 14
- 1515 Sedgwick St., Chicago 10, Ill.)

  15-17 Solid-State Circuits Conf., internat'l, spons'd by IRE, AIEE, U. of Pa., at U. of Pa. & Sheraton Hotel, Phila. (F. H. Blecher, Bell Telephone Labs, Murray Hill, N. J.) (See Sept. PT, p. 76)

  16-18 The Biophysical Soc., ann. mtg., Chase-Plaza Hotel, St. Louis (W. Sleator, Washington U., St. Louis 10, Me.)

- 20-25 Semiconductor Devices, internat'l symp. in connection with Internat'l Electronic Components Exhibition (Feb. 17-21), Paris (10 av. Pierre-Larouse, Malakoff (Seine), France)
- Pittsburgh Conf. on Analytical Chem. Phtsburgh Conf. on Analytical Chem. & Applied Spectroscopy and New Frontiers in Optics & Spectroscopy Symp., Pittsburgh (W. F. Harris, Westinghouse Electric Corp., Pittsburgh 35, Pa.)

#### March

- Optical Society of America, Pick-Roosevelt Hotel, Pittsburgh, Pa. (Mary Warga, 1155 16th St., N. W., Washington 6, D. C.)
- Engineering Aspects of Magneto-hydrodynamics Symp. spons'd by AIEE, IAS, IRE, at U. of Pa., Philadelphia (N. W. Mather, Proj-ect Matterhorn, P. O. Box 451, Princeton, N. J.)
- American Physical Society, US Naval Postgraduate School, Monterey (W. A. Nierenberg, U. of Calif., Berkeley 4, Calif.)
- APS Division of Solid-State Physics, US Naval Postgraduate School, Monterey, Calif. (E. Bur-stein, U. of Pa., Philadelphia 4, Pa.)
- APS Division of High-Polymer Physics, Monterey, Calif. (D. W. McCall, Bell Telephone Labs, Mur-ray Hill, N. J.)
- Temperature—Its Measurement & Control in Science & Industry, nat'l symp. spons'd by AIP, ISA, NBS, Columbus, Ohio (C. M. Herzjeld, Nat'l Bureau of Standards, Washington 25, D. C.) (See July PT, p. 74)

### April

- 4-6 Electromagnetics & Fluid Dynamics of Gaseous Plasma, Polytechnic Inst. of B'klyn symp. spons'd by IRE, IAS, US defense Research Agencies at Engineering Socs. Bldg., NYC (M. Bloom, PIB, 55 Johnson St., B'klyn, 1, N. Y.) (See Dec. '60 PT, p. 79)

  11-13 Ultrapurification of Semiconductor Materials Conf., New England Mutual Hall, Boston (Electronics Research Directorate, L. G. Hanscom Field, Bedford, Mass.)
- Field, Bedford, Mass.)

  15-24 Photography, Cinematography, & Optics, internat'l biennial, Paris (I. d'Autrevaux, Syndicat Général d'Industrie Photo & Cinéma, 94 rue de Rennes, Paris 6, France)

  18-19 Organic Semiconductors, conf. spons'd by Armour Research Found, & Electronics mag., at Morrison Hotel, Chicago (J. J. Brophy, ARF, 10 W. 35 St., Chicago 16, Ill.)
- Chemical Reactions in the Lower & Upper Atmosphere Symp. spons'd by Stanford Research Inst., at Mark Hopkins Hotel, San Francisco (R. D. Cadle, SRI, Menlo Park, Calif.) (See Aug. PT, p. 62)
- Nat'l Academy of Sciences, ann. mig., Washington, D. C. (NAS, 2101 Constitution Ave., Washington 25,

- 24-27 American Physical Society, Sheraton-Park Hotel, Washington, D. C. (K. K. Darrow, 538 W. 120 St., New York 27, N. Y.)
- Nat'l Aero-Space Instrumentation Symp., Adolphus Hotel, Dallas (W. I. Gabriel, Convair Div., General Dynamics Corp., Ft. Worth, Tex.)

### May

- Graph Theory Workshop, U. of Ill., Urbana (M. E. Van Valkenburg, U. of Ill., Urbana, Ill.)
- Topology in Circuit Theory, 5th Midwest Symp, at Allerton Pk. in Monticello, & U. of Ill. in Urbana (M. E. Van Valkenburg, U. of Ill., Urbana, Ill.) (See May PT, p. 73)
- Nat'l Aerospace Electronics Conf. (NAECON), Biltmore & Miami Hotels, Dayton; send abstracts by Jan. 15 to R. G. Stimmel, 809 Larriwood Ave., Dayton 29, Ohio (Inst. of Radio Engineers, 1 E. 79 St., New York 21, N. V.)
- 11-13 Acoustical Society of America, Bellevue-Stratford Hotel, Philadel-phia, Pa. (M. E. Hawley, RCA, Moorestown, N. J.)
- Moorestown, N. J.)
  Large Capacity Memory Techniques for Computing Systems, symp, spons'd by ONR Information Systems Branch, in Dept. of Interior Auditorium, Washington, D. C. (Miss. J. Leno, Code 430A, Office of Naval Research, Washington 25, D. C.)
- Research, Washington 25, D. C.)
  Effects of Ionizing Radiation at the
  Molecular Level, IAEA symp., Brno,
  Czechoslovakia (Internat! Atomic
  Energy Agency, 11 Kärntner Ring,
  Vienna 1, Austria)
- Property Changes in Reactor Ma-terials & Radiation Damage Conf., Bristol (A. T. Churchman, Berkeley Nuclear Labs, 7 St. Stephen's Ave., Bristol 1, England)
- Biophysical Cong., 1st, Tatranská Lomnica (V. Slouka, Czechoslovak Medical Soc., Juan Evangelista, Bio-phys. Sect., Prague, Czechoslovakia)

### June

- ASTM Comm. E-14 on Mass Spectrometry, Chicago, III.; send abstracts before Feb. 1 to R. E. Fox, Westinghouse Research Labs, Pittsburgh 35, Pa. (6, Crable, Gulf Research Center, P. O. Box 2038, Pittsburgh 30, Pa.) (See Dec. '60 PT, 6, 80)
- 7-10 Canadian Assoc. of Physicists, ann. cong., Sir George Williams U., Montreal (G. D. Scott, U. of Toronto, Toronto 5, Ont., Canada)
- 12-15 Physics of Electronic & Atomic Collisions, internat'l conf., U. of Colo., Boulder (B. Bederson, New York U., New York 53, N. Y.) (See July '60 PT, p. 75)
- Molecular Structure & Spectroscopy Symp., Dept. of Physics & Astron-omy, Ohio State U. (R. A. Oetjen, Ohio State U., Columbus 10, Ohio)
- Gas Chromatography Symp., biennial internat'l, Kellogg Center, Mich. State U., E. Lansing, Mich. (H. J. Noebels, ISA, 313 Sixth Ave., Pittsburgh 22, Pa.)
- American Astronomical Society, Nantucket (A. Hynek, Smithsonian Astrophysical Observatory, 60 Gar-den St., Cambridge 38, Mass.)
- 19-23 Carbon Conf., biennial, spons'd by Am. Carbon Comm. & Penn State U. at Penn State U.; submit titles by Feb. 1 to G. R. Hennig, Solid State Science Div., Argonne Nat'l Lab, Lemont, Ill. (5th Carbon Conf., Penn State U. Conf. Center, University Park, Pa.)

- 20-22 Am. Meteorological Soc. with AAAS Pacific Div., Davis (K. C. Spengler, 45 Beacon St., Boston 8, Mass.)
- 20-24 Vacuum Techniques, internat'l cong., Paris (P. Fleury, Institut d'Optique, 3 blvd. Pasteur, Paris 15, France)
- 22-24 American Physical Society, U. of Mexico, Mexico City (K. K. Darrow, 538 W. 120 St., New York 27, N. Y.)
- Internat'l Measurements & Instru-ments Conf., Budapest (IMEKO Secretariat, P. O. Box 3, Budapest 5, Hungary)
- 26-27 Vacuum Metallurgy, ann. conf. spon-s'd by Am. Vacuum Soc. & New York U. at NYU University Heights Campus; send abstracts by Feb. 15 to R. F. Bunshah (R. F. Bunshah, NYU, New York 53, N. Y.)
- 26-28 European Symp. on Space Technology, at Federation of British Industries, London (British Interplanetary Soc., 12 Bessborough Gardens, London S. W. 1, England)
- 26-28 Military Electronics Conv. spons'd by PGME of IRE, Shoreham Hotel, Washington, D. C.; send abstracts before Feb. 1 to H. Davis, SAFRD, The Pentagon, Washington 25, D. C. (C. De Vore, 3224 16th St., N. W., Washington 10, D. C.)
- American Association of Physics Teachers, Stanford U., Palo Alto, Calif. (F. Verbrugge, U. of Minnesota, Minneapolis 14, Minn.)

### July

- Optical Materials, Internat'l Comm. for Optics mtg., Paris (A. Maréchal, Institut d'Optique, 3 blvd. Pasteur, Paris 15, France) 5-8
- Free Radicals, interna'l symp., Uppsala (Symp. Secretariat, c/o Inst. of Phys. Chem., Uppsala, Sweden)
- 10-14 Optical Instruments & Techniques
  Conf., arranged by British Nat'l
  Comm. for Physics under auspices of
  Internat'l Commission for Optics,
  London (K. J. Habell, Nat'l Physical Lab, Teddington, Middlesex, England)
- Am. Crystallographic Assoc., U. of Colorado, Boulder (W. M. Macintyre, U. of Colo., Boulder, Colo.) 31-4
- Internat'l Congress of Biophysics, Stockholm (B. Lindström, Karolinska Institutet, Stockholm 60, Sweden) (See Oct. '60 PT, p. 88)

- 2-12 Aug. 2-5, IUPAC Conf. (R. Morf, c/o Sandoz Ltd., Basel 13, Switzerland); Aug. 6-12, Internat'l Congress of Pure & Applied Chem. (L. Marion, Nat'l Research Council, Ottawa 2, Canada); Aug. 7-11, High-Temperature Chem. & Thermodynamics Symp. (L. Brewer, U. of California, Berkeley 4, Calif.) in Montreal, Canada
- 6-26 Nuclear Physics Summer Course spons'd by Italian Physical Soc., at Varenna (G. Polvani, Via Saldini 50, Milan, Italy)
- 14-17 Internat'l Calorimetry Conf., Ottawa, Canada (J. E. Kunzler, Bell Tele-phone Labs, Murray Hill, N. J.)
- Internat'l Astronomical Union, Berkeley, Calif. (D. H. Sudler, Royal Greenwich Observatory, Herstmonceux Castle, Sussex, England)
- 21-24 Photoconductivity, internat'l conf., spons'd by IUPAP, APS, ONR, at Cornell U., Ithaca, N. Y.; send abstracts by March 31 to A. R. Hutson (A. R. Hutson, Bell Telephone Labs, Murray Hill, N. 1.)

January 1961



## Ultek ELECTRONIC high-vacuum SYSTEMS

clean vacuum-no fluids, no contaminants

high vacuum—10.5 through 10.9 mm Hg and below, chamber volumes from 0.001 to 100 cubic feet

low-cost operation - UlteVac ionic pumps need minimum maintenance, operate unattended for months

System completely self-contained and movable

No water lines or plumbing connections Requires only an AC outlet

### high-vacuum applications . . .

- vacuum tube processing
- thin film deposition

space simulation

- environmental testing
- · general physics research

### complete vacuum line . . .

standard and custom systems, with pumps from 5 to 2000 liters/sec.

Ultek vacuum

tube processing

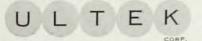
- sorption roughing pumps
- metal-sealed fittings

- high-vacuum valves
- ambient foreline traps

- vacuum chamber feed-throughs and view ports

### Write Today -

FREE Reprint of technical article, "Ionic Vacuum Pumps," by Dr. Lewis D. Hall



920-P Commercial St. - Palo Alto, Calif. - DA 1-4117

ULTEK SALES ENGINEERING OFFICES BOSTON . CLEVELAND . PHILADELPHIA



### POSITIONS OPEN

### AUSTRALIA

### THE UNIVERSITY OF NEW SOUTH WALES SENIOR LECTURER/LECTURER IN PHYSICS

The University invites applications for appointment to the position of SENIOR LECTURER/LECTURER in the SCHOOL OF PHYSICS.

#### Salary:

Senior Lecturer, £A2563 range £A3013 per annum. Lecturer, £A1743 range £A2448 per annum.

Commencing salary according to qualifications and experience. Applicants must possess a degree with honours and preferably a higher degree in physics, or equivalent qualifications. Research experience in theoretical or experimental solid-state physics is desirable.

Subject to passing a medical examination, the appointee will be eligible to contribute to the State Superannuation Fund. First-class ship fare to Sydney of appointee and his family will be paid.

Four copies of applications, together with the names of two referees, should be lodged with the Agent General for New South Wales, 56, Strand, London, W.C.2., and a copy forwarded by airmail in an envelope marked "University Appointment" to the Bursar, The University of New South Wales, Box 1, Post Office, Kensington, New South Wales, Australia, before 31st January 1961.

# PHYSICS DALHOUSIE UNIVERSITY HALIFAX, CANADA

Applications are invited from theoretical and experimental physicists for positions in the Department of Physics. Excellent facilities are available for research in solid state and low temperature physics. Salary and rank will depend upon qualifications: Assistant Professor \$6,000-7,500: Associate Professor \$7,500-9,500: Professor \$9,500 and up. Replies including curriculum vitae should be addressed to the head of the department.

GRADUATE ASSISTANTSHIPS for M.A. candidates in physics available at Wesleyan University for September 1961. \$1900 to \$2100 per academic year and exemption from tuition charges. Active research areas include cosmic radiation, plasma physics, nuclear magnetic resonance, field theory, mono-molecular layers. For further information write to Forrest Boley, Scott Laboratory, Middletown, Connecticut.

Two physicists with Ph.D. in an expanding church-related liberal arts college. Assistant or Associate Professor, depending on qualifications. Minimum salary, \$6,500 plus additional summer session if applicant has some teaching experience. Research opportunities available. M.S. Degree now being granted. Excellent California location. Write: Dr. Alfred A. Kraus, Jr., Physics Department, College of the Pacific, Stockton 4, Calif.

### POSITIONS OPEN

### PHYSICIST'

### THEORETICAL or MATHEMATICAL

Your interest and inquiry are invited into permanent high level scientific positions in:

PLASMA PHYSICS
MAGNETOHYDRODYNAMICS
RADIATION TRANSPORT
NUCLEAR PHYSICS

Contact: Dr. J. W. Carpenter

AMERICAN SCIENCE AND ENGINEERING, INC. 85 Broadway, Cambridge 42, Mass.



### POSITION IN PHYSICS

Colorado School of Mines has an opening in its Physics Department. Position to be permanent staff appointment and involves teaching engineering physics, advanced undergraduate, and graduate courses. Present staff of 8 full time members and several graduate assistants. We desire a physicist whose primary interest is in teaching. Opening occasioned by expanded physics program.

Experience: Preferably a Ph.D. with several years teaching experience. Will consider a man about to obtain a Ph.D.

Teaching load: Approximately 12 hours.

Research: Fundamental research encouraged and supported.

Salary and Rank: Commensurate with qualifications.

Mines is a state supported college of mineral science. Teaching faculty of 105, student body of 1100. Faculty housing and fringe benefits. New 46,000 sq. ft. physics building approved and design in progress. Campus located 15 miles from Denver, Apply to:

Dr. V. Allan Long, Head Department of Physics Colorado School of Mines Golden, Colorado

BIOPHYSICISTS & BIOCHEMISTS—Basic research institute (East Coast) with several programs in the physical sciences desires to intensify and expand the biosciences group. Current program includes photochemistry, photosynthesis and related aspects of physical and chemical biology. Positions and salaries commensurate with training and experience. Postdoctoral fellowships also available. Send resume and salary requirements to: Box 161, c/o Physics Today, 335 East 45th St., New York 17, N. Y.

TEACHING AND RESEARCH in expanding undergraduate Liberal Arts Christian College. One instructor with recent training in Nuclear Physics desired. Teaching experience needed as background for heading department. Send resume, salary requirements to Dr. Frank F. Warren, President, Whitworth College, Spokane, Washington.

#### 1961

- 23-26 Electron Microscope Soc. of Am., Pittsburgh Hilton Hotel, Pittsburgh, Pa.; send abstracts by May 1 to A. R. Taylor (A. R. Taylor, Parke, Davis & Co., Detroit 32, Mich.)
- 28-31 Spectral Line Shape & Molecular Interactions Conf., Rehovoth (J. H. Jaffe, Weizmann Inst., Rehovoth, Israel)
- 28-1 Ionization Phenomena in Gases, internat'l conf., Munich (Conf. Sekretariat, Oskar-von-Miller-Ring 18, P. O. Box 463, Munich, Germany)

#### September

- 4-8 Plasma Physics & Controlled Nuclear Fusion Research, IAEA Conf., Vienna (Internat'l Atomic Energy Agency, 11 Kärntner Ring, Vienna I, Austria)
- 4-9 Internat'l Conf. on Discovery of the Nucleus, Manchester (The Inst. of Physics & The Physical Soc., 47 Belgrave Sq., London S. W. 1, England)
- 6-8 Midwestern Conf. on Fluid Mechanics & Solid Mechanics, Michigan State U. (J. E. Lay, Michigan State U., East Lansing, Mich.)
- 6-8 Transmission & Processing of Information, internat'l symp. spons'd by PGIT of IRE & Mass. Inst. of Technology Center of Communication Sciences at MIT (P. Elias, Research Lab of Electronics, MIT, Cambridge 39, Mass.) (See Nov. 160 PT, p. 78)
- 11-21 Cloud Physics Conf., internat'l, spons'd by Australian Acad. of Sciences
  & CSIRO in Canberra & Sydney
  (E. G. Bowen, CSIRO, University
  Grounds, Sydney, Australia)
- late Magnetism, internat'l IUPAP conf. & Electron & Neutron Diffraction, internat'l IUCr symp., Kaikan Assembly Center, Kyoto (T. Nagamiya, Science Council of Japan, Ueno Park, Tokyo, Japan) (See Oct. '60 PT, p. 90)

### October

- 11-13 Gaseous Electronic Conf., ann., spons'd by APS Div. of Electron Physics at GE Research Lab, Schenectady (C. J. Gallagher, GE Research Lab, P. O. Box 1088, Schenectady, N. Y.)
- 16-19 Vacuum Technology Cong., Sheraton-Park Hotel, Washington, D. C.; sub-mit abstracts by April 1 to L. E. Preuss (L. E. Preuss, Edsel B. Ford Inst., for Medical Research, Detroit 2, Mich.)
- 18-20 Optical Society of America, Bilt-more Hotel, Los Angeles, Calif. (Mary Warga, 1155 16th St., N. W., Washington 6, D. C.)
- 29-31 Photoelasticity, internat'l symp., Ill.
  Inst. of Technology; submit papers
  before Jan. 31, '61 to P. D. Flynn
  (P. D. Flynn, Ill. Inst. of Technology, Chicago 16, Ill.)

### November

- 1-3 High Magnetic Fields, internat'l cont., MIT, Cambridge (H. H. Kolm, Lincoln Lab MIT, Lexington 73, Mass.)
- 1-3 Experimental Mechanics, internat'l congress, NYC; submit papers before Jan. 31, '61 to R. Guernsey, Jr. (R. Guernsey, Jr., GE Co., Schenectady 5, N. Y.)
- 9-11 Acoustical Society of America, Cincinnati & Dayton (D. W. Martin, Baldwin Piano Co., 1801 Gilbert Ave., Cincinnati 2, Ohio)
- 24-25 American Physical Society, Chicago, Ill. (K. K. Darrow, 538 W. 120 St., New York 27, N. Y.)

### ROCKETDYNE

### Invites your immediate investigation of these Career Scientist Positions

Our Physics and Mathematics Group is seeking two Senior Scientists to conduct theoretical, analytical and experimental studies of rocket exhaust jet radiation involving spectroscopy and thermochemistry. An advanced degree in physics or engineering is required.

There are five openings in our Electrical Propulsion Group for Senior Scientists to plan and perform experimental research on such electrical thrust devices as ion, colloidal and plasma jet engines. Some of the problems involved are concerned with ion sources, ion species, electrical discharge phenomena, field phenomena, ion acceleration and collimation, sputtering, and ion-electron recombination. An advanced degree in physics or electrical engineering is required.

Our Power Conversion Group has one opening for a Senior Scientist to engage in an experimental program on direct power conversion including thermionic and magnetohydrodynamic systems. Must have experience in physical electronics or plasma physics and be experienced in instrumentation. An advanced degree in physics is required.

While attending the APS Meeting in New York City, February 1-3 contact

Mr. J. C. Peck or Dr. C. J. McDole

If unable to come for interview send resume to:
Mr. C. H. Stoetzel
Professional Employment
6633 Canoga Avenue
Canoga Park, California

### ROCKETDYNE I

Division of North American Aviation