# New Products

**Water baths** for water or oil bath control of reaction temperatures accommodate standard Army Medical, Wasserman, Kolmer, and Kahn racks for serological testing and have an operating range of room temperature to 105°C when oil is used instead of water. The baths are fabricated of stainless steel with immersion-type copper heating units controlled by hydraulic thermostats. Three heating units permit selection of optimum warm-up time and performance. Heat is distributed by a perforated stainless-steel diffuser plate. Gable and concentric ring covers and water level regulator are available accessories. A standard laboratory thermometer indicates operating temperature.—R.L.B. (Central Scientific Co., Dept. S279, 1700 Irving Park Rd., Chicago, Ill.)

**Spore trap** permits the continuous sampling of airborne spores in the open regardless of weather conditions. Agricultural applications include research into the relationship between plant diseases, spores, and meteorological conditions, while medical research concerned with respiratory allergies and asthma may require information on the many different pollens and spores. The main parts of the instrument comprise the cylinder in which the slit is formed, the top main casting carrying a clock, and the vertical rotating axis. The cylinder is a vertical metal tube, towards the lower end of which is formed the slit, 14 mm wide by 2 mm high, through which the air to be sampled is drawn. A glass slide is carried in a metal holder accurately located so that the slide is always 0.6 mm from the slit. The slide is drawn upwards past the slit by a fine thread wound round a small drum on the clock spindle. A friction drive on the drum allows for easy resetting of the slide holder. The clock rotates once in 24 hr but needs winding only once a week. Air drawn through the horizontal slit impacts the spores onto the slide coated with a sticky substance. A built-in flow meter shows the volume of air being drawn through while the slide is moved past the slit at a constant rate for 24 hr. Every 24 hr a fresh slide is inserted into the holder which has been reset. A suitable suction pump is connected and turned on. The instrument is left unattended for 24 hr collecting spores and pollen which may be related to meteorological or other factors at a specified time. A large vane keeps the sampling section facing into the wind and a rain shield protects the slit area from inclement conditions. The air is sampled at a rate of 10 lit./min and the slide moves at 2 mm/hr. The instrument operates at an efficiency of collection of between 70 and 90 percent, depending on spore type and size and wind speed. Evaluation of the material collected involves counting the numbers of selected spores and pollen in each 2-hr period. These can be plotted against meteorological or other data according to the research being performed. To assist the counting work an electromagnetic push-button counter is available as an accessory. Also available are two types of vacuum pumps: an oilless electric pump and a gasoline driven diaphragm pump.—D.J.P. (Hirst Spore Pump; Brinkmann Instruments, Dept. S268, Cantiague Rd., Westbury, N.Y. 11590)

**Oxygen meter** operates on new principle which is described as the production of a voltage between two electrodes on a zirconium–calcium oxide tube heated to 650°C. According to the description, oxygen forms ions which move through the material to produce a voltage difference. Unusual and attractive features of the instrument include very rapid response to gas flowing through the heated tube, simplicity, and high output. The reaction tube, heater, thermocouple temperature controller, and indicator voltmeter and flow gauge are all housed in an 8- by 9- by 12-inch cabinet (20 by 23 by 30 cm) provided with ¼-inch (0.6-cm) gas ports and output terminals for recorders. Response of the electrochemical cell is approximately 1 msec and it is sensitive to one part per million of oxygen, accurate to ±3 percent. Voltage output is proportional to the logarithm of the partial pressure of oxygen, not responsive to inert gases, $CO_2$, or $H_2O$. Oxidizable gases consume the $O_2$ at the temperature of the cell, reducing the $O_2$ response. Output of several hundred millivolts appears on some of the performance curves but output per $O_2$ decade is not given. Recorders can be connected directly across the cell without loading the meter if they present a resistance greater than 10,000 ohms, so it is clear that this detector is really putting out a good signal. Several options are available in the form of alarms for too much or too little $O_2$, and provision for monitoring inlets to vacuum systems are described. This appears to be a real spin-off item from space research, as it grew out of a fuel cell project when it was noted that the cell produced a voltage related to $O_2$ when no fuel was supplied.—R.L.B. (Westinghouse Scientific Equipment, Dept. S275, 360 Churchill Rd., Pittsburgh, Pa.)

**Direct-current nanovoltmeter** (model 148) has full-scale sensitivities of from 10 nanovolts (1 nanovolt = $10^{-9}$ volt) to 100 mv in 18 ranges. Designed for measuring and/or amplifying small d-c voltages, the meter is ideal for measuring small temperature differences and changes indicated by thermocouples, monitoring the electrode potentials during titrations and chemical reactions, and measuring low resistances in very low current circuits. The instrument has 18 overlapping ranges from 10 nanovolts to 100 mv in 1× and 3× steps with indication on a zero-center meter having an accuracy of 2 percent of full scale on all ranges and a resolution of 1 nanovolt on the 10-nanovolt scale. Response speed (10 to 90 percent of full scale) is 3 to 5 sec on the 10- and 30-nanovolt ranges and between 0.5 and 3 sec on the 0.1-$\mu$v to 100-mv ranges, depending upon the source

---

The material in this section is prepared by the following contributing writers:

Robert L. Bowman (R.L.B.), with the assistance of Denis J. Prager (D.J.P.), Laboratory of Technical Development, National Heart Institute, Bethesda 14, Md. (medical electronics and biomedical laboratory equipment).

Joshua Stern (J.S.), Basic Instrumentation Section, National Bureau of Standards, Washington 25, D.C. (physics, computing, electronics, and nuclear equipment).

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Neither *Science* nor the writers assume responsibility for the accuracy of the information.

Address inquiries to the manufacturer, mentioning *Science* and the department number.

resistance. Zero suppress of up to at least 100 $\mu$v on microvolt ranges and up to 100 mv on millivolt ranges is possible and stability is such that 100 times full scale may be suppressed. In this way, with the instrument set on the 1-$\mu$v range, variations of less than 1 $\mu$v may be measured in a steady-state signal of 100 $\mu$v. The instrument is stable to within 10 nanovolts per 24 hours after 1 hour warmup with reasonably constant ambient temperature, and long-term drift is noncumulative. Input resistance is 1000 ohms on the 10-nanovolt range and increases to 1 megohm on the 100-mv range in 1× and 3× steps, with the maximum source resistance one-hundredth of the input resistance on all scales. Input noise is less than 1 nanovolt on the most sensitive range. The gain as an amplifier varies from $10^8$ to 10, corresponding to the range selected. A recorder output of ±1 volt d-c at 1 ma is supplied for full-scale meter deflection on any range. Solid state circuitry is incorporated throughout with the exception of the first two input stages. The instrument may be battery operated for convenience or improved line-frequency isolation. A 6-volt nickel-cadmium battery pack will operate from 8 to 16 hours and is automatically recharged when the instrument is reconnected to a-c line.—D.J.P. (Keithley Instruments, Inc., Dept. S266, 12415 Euclid Ave., Cleveland 6, Ohio)

**Liquid scintillation counter** automatically determines the activity and quenching in up to 200 samples. After each sample count the instrument prints out sample number, time, and background-corrected count rate for each channel. An external standard—a $Cs^{137}$ point source—moves into the calibration position and the sample is recounted for 1 minute to correct for quenching without the necessity of adding radioactivity to the sample. It is claimed that the use of the external standard chosen to provide good counting statistics in short calibration periods permits counting efficiency to be determined independently of sample counting statistics. Inaccurate results at low counting rates are thereby avoided. All silicon solid-state electronics, with dynamic range, quartz crystal controlled timing, and plug-in determination of settings for commonly used assays are additional claims.—R.L.B. (ANS, Inc., Dept. S277, P.O. Box 37, Wallingford, Conn.)

# Personnel Placement

## POSITIONS WANTED

**Fishery Biologist,** American, age 40, with demersal, pelagic and crustacean research background. Many publications. International commission and foreign technical assistance, teaching and administrative experience. Speaks three languages, reads others. M.S. Zoology. Available from second semester 1964 for position anywhere in world. Box 448, SCIENCE. 7/3, 10

**Geologist, A.B., M.S.** Experience in petrography and geophysics. Primarily interested in mineralogy and petrography or editorial work embracing these fields. Box 455, SCIENCE. X

**M.D., Ph.D.,** Associate Professor, Endocrinologist and Steroid Biochemist with many years of experience as independent investigator, own current NIH grants, many original publications, wishes to transfer his activities. Box 449, SCIENCE. 7/3

A **Public Information Specialist** in bridging gap between scientists and nonscientists seeks new challenge; skilled, mature writer-editor-administrator; press, industrial, federal, institutional experience; distinguished achievement record. Box 456, SCIENCE. 7/10

## POSITIONS OPEN

**PHARMACOLOGISTS**

Ph.D. for pharmacological research. Direct letter or résumé in confidence to Dr. Karl M. Beck, **Abbott Laboratories, North Chicago, Illinois.**

## POSITIONS OPEN

**BIOCHEMIST OR NUTRITIONIST, Ph.D**

To participate in research on factors affecting the nutrition and growth of mentally retarded children. New air-conditioned research facilities. Starting salary of $9000 with annual increments. Room and board for single person available on the grounds for $25 per month. Send résumés to *W. J. Culley, Director,* Mental Retardation **Research Laboratory, Muscatatuck State School, Butlerville, Indiana.**

**CLINICAL LABORATORY SUPERVISOR**

With experience in biochemistry, microbiology, and serology. Must have supervisory and administrative experience. Salary up to $10,000 per year.

*H. C. Bryant, M.D.,* **Physicians Clinical Laboratory, 425 East Washington Street, Ann Arbor, Michigan.** X

**An Instructorship in Biology Department** of a small Upstate New York college, beginning September 1964. Masters degree or its equivalent required. Applicants should be prepared to assist in a course in invertebrate and vertebrate zoology and to take full responsibility for one or more of the following courses: animal histology, comparative vertebrate anatomy, comparative embryology, and general physiology. **Box 458, SCIENCE.** X

**SENIOR SPACE PHYSICIST or ASTROPHYSICIST**—Position for U.S. citizen with an Agency of the U.S. Government in Washington, D.C. Some background in upper atmosphere geophysics with Ph.D. or equivalent. No laboratory work. Salary $16,000 to $20,000. All applications will be held in strict confidence. Write complete details to **Dr. Donald T. Munley, P.O. Box 13082, T St. Station, Washington, D.C. 20009.**

## POSITIONS OPEN

**BIOCHEMIST OR PHYSIOLOGIST**

To develop a research program pertinent to the manipulation of the fishery resource to complement others in progress on hormones, fish and shellfish diseases, and nutrition.

Appointment will be made in a salary range $7600 to $11,600, commensurate with qualification and experience. Applicants should send curriculum vitae and two references to **Director, Fisheries Research Board of Canada, Technological Research Laboratory, P.O. Box 429, Halifax, Nova Scotia, Canada.** 7/10



**PHARMACOLOGISTS** — Excellent opportunities for applicants expecting Ph.D. within next few months or preferably Ph.D. applicants with 1 to 5 years of experience, to inaugurate and expand chemical screening program and methods design in research department of ethical drug manufacturing subsidiary of large chemical manufacturer. Write to **Mr. A. G. Worton, Warren-Teed Pharmaceuticals Inc.** (Subsidiary of Rohm & Haas Company), 582 West Goodale Street, Columbus, Ohio 43215.



**VERTEBRATE PALEONTOLOGIST**

The University of Alberta has established a new academic position in vertebrate paleontology in the Departments of Geology and Zoology to begin September 1964 or later. Salary will depend on qualifications and experience (present ranges: Assistant Professor, $7500 to $9600; Associate Professor, $10,000 to $12,600; Professor, from $13,000). Applicants should submit curriculum vitae and names of three referees to the head of either of the departments named above at the **University of Alberta, Edmonton, Canada.** 7/17

## POSITIONS OPEN



## FELLOWSHIPS

**Postdoctoral fellowship in biochemistry department** of large western university. Area of interest is metabolism and synthesis of collagen. Excellent research facilities in new building. Résumé to Box 446, SCIENCE. 7/17

# The Market Place

**DISPLAY:** Insertions must be at least 1 inch in depth. Weekly invoices will be sent on a charge account basis—provided that satisfactory credit is established.

| | |
|---|---|
| Single insertion | $65 per inch |
| 4 times in 1 year | 60 per inch |
| 13 times in 1 year | 50 per inch |
| 26 times in 1 year | 50 per inch |

**PROOFS:** If copy is to be set, and proofs submitted for approval, complete copy and cuts must be received 4 weeks in advance of issue date (Friday of each week); complete plates no later than 3 weeks in advance of issue date.

## PROFESSIONAL SERVICES

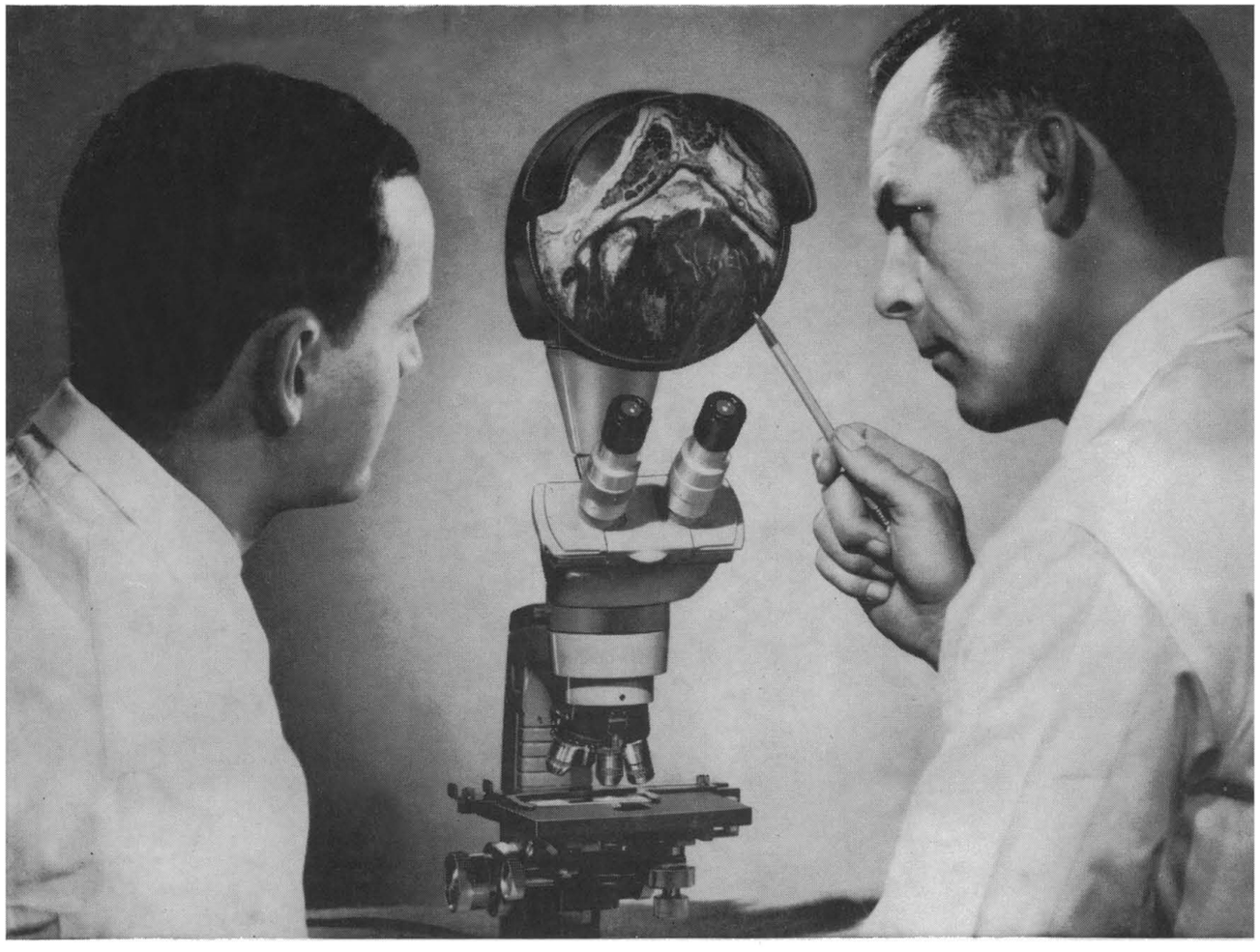
**JR. SCIENTIFIC SUMMER**

EXPLORE western history and natural history in the Sierra Nevada & Great Basin. Ecological studies in mountains, desert, antelope refuge & forest reserve. Strong riding, swimming, crafts. Challenge to alert boys & girls 9-14. Six-week session, July 19 to Aug. 30.

**Dr. & Mrs. Richard G. Miller, 621 Rt. 1,**
Carson City, Nevada, Code 702, GR 2-1728
**WASHOE PINES RANCH**

## SUPPLIES AND EQUIPMENT

**ELECTRO-OPTICAL COLOR DETECTIVE.** One problem in perfecting the manufacture of advanced communications equipment is that many operations require visual observation beyond human limits. To find the solution, Western Electric, the manufacturing and supply unit of the Bell Telephone System, has been exploiting the science of electro-optics, which simulates functions of the human eye. Electro-optical devices—combining a light source, an optical system, a photoelectric sensor, and an electronic logic with a mechanical control system—can already do extremely delicate positioning, monitoring, and selecting operations. For example, one such device (see photo) uses a system of filters and a twin-plate photo-emissive cell to automatically select two conductors out of a group of six, purely by the colors of their insulations. Another way Western Electric engineers are helping Bell telephone companies give America the very best in communications service. **WESTERN ELECTRIC**



# NOW! A Viewing Screen...and the new AO Microstar has it!

The AO Viewing Screen answers the long-felt need for a convenient and practical method of slide demonstration. It's designed exclusively for use with the new AO Microstar® Microscope and can be mounted quickly and easily on the trinocular body. You'll find it ideal for small group discussions, consultations and countless teaching situations in the classroom or laboratory. The six inch screen covers the same field of view as the 10X Wide Field Eyepiece. Magnification is 7.5X. The superior optical performance provided by the new Microstar's infinity-corrected optical system delivers a bright, crisp screen image that is flat and in focus over the entire screen area.

This unique AO Viewing Screen is just one example of the wonderful versatility and performance that has been designed into the remarkable AO Microstar. Its infinity-corrected optics, revolutionary focusing concept and unitized construction are the most significant basic improvements in microscope design made in this century. Learn how they make possible dramatic new breakthroughs in optical and mechanical performance. Ask your AO Sales Representative to demonstrate the new Microstar and Viewing Screen, or write for 24-page brochure.

® *Registered Trademark American Optical Company.*

American Optical
COMPANY

**INSTRUMENT DIVISION, BUFFALO 15, NEW YORK**

Dept. G1.

Gentlemen:

☐ I would like a demonstration of the new AO Microstar Microscope and Viewing Screen.

☐ Please send 24 page brochure.

Name_____

Address_____

City_____ Zone_____ State_____

**IN CANADA** write—P.O. Box 130, Postal Station R, Toronto 17, Ontario