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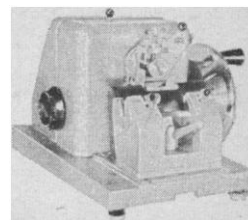
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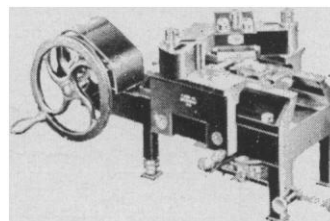
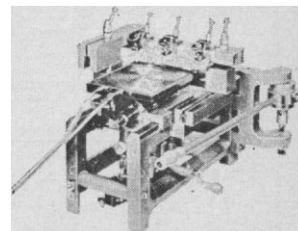
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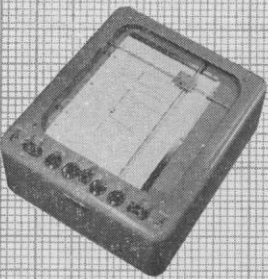
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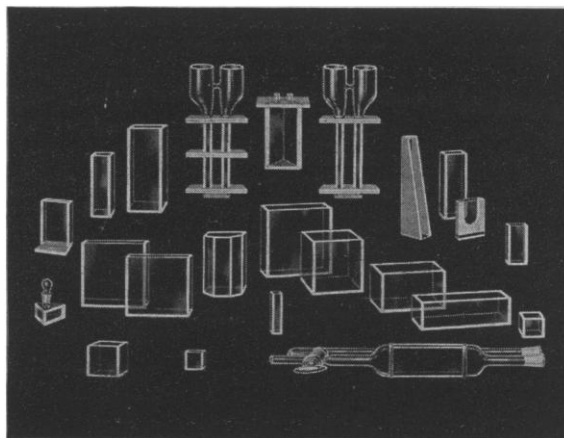
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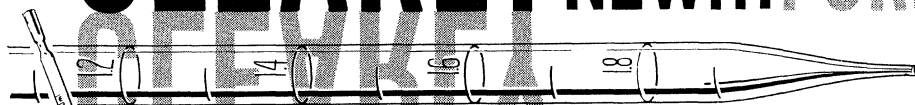
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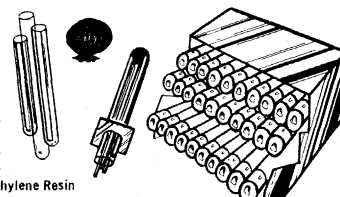
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# New Products

*The information reported here is obtained from manufacturers and from other sources considered to be reliable. Neither Science nor the writer assumes responsibility for the accuracy of the information. A Readers' Service card for use in mailing inquiries concerning the items listed is included on pages 431 and 505. Circle the department number of the items in which you are interested on this card.*

■ **SEQUENTIAL GAS SAMPLER** will automatically collect air samples for subsequent analysis of contamination. In operation a vacuum pump is connected to a special 12-position valve, which is connected to 12 gas collectors or filter holders. The valve is automatically switched from one position to the next so that 12 samples of air are collected in sequence, and then the sampler shuts itself off. The operating sequence of the sampler is controlled by a dial-adjusted timer. The basic cycle time is set by moving one of two dials to the time desired. The second dial controls the operating time of the pump. Thus, by adjusting the dial arrangements, the sampler can be programmed to sample 10 min every 2 hr. Sampler may be used with filter holders for collecting dust samples; gas samples can be collected in midjet charcoal traps. Refrigerated traps can also be used. (Gelman Instrument Co., Dept. Sci81, P.O. Box 86, Chelsea, Mich.)

■ **PORTABLE OSCILLOGRAPH** (Fig. 1), available in a choice of 6, 12, or 18 channels, uses a push-button controlled transmission to provide record speeds of 0.25, 1.0, 4.0, 16.0, and 64.0 in./sec. Any speed may be selected while the motor is running without interrupting the recording operation; writing speeds up to 50,000 in./sec are obtainable. Grid lines are provided in either 0.1-in. or 1-mm increments; trace width is 0.01 in. Records are provided by a printout process, and no record magazine is required; record capacity is 200 feet. (Consolidated Electrodynamics Corp., Dept. Sci98, 360 Sierra Madre Villa, Pasadena, Calif.)

■ **SPECTROPHOSPHORIMETER** permits excitation of compounds and measurement of resulting phosphorescence throughout the ultraviolet and visible regions. Decay curve of the phosphorescent state is measured by an x-y recorder with time-base generator or an oscilloscope. Phosphorescence spectra are used for identification of components in compounds of unknown composition or for quantitative analysis of phosphorescent compounds. The instrument will also measure fluorescence with an accessory attachment. (American Instrument Co., Dept. Sci82, 8030 Georgia Ave., Silver Spring, Md.)

■ **AUTOMATIC RECORDING MICRODENSITOMETER** consists of a traveling-stage projection microscope with a multiplier phototube for measuring the light in the projected image. An adjustable limiting aperture is located immediately in front of the phototube. Area of the sample illuminated can be adjusted to match reading aperture to reduce stray light. Standard microscope optics are used; reflection optics as well as transmission components can be used. Full-scale sensitivity is 0 to 4.0 density in reading areas as small as  $20\mu^2$ .

The stage is driven through a micrometer system by an electrically selected gear train; total scanning travel is 25 mm. Samples are mounted on standard microscope slides. A strip-chart recorder plots density against travel as the sample is scanned. (AnSCO, Dept. Sci84, Vestal Parkway E., Binghamton, N.Y.)

■ **HIGH FREQUENCY CURRENT PROBE** (model P 6016) and type 131 amplifier constitute a current detecting system for use with a wide-band oscilloscope for observation and measurement of current waveforms of low amplitude and fast rise time. Current range is 1 ma to 10 amp. Pass band with a 30 Mc/sec oscilloscope is 50 cy to 17 Mc/sec. When used with passive termination, the probe permits measurement at frequencies to 20 Mc/sec and sensitivity of either 2 or 10 ma/mv. In operation the probe slot is placed over the current-carrying conductor, and the magnetic circuit is closed by a slide. Loading introduced is said to be negligible. (Tektronix, Inc., Dept. Sci83, P.O. Box 500, Beaverton, Ore.)

■ **PHOTOELASTIC ULTRASONIC DELAY LINES** operate by detecting an acoustic signal in the solid transparent delay line by optical means. The optical system consists basically of a light source, a polarizer, a birefringent phase-delay plate, a viewing slit, an analyzer, and a multiplier phototube. The delay medium used is a bar of pure fused silica; delays up to 160  $\mu$ sec at frequencies up to 30 Mc/sec have been achieved. Continuously variable delay is made possible because output can be tapped at any point along the medium without loss of signal. (Corning Glass Works, Dept. Sci101, Corning, N.Y.)

■ **REMOTE POSITIONING DEVICE** (Fig. 2) for small laboratory apparatus or instruments in radiation environments is 26 in. high, and its base diameter is 9 in. Mounting rods and a platform for beakers or flasks are provided. Vertical and rotary motions are controlled by toggle switches. Rotation is unlimited in either direction. (Nuclear Ohio, Inc., Dept. Sci58, 27105 Knickerbocker Rd., Bay Village, Ohio)

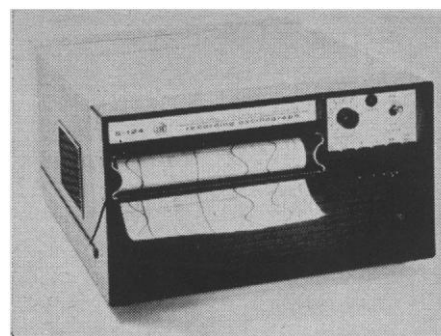


Fig. 1. Portable oscillograph.

■ **ULTRASONIC DISPERSER**, designed primarily for preparation of dispersions for electron microscopy, comprises two ultrasonic generators and transducers, 1 and 3 Mc/sec, respectively, housed in a common cabinet. Samples placed in the excitation cell are dispersed instantly into a fog that can be collected on a diaphragm or grid for examination. The instrument operates on a 50 or 60 cy/sec, 110 to 145 volt a-c line; power consumption is 150 watts. Brinkmann Instruments, Inc., Dept. Sci65, 115 Cutter Mill Rd., Great Neck, N.Y.)

■ **REFERENCE-CURRENT SOURCE** provides 12 currents of either positive or negative polarity over the range from 1 ma to 3 na with accuracy said to be  $\pm 1$  percent. Source of current is a 3.4-volt mercury cell in combination with precision resistors. (Elcor, Inc., Dept. Sci67, Falls Church, Va.)

■ **SPECTRUM ANALYZER** operates in real time covering the range 5 to 1000 cy/sec. Resolution for 3 db is 6.5 cy/sec, and 40 db band width is 60 cy/sec. The spectrum is displayed on a 5-in. oscilloscope every 1/5 sec. The instrument is a delay-line synthesized Fourier analyzer. (Federal Scientific Corp., Dept. Sci86, 615 W. 131 St., New York 27, N.Y.)

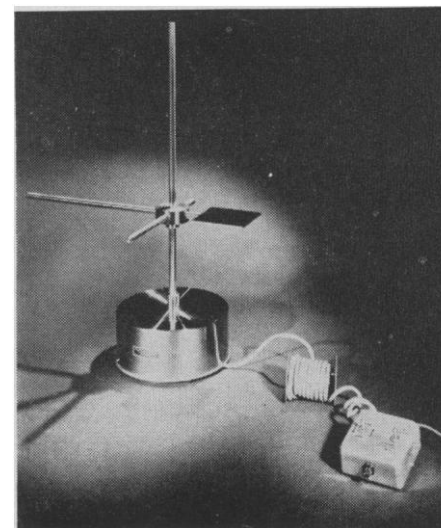
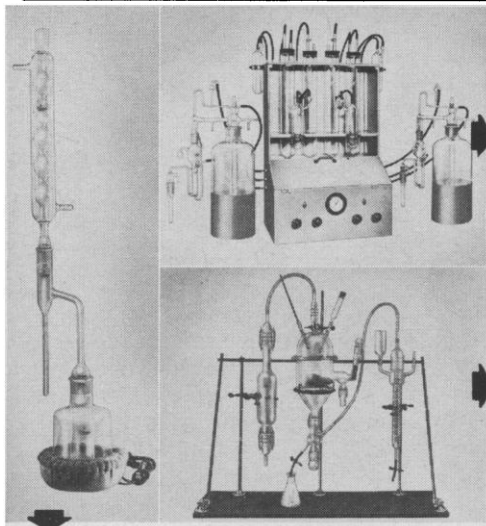


Fig. 2. Remote positioning device.

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rectly to inner compartment. On completion of the process, fat has collected in the graduated receiver, solvent is in the inner flask cell and moisture has been dissipated or collected. Price complete . . . only \$75.00 each. For full details, ask for Fat Extractor Bulletin S.

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■ **FREQUENCY TRANSLATOR** filters and converts the audio spectrum into frequency bands that can be examined individually and simultaneously with a high degree of resolution. Thirty five units are assembled into two racks to provide for the selection and translation of 35 segments, each 140 cy/sec wide, falling between 150 and 5000 cy/sec. An input filter unit is provided for each set of five channels as a means of rejecting particular spectrum portions. It is possible to add or subtract channels individually or in groups of five. (Rixon Electronics Co., Dept. Sci27, 2414 Reddie Ave., Silver Spring, Md.)

■ **STROBOSCOPIC ILLUMINATOR** features flashing rate of 110 to 25,000 per minute in three ranges with flash duration 1 to 6  $\mu\text{sec}$ . Peak intensities of flashes are 0.21, 1.2 and 4.2 Mca, respectively, on the three ranges. Single-flash intensity is 7 Mca peak. The light source is housed in a parabolic reflector designed to swivel around the lamp. Accuracy is said to be  $\pm 1$  percent of reading after calibration on the middle range. Calibration may be performed against power-line frequency by making two screwdriver adjustments. (General Radio Co., Dept. Sci31, West Concord, Mass.)

■ **MULTIMETER** enables increments of any range to be expanded about any point in the range and displayed on an external servo recorder. The instrument combines a Simpson multimeter with a suppressor power supply and an attenuator. A 5-mv-sensitivity external servo recorder will permit expansions to  $\pm 1$  percent of full-scale value. The attenuator permits the expansion to be adjusted to any value from 1 to 100 percent. (Tensor Electric Development Co., Dept. Sci88, 1873 Eastern Parkway, Brooklyn 33, N.Y.)

■ **PEAK-READING VOLTMETER** is designed to accept and display the peak values; within specified limits, of any positive transient voltage pulse of arbitrary shape. The instrument will detect a peak voltage and initiate readout while blocking further input signals until it is reset. Readout is provided directly in volts as a four-digit decimal value with accuracy said to be  $\pm 1$  percent. (Curtiss-Wright Corp., Dept. Sci90, P.O. Box 8324, Albuquerque, N.M.)

■ **GAS-VELOCITY METER** measures the velocity of luminous, hypersonic gas flow by observing the luminosity fluctuations in the flow. These fluctuations are converted into amplitude variations of electrical signals by two multiplier-phototube transducers spaced 1.2 in. apart. The phase difference between the outputs of the transducers is compensated by a calibrated variable

magnetostrictive delay line that provides indication of the time required for the luminosity variations to travel the distance between the transducers. Velocities are measured over a range of 2000 to 50,000 ft/sec. The meter may also be used to measure vibration frequency or motion as a function of time. (MHD Research Inc., Dept. Sci80, P.O. Box 1815, Newport Beach, Calif.)

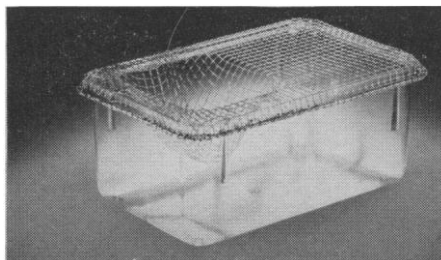
■ **RECORDING SYSTEM** combines direct writing and photographic oscillographic recording to cover the broad range of frequencies encountered in physiological recording. The direct-writing portion of the system covers events in the d-c to 100 cy/sec range. The photographic section, using optical galvanometers, provides frequency response to 500 cy/sec. The multichannel system makes use of interchangeable plug-in amplifiers that are compatible with both types of recorders. (Sanborn Co., Dept. Sci66, 175 Wyman St., Waltham 54, Mass.)

■ **TRANSDUCER EQUALIZER** is essentially an analog computer that overcomes the limitations of transducer measuring systems by inserting into the data a complex transducer function that is the reciprocal of the transducer transfer function. The device is said virtually to eliminate undesirable ringing, which results from the excitation of the transducer at or near the natural resonant frequency, and to extend effectively the system's frequency response by several octaves. It can be employed as a single or dual system to compensate for transducer or electrical systems with one or two degrees of freedom. Input impedance is 20,000 ohms shunted by 20 pf; output impedance is less than 1000 ohms. Input signal is nominally  $\pm 5$  volts at gain of 1; output signal is  $\pm 15$  volts maximum; gains of 1, 2, 5, and 10 are provided. Pulse response is sufficient to equalize pulses with rise times as short as 0.5  $\mu$ sec. (Telecomputing Corp., Dept. Sci100, 915 N. Citrus Ave., Los Angeles, Calif.)

■ **VIBRATION ANALYZER** is a fully automatic system that performs on-line spectral density analysis of dynamic data. Analysis is performed over a band width of 5 kcy/sec with resolution of 50 cy/sec. Energy distribution is encoded at a rate of 5000 readings per second and recorded on 1/2-in. magnetic tape. The entire spectrum is swept and encoded every 20 msec or on command. An additional unit monitors any selected group of frequencies and warns when amplitude approaches or exceeds a preselected value. Accuracy is said to be better than  $\pm 1$  percent. (Communications Control Corp., Dept. Sci89, 14707 Keswick St., Van Nuys, Calif.)

## A Mousellany of Animal Care Developments

### They Said It Couldn't Be Done



Econo-Cage #27, LID #22D

The new Polycarbonate Econo-Cage #27 is clear, autoclavable and unbreakable.

To operate most efficiently animal colonies must use cages which withstand the rough and tumble of mechanized washing systems and the high temperatures at which these systems and autoclaves operate. Because colonies must be inspected quickly, cages should afford maximum visibility. Until now the cages were either transparent or durable, but none had both characteristics.

The new Polycarbonate combines the optical and thermal properties of glass with an *impact resistance unmatched by any other clear material*. A good example of the degree of impact resistance was furnished by a doubting Thomas who could not break the cage by dropping it out of a fourth floor window. Polycarbonate retains this remarkable strength from 275° F. to -40° F. It is the first clear plastic which can be autoclaved repeatedly.

This new material, a linear aromatic polyester of carbonic acid, has a very low absorption level. Odor producing gases are not absorbed, resistance to most acids and basics is very good.

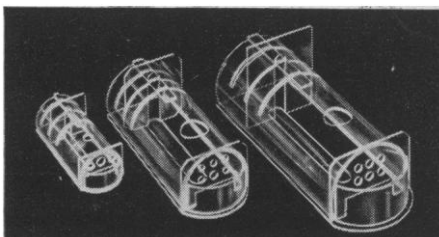
The cage is constructed to NIH Spec. EG-84. For housing mice, the cage is 11½" x 7½" x 5" deep. The cages nest for easy storage.

This is one of the "20 Series" of Econo-Cages, which includes cages of fibre glass, acrylonitrile-styrene-copolymer, polypropylene and polycarbonate. These are all 11½" x 7½" x 5" deep. There are four lid styles which are interchangeable on all "20 Series" cages. Write for complete information on this series.

### Working With Restraint

Two new pieces of animal restraining equipment are now available from the Econo-Cage Division of Maryland Plastics, Inc. A small restrainer for mice weighing from 10 to 40 grams (Econo-Cage #88), and a large unit for rats and hamsters weighing from 250 to 600 grams (Econo-Cage #91), are new additions which supplement Econo-Cage #90 for 150 to 300 gram rats and hamsters.

These clear acrylic plastic units afford rapid and safe immobilization of animals, easy access and maximum visibility of animals in restraint. Econo-restrainers prevent unanesthetized animals from attacking tubes, cannulae, and other fixtures; provide extended housing during nutritional studies; restrain animals during administration of intravenous, intraperitoneal, intramuscular, and subcutaneous injections; and are useful for administering intravenous fluid drips and anaesthetic.



Econo-Cage #88, #90, #91

All three sizes have an adjustable tailgate which fits into any of three slots to vary cage length, confine the animal, and serve as a cage door. Openings at the top, bottom, and tail provide easy access to any part of the animal (the bottom slot also permits drainage of animal waste). A hopper permanently attached to the front of the unit includes a trough for granular feeds and a water tube inlet.

The small restrainer, Econo-Cage #88, can be varied from 2" to 3½" in length and is 1¼" wide. The medium restrainer, Econo-Cage #90, can be varied from 4½" to 6" in length and is 2½" wide. The large restrainer, Econo-Cage #91, can be varied from 5" to 7" in length and is 3" wide. All these units can be cleaned chemically or with hot water, they are not autoclavable.



ECONO-CAGE DIVISION  
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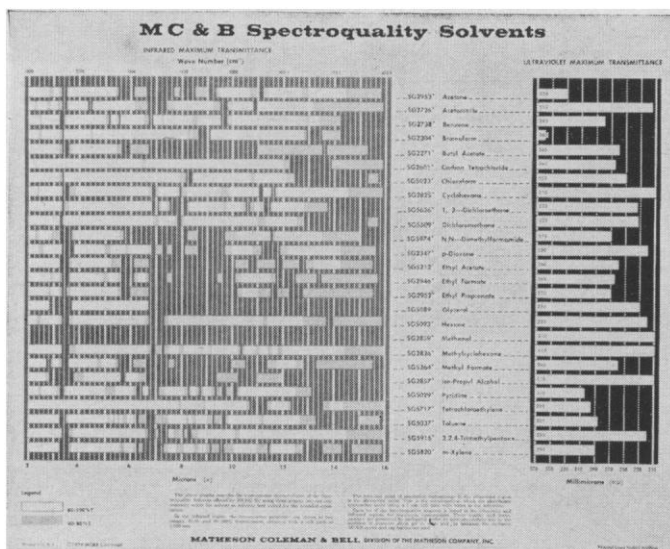
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■ **PUNCHED-TAPE VERIFIER AND DUPLICATOR** handles one through eight channels in any code structure at 60 characters per second. In verifying, the device stops automatically upon discovery of error and displays error in neon indicators simulating bits. Failure to verify stops the duplication function without punching an erroneous character. (Tally Register Corp., Dept. Sci72, 1310 Mercer St., Seattle 9, Wash.)

■ **GLASSWORKING LATHE** can be changed from horizontal to upright position in 2 min or less, according to the manufacturer. Length between chucks is 36 in.; radial clearance, 8 in.; chuck capacity, 8 in.; through-spindle diameter, 4 in. Chuck adjustment does not require a key; the tailstock can be locked while the headstock rotates for flaring operations. A synchronous switch stops the motor when the clutch is disengaged; hence the motor cannot be left running accidentally. (Bethlehem Apparatus Co., Dept. Sci75, Hellertown, Pa.)

■ **PERFORATED-TAPE RECORDER** consists of a tape-transport mechanism, a transistorized electronic circuit, power supply, and housing. Inputs are converted to serially encoded pulse trains. The pulses are recorded by incineration of small holes in a paper tape, with the hole pattern representing the information recorded. Maximum operating speed is 180 decimal digits per minute. An associated tape reader operates at 1200 decimal digits per minute. (Advanced Instrument Corp., Dept. Sci26, 700 S. 4 St., Richmond, Calif.)

■ **PHOTOELECTRIC TAPE READER** reads blocks of up to 80 bits simultaneously at speeds up to six blocks per second. Stop code can be provided either by external equipment or by any desired hole in the matrix. Use of the sprocket hole as a stop signal results in conventional line-by-line operation. (Photocircuits Corp., Dept. Sci32, 31 Sea Cliff Ave., Glen Cove, N.Y.)

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**Botanist,** 35, Ph.D., more than 50 papers in ecology, soil science, and limnology, seeks post (research and/or teaching). Varied experience universities and research institutes. Box 31, SCIENCE. X

## POSITIONS WANTED

(a) **Biochemistry** Ph.D.; organic chemistry and bacteriology minors; university teaching and nutritional research experience; available for teaching or research appointment. (b) **Young Entomologist** Ph.D.; experienced in university teaching of biology-zoology with insect disease and control research; desires academic appointment. (Please write for information regarding these and other scientists in all fields; nationwide service.) S2-3 Medical Bureau, Inc., Science Division, Burnice Larson, Chairman, 900 North Michigan Avenue, Chicago. X

**Blood Plasma Protein Fractionation.** B.S., 42, 17 years' production and administrative know-how: serum albumin, immune globulin, and fibrinogen. Isolation of plasma proteins, freeze drying, sterile filtration, and filling. Seeks production and/or development position in same or related field. Box 20, SCIENCE. 2/17; 24

**Cytologist, Histologist, Histochemist.** Ph.D., 1960. M.S. biochemistry. Broad college chemistry teaching, 7 years of biology teaching includes physiology and embryology. Publications. Teaching and/or research. Box 33, SCIENCE. X

**Director Biochemistry-Microbiology,** Ph.D. Desires clinical or pharmaceutical administration. Investigated tracer metabolism, enzymes, cancer, chemotherapy, immunology. East. Box 32, SCIENCE. X

**Nutritionist-Biochemist,** Ph.D., 37, academic industrial experience; background in metabolic studies, connective tissue diseases. Seeks association with research institute, academic position. Box 26, SCIENCE. 2/17

**Ph.D. Plant Pathologist, Microbiologists, Biochemist;** 10 years of varied experience. Now on foreign assignment. Speak Portuguese, read Spanish. Desires foreign assignment, technical representative in Brazil or South America. Box 27, SCIENCE. X

## POSITIONS OPEN

### APPOINTMENT OF DIRECTOR

Applications are invited for the post of **Director of the British Industrial Biological Research Association**, which has recently been formed with the support of the Department of Scientific and Industrial Research to undertake biological investigations into the properties of substances for use in, or in connection with, the production, processing, and packaging of food and cosmetics. The association is contemplating the immediate establishment of a research station at Leatherhead, Surrey, in proximity to other research establishments, and the first task of the director will be to make proposals to the Council of the association for the building of the laboratories, the recruitment of staff, the formulation of a research and testing program, and the provision of administrative services.

Preference will be given to candidates of proved scientific and research attainment. A medical qualification is desirable, and candidates must have had wide general experience in the biological sciences with specialist experience in pharmacology, toxicology, or pathology. The starting salary will be about £4000 per annum, depending on age, qualifications, and experience, and appropriate pension arrangements will be made. Applications should be sent by 15 April at the latest to the president of the association, Professor A. C. Frazer, M.D., D.Sc., F.R.C.P., University of Birmingham Medical School, Birmingham 15, England.

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(a) **Biochemist**; Ph.D. interested, experienced nutrition, metabolism research; supervise nutrition group with excellent potential for productivity; must be capable initiating, carrying out research; \$15,000, substantial fringe benefits; East. (b) **Microbiologist**; trained virology, work with pathologist, clinicians; substantial free time for independent research; 100-bed New England hospital; minimum \$7500. (c) **Bacteriologist**; B.S., M.S. to head busy department, 250-bed general hospital; southeastern coastal city. (d) **Biochemist**; Ph.D. to aid in reorganization of laboratories, 300-bed general hospital; \$12,000; Southeast. **Woodward Medical Bureau**, Ann Woodward, Director, 185 North Wabash, Chicago. **FOUNDERS OF THE COUNSELLING SERVICE TO THE MEDICAL PROFESSION: SERVING MEDICINE WITH DISTINCTION OVER HALF A CENTURY.** X

(a) **Clinical Research Director** with Ph.D. or M.D. to supervise clinical testing, coordinate studies, liaison duties, and travel throughout area for well-established drug firm; openings in East and Southwest; \$15,000 up. (b) **Space Physiologist** for research on radiation injury and aviation medicine studies with important research laboratory; West Coast. (c) **Neurochemist or Biochemist** for CNS studies at university medical center; teaching duties if desired; Midwest. (d) **Genetic Scientist** for cancer and allied research at large medical institution; \$8000-\$10,000; East. (e) **Biochemist** for clinical section of medical group serving several hospitals and laboratories; \$9000-\$12,000; Pacific Coast resort town. (f) **Chemistry Research Director** to initiate, staff, and direct new research laboratory of agricultural chemical product firm; South. (g) **Histochemist** for research on meat tissue, enzyme distribution, freeze drying, and development of new techniques for research institute; \$8000 up; Midwest. (h) **Bacteriology Professor** to develop virology program for undergraduates and direct research of graduate students in university public health division; \$7000-\$9800 year; East. (i) **Pharmacologist** to establish central drug evaluation service for physicians and institutions, compile information, and maintain liaison with clinical investigators; East. (j) **Radiological Health Scientist** with Ph.D. or M.S. degree for teaching and research in sanitary engineering division of state university at assistant or associate professor level; around \$10,000; also **Research Chemist** Ph.D. for pesticides study at assistant professor level; \$8000 up; Northwest. (k) **Organic Chemist** for steroid syntheses research in new laboratory of university hospital group; straight research with academic status; around \$10,000; Midwest. (l) **Biology Teacher** for undergraduates and mammalian physiology-endocrinology graduate teaching for expanding college; East. (m) **Biochemist or Pharmacologist** for radioisotope studies on food and drug problems, synthesis, analysis, and consulting for leading nuclear science firm; East. (n) **Physiologist** for vibration and physiological response studies in human factors research program; qualified to originate and develop projects and supervise personnel; Midwest. (Please write for details; also many other positions available through our nationwide service.) S2-3 Medical Bureau, Inc., Science Division, Burneice Larson, Chairman, 900 North Michigan Avenue, Chicago. **THE BEST SOURCE FOR THE BEST MEDICAL-SCIENTIFIC POSITIONS.** X

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## FELLOWSHIPS

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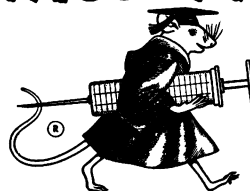
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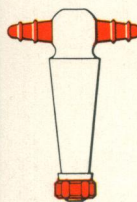
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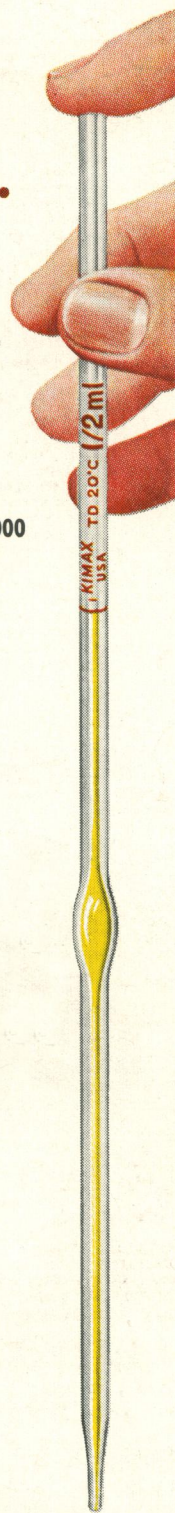
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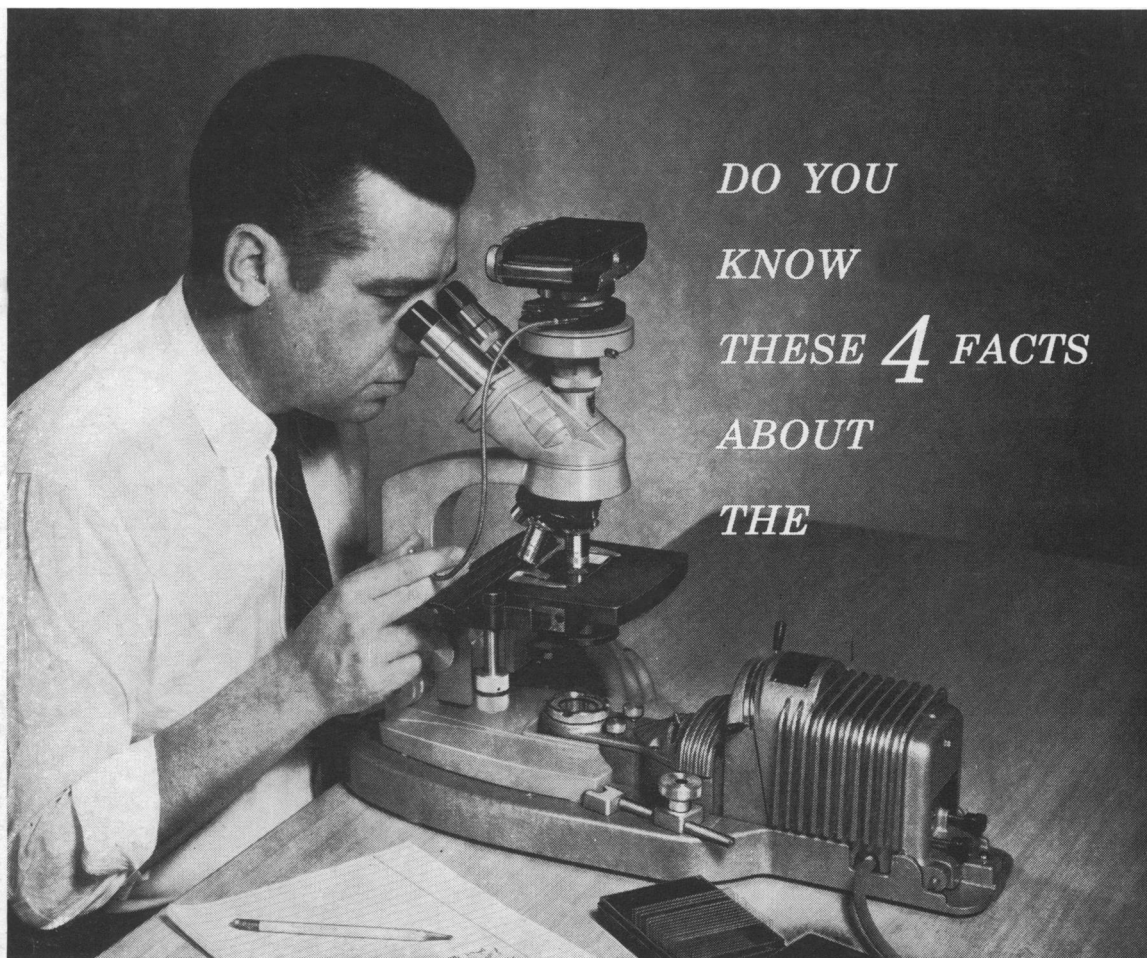
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