New Products

Servo-programmer (model DY–2307A) permits remote, local, or preset positioning of rotating shafts. The instrument incorporates a control amplifier package and remote servo-drive unit that attaches directly to the instrument to be driven. The drive unit may be operated up to 300 m away from the control amplifier. From the front panel it can be operated with up to ten preset positions with repeatability said to be better than ±0.1 percent, or continuously through the full operating range by a potentiometer with vernier dial. In all operating modes, an indication of servo null is provided by a front-panel lamp.—J.S. (Dymec Division of Hewlett-Packard Co., Dept. S918, 395 Page Mill Rd., Palo Alto, Calif.)

Phonocardiograph transcriber permits writing a permanent record of the timing and appearance of heart sounds. The instrument connects by cable with any single channel direct-writing electrocardiograph, and uses the pen-writer and paper of the electrocardiograph to produce the written record. In operation the appropriate leads from the electrocardiograph are removed from the electrodes on the patient and inserted into the proper terminals on the transcriber. Leads from the transcriber are then inserted into the limb electrodes on the right arm, left arm, and right leg. The heart sounds are written in each of three frequency bands. The 20- to 80-cy/sec band is written directly, since the electrocardiograph will accept this range without rectification. The 80- to 240-cy/sec and 240- and over bands are rectified and filtered to permit the electrocardiographic apparatus to write them in envelope form. The envelope shows the timing and intensity of the sounds, and provides the necessary diagnostic information. A switch permits selection of the band to be recorded. The instrument includes an R wave discriminator circuit so that in all recordings the R wave of the electrocardiogram is seen as a downward spike, preceding the first heart sound. Earphones are provided, along with the microphone, so that the unfiltered sounds may be heard in the accustomed manner while the record is being made. The circuits used are solid state and all circuits are mounted in printed circuit cards for ease of maintenance and repair if this becomes necessary. Input power required is 117 volts a-c, 50 or 60 cycles, and, since a regulated power supply is part of the unit, ± 10-percent changes in line voltage will not affect output. The unit is portable, measuring 8 by 9 by 12 inches and weighing 18 lb.—D.J.P. (Sage Instruments, Inc., Dept. S4, 2 Spring St., White Plains, N.Y.)

The **Flexiscope,** a fiber optic image probe, allows the operator to see internal areas of machinery, engines, and other intricate mechanisms. The Flexiscope is a lightweight, compact unit designed to be held easily by hand. The 0.6-m probe can be inserted into any opening 1.27 cm or larger in diameter. When numerous obstructions cover the area under inspection, the tube can be bent to a radius of as little as 4.4 cm without damaging fibers or sacrificing image quality. The basic unit is operated with either a flexible or semiflexible probe, the latter for applications requiring a limited amount of rigidity. Either style is easily substituted for the other. The probe end has an area of view measuring approximately 6.45 cm^2, but the probe can be moved about to examine adjacent areas. Two tiny light bulbs, and the ends of the probe, provide direct, even illumination, and a right-angle accessory is available for inspecting lateral surfaces. A cast metal housing, to which the probes are attached, contains a focusable eyepiece, batteries for the lighting system, and a three-position switch. The instrument has been constructed to resist corrosion, and the dirt, dust, and splashed oil or water encountered in outdoor or industrial environments. The durability of the tubing permits continuous twisting and bending without damage to fiber optic components. Specifications and suggested appplications are available in an illustrated folder, catalog No. D–2042. —R.L.B. (Bausch & Lomb Inc., Dept. S956, Rochester 2, N.Y.)

Magnetic stirrer with a built-in illumination system clearly illuminates the interior of any transparent vessel and allows the user to determine end points of titration more uniformly and accurately while stirring. The user can supervise other processes such as solubility and emulsion studies. The instrument is capable of stirring and illuminating simultaneously or of doing either operation independently. A large motor-driven Alnico V magnet revolves close to the top surface to provide exceptionally strong magnetic coupling to provide the necessary force to stir viscous liquids at high speeds. Stepless speed regulation is completely variable from the gentlest movement to violent churning, from 60 to 1500 rev/min. The perforated stainless-steel case ventilates the interior and dissipates heat from the motor and control. A translucent plastic top resists scuffing and is easy to clean. The electrical characteristics are: 115 volts, 60 cycles, a-c, .35 amp. Added features are the dovetail bracket for apparatus setups, and a Teflon-coated stirring magnet.—R.L.B. (Thermolyne Corp., Dept. S959, 568 Kerper Blvd., Dubuque, Iowa)

The 820 series **oscillators** combine automatic phase control and digital techniques to generate stable frequencies up to 1 Mcy/sec with setability said to be five digits. Automatic selection of any frequency in the operating range is obtained by means of front-panel settings. The circuit of the oscillator is basically a phase coherent multiplier in which the input to the multiplier loop is a crystal frequency. The divider in the multiplier loop is a five-decade preset counter, set by the fre-

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).

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

quency knobs on the panel. The output of an oven-controlled crystal oscillator is divided down to derive a reference source which is compared to the output of a voltage-controlled oscillator divided by some preset factor. Synchronization of the two frequencies requires that the voltage-controlled oscillator operate at a frequency equal to that of the reference multiplied by the preset factor. The long-term stability of the oscillator output is that of the reference source and may be increased by inserting an external reference frequency of greater stability than that provided. The short-term stability of one part in 10,000 is fixed by the noise generated in the automatic-phase-control loop.—J.S. (Century Electronics and Instruments, Dept. S949, P.O. Box C, Admiral Station, Tulsa 15, Okla.)

Ultrasonic biological measurements such as the temperature, motion, or location of tissue and organs can be made by using the Biosonar 200 equipment and accessories recently announced. Temperature of solid organs such as the brain can be measured by using the dependance of sound velocity on temperature. In the system where a pulse of sound travels through the brain to trigger another pulse of sound the repetition rate changes with transit time through the brain to resolve about 0.05°C per 1-sec frequency count. Other arrangements measure the distance to reflecting surfaces with a resolution of about 0.2 mm of flesh.—R.L.B. (Sonomedic Corp., Dept. S960, 245 Old Hook Rd., Westwood, N.J.)

Frequency synthesizer generates signals over the frequency range 0.0005 cy to 30 Mcy/sec with frequency continuously adjustable over that range. Resolution of frequency setting is 0.005 cy/sec over the entire range, which is covered by hand-calibrated scales having a total effective length of more than 5.99 m. Output voltage is calibrated and is continuously adjustable from 300 μv to 3 volts between d-c and 10 kcy/sec and from 100 μv to 1 volt between 30 cy and 30 Mcy/sec. Spurious frequencies are said to be more than 60 db down. Frequency range can be increased to the gigacycle region with accessory equipment. The instrument is housed in a single movable rack cabinet with space available to accommodate accessory frequency standards.—J.S. (Rohde & Schwartz, Dept. S950, 111 Lexington Ave., Passaic, N.J.)

Personnel Placement

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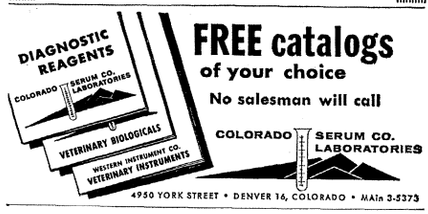

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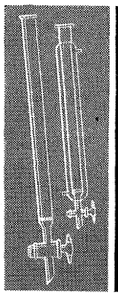

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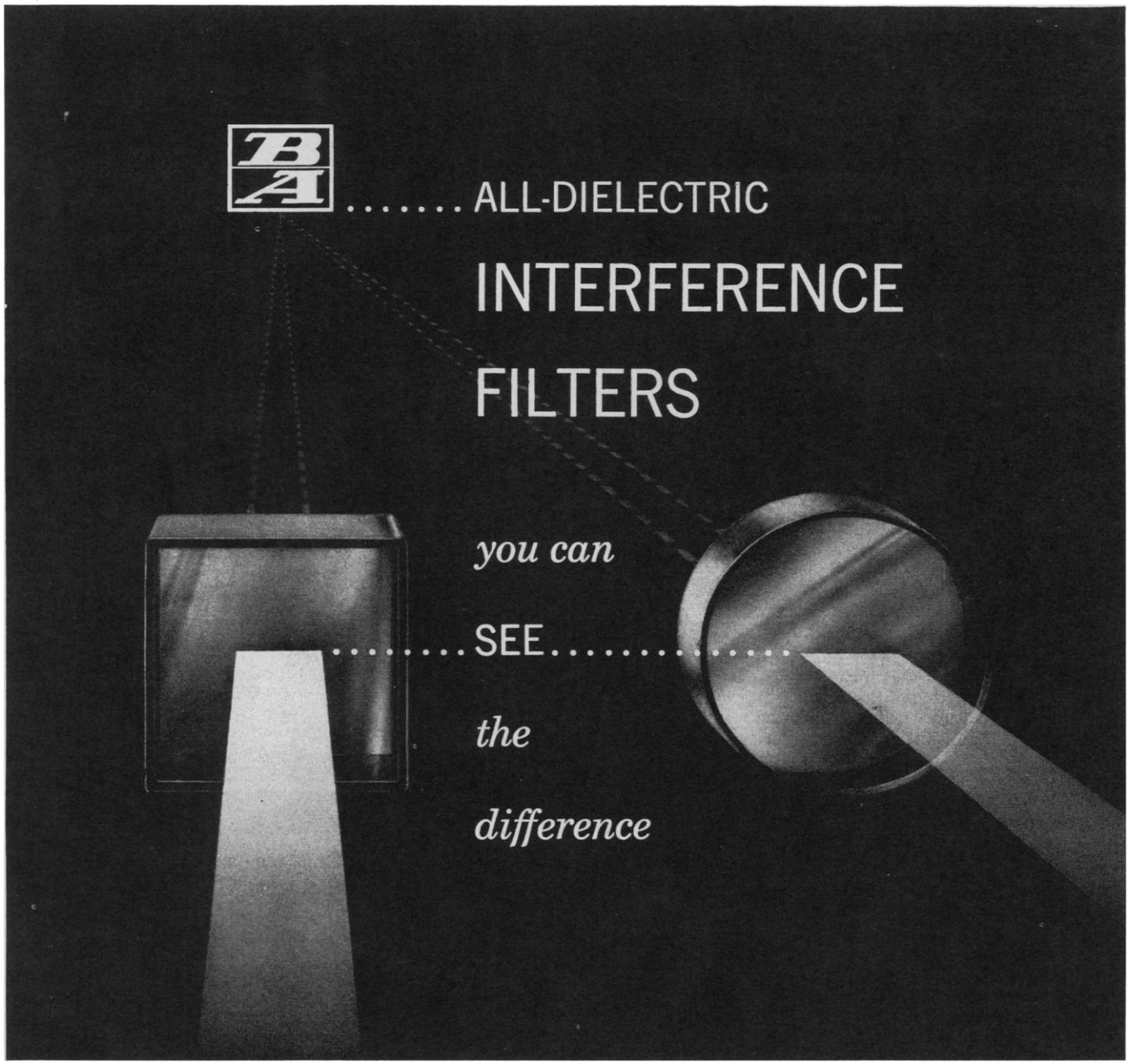

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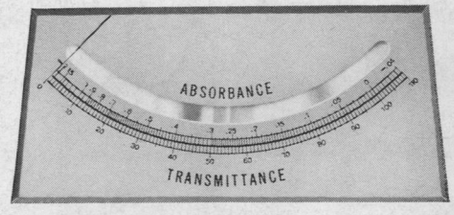

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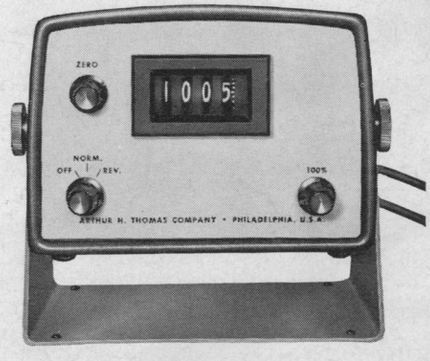

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