

new products

The items listed have been selected from among those appearing concurrently in "New Instruments" or "New Materials and Components" in *Review of Scientific Instruments*. We gratefully acknowledge the cooperation of the editor of *RSI*, J. B. Horner Kuper, the associate editor for New Instruments, Joshua Stern, and the associate editor for New Materials and Components, R. K. Eby.

These descriptions are based on information supplied by the manufacturer and in some cases from independent sources. Neither *Review of Scientific Instruments* nor *PHYSICS TODAY* assume responsibility for their correctness.

Multichannel Analyzer

The SCORPIO 3000 provides a computer based data acquisition and analysis system for on line physics experiments. It includes three separate, independent processors for data acquisition, display and analysis. The Input Data Processor (400K cps count rate capability) performs all needed control, PHA data storage, and timing for up to four independent ADC's. A separate Graphics Processor automatically performs all major data display



and X-Y plotting tasks. Since both processors use direct memory access, the load on the Central Processor is reduced to a minimum. The entire family of PDP-11's from D.E.C. is available for use as the SCORPIO central processor unit. By using a secondary UNIBUS for the time critical functions—data acquisition and display—the primary UNIBUS and PDP-11 CPU are essentially devoted to data analysis and computation—Canberra Industries, 45 Gracey Avenue, Meriden, Ct. 06450.

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Infrared microscope

The Model D uses an S-1 photocathode. The sensitivity extends beyond 1150 nm with a maximum at 900 nm and is said to be usable through the visible and into the near ultraviolet. There are four objectives with magnification to 580 \times and resolution 1000 nm on an Abbe test plate. A transmitted light illumination system contains an

infrared filter, a condensor which can be focused, and an aperture diaphragm. The vertical illuminator contains an infrared filter and field and aperture diaphragms. Included with the unit is a combined supply for the photocathode and illuminator. Optional accessories include infrared polarizers and analyzers, a binocular viewing attachment, and a reflex photography attachment. The latter has shutter speeds from 1/125 to 1 sec and uses Polaroid type 52 or 57 4 \times 5 film. With the proper film holder, 3 \times 4 film packs can be used.—Research Devices, Inc., 616 Springfield Ave., Berkeley Heights, NJ 07922.

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Logic circuit probes

Two hand-held probes designed for digital logic circuit troubleshooting are the model 547A current tracer and the model 546A logic pulser. The current tracer locates low-impedance faults by tracing the flow of current pulses, rather than voltage changes, in circuit conductors. The logic pulser, a miniature pulse generator, electrically



stimulates circuits for stimulus-response testing. A feature of the pulse is its ability to supply pulse streams of 1, 10, or 100 Hz, or bursts of exactly 10 or 100 pulses, as well as single pulses. The current tracer senses logic current pulses as small as 1 mA up to 5 mm from the conductor. It operates on all logic families having current pulses from 1 mA to 1 A with repetition rates to 10

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CRYOGENIC Temperature Controller



Model 5301

Accurate temperature control in Research Dewars, Cryogenic Freezers, Tensile Cryostats for physics, chemistry, metallurgy and other scientific fields where the process, temperature and/or control requirements change frequently. System features control stability better than $.01^\circ\text{K}$ from below 0.3° to 320°K with less than one micro-watt power dissipation in the sensor. Three mode control: Proportional, rate and reset with internal parameter controls, allowing to tune the controller to thermal characteristics of the system. 100 watts output, short circuit proof, DC for minimum interference to other low level instrumentation.

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PROGRAMMER



Model 5350

The Model 5350 Programmer is an electro-mechanical function generator, consisting of a digitally controlled servo-system driving a 10 turn potentiometer at a wide range of sweep rates. The Programmer finds application in the process control field with other instrumentation, whose output is controlled by a resistance or resistance ratio, such as powersupplies, magnetic generators, audio or RF oscillators as well as temperature, deposition-rate, vacuum and similar controllers.

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MHz. Operation does not require interruption of the conducting path or encirclement by a magnetic device. In situations where no signals are present in the circuit, a logic pulser may be used to stimulate the circuit under test; synchronization signals are not required. Sensitivity needed to sense the small magnetic fields is provided by a shielded inductive pickup and a wide-band, high-gain amplifier. A sensitivity control is used to set indicator lamp brightness to a reference level. During tracing, changes in lamp intensity show the relative level of ac current activity to assist in pinpointing the fault location. Self-contained in a hand-held probe, the tracer operates from 4.5 to 18 V dc, requiring less than 75 mA. The indicator lamp will display single-step current transitions, single pulses greater than 50 nsec wide, and pulse trains to 10 MHz. Current transitions with rise time less than 200 nsec at 1 mA are displayed.—Hewlett-Packard Co., 1501 Page Mill Rd., Palo Alto, CA 94304.

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X-ray analysis system

The Spectrace 440P automated x-ray analysis system is an energy dispersive system that incorporates pulsed control of the x-ray tube to reduce counting time. The instrument includes a 10-, 20-, or 40-position sample changer, pulsed x-ray tube, and power supply, Si(Li) x-ray detector with associated electronics, transmission filters, and a computer-based x-ray analyzer featuring either tape cassette or dual floppy disk storage. Parameters such as sample position, filter selection, and control of the x-ray power supply voltage and beam current are computer controlled.—Nuclear Semiconductor Division, United Scientific Corp., 1400 D. Stierlin Rd., Mountain View, CA 94042.

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Infrared spectrometer

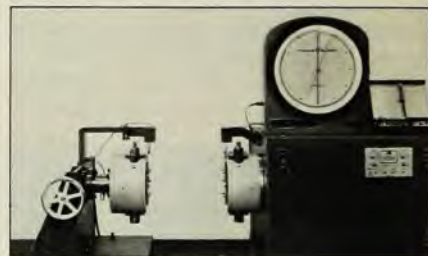
The series 7000 Fourier transform infrared spectrometer system provides automatic ratio recording with better than 0.06-cm^{-1} resolution throughout the spectral range $4000\text{--}400\text{ cm}^{-1}$. It includes a Michelson interferometer with a Ge-on-KBr beam splitter, laser reference, and white light reference system, and variable mirror drive rates from 0.05 to 4 cm/sec. It has a total optical retardation length of 16 cm, and a nominal aperture of 2-in. diameter. Options are available for operation in the visible, near-infrared, and far-infra-

red regions, and for operation with a cooled detector. Information is collected, processed, and displayed from a 1120 data system with 40 k of solid state, 20-bit word memory storage; dual 4.8 megaword disk memory; a high-speed digital plotter; and CRT display. The system is available in either a console or a rack mount configuration.—Nicolet Instrument Corp., 5225 Verona Rd., Madison, WI 53711.

Circle No. 144 on Reader Service Card

Torsion testing machine

Torsion testing machines, available in capacities from 30 000 to 10^6 in. lb or kg cm, load and weigh in both directions of rotation. The machines make it possible to determine both the ultimate torque load of a specimen and how the specimen behaves under conditions of continuous or intermittent torque loading in two directions. The testers comprise a variable-speed drive loading



system, a strain gauge torque weighing system, and a dial or digital indicating system. The loading and indicating systems are located on a fixed unit along with the loading or twisting head. The weighing head with its strain gauge torque sensor is mounted on a movable unit that can be positioned to accommodate to the specimen length. Testing speed is continuously adjustable from 5° to 180° or $360^\circ/\text{min}$ in either direction, and both speed and direction of twist can be changed during the test. Two-way grips ensure slip-free specimen clamping regardless of twist direction.—Tinius Olsen Testing Machine Co., Inc., Eaton Rd., Willow Grove, PA 19090.

Circle No. 145 on Reader Service Card

Charge amplifier

The type 5003 charge amplifier and type 5423 range selector, with up to 9 separate ranges for converting electrical charge signals from piezoelectric transducers into proportional voltages, are available separately or housed together and interconnected electronically by means of a type 5425A2 adapter plug-in. The latter contains an operate-reset-remote switch for manually or remotely controlled reset,

a short-long-remote switch for selection between two time constants, and a fine adjustment set screw. The range selector can be furnished with 3, 6, or 9 ranges that may be set manually or, optionally, by remote control. Fine adjustment of the individual ranges is provided for calibration of the amplifier to a specific transducer. Principle specifications of the combined instrument are: measuring range, 100–10⁶ pC; output voltage, ± 10 V; upper frequency limit (–3 dB), 15–75 kHz; time constant (long), 1000–100 000 sec; time constant (short), 0.01–10 000 sec; accuracy (100–500 pC), within 1.5%; accuracy (500–10⁶ pC), within 0.5%; hum and noise, 2–5 mV_{pp}.—*Kristal Instrument Corp., 2475 Grand Island Blvd., Grand Island, NY 14072.*

Circle No. 146 on Reader Service Card

Scanning microscope

The model 7 scanning electron microscope offers 100-Å resolution guarantee, a wide range of specimen handling capability, and pushbutton operation. Key features include built-in TV scanning over the entire magnification range, 30–120 000, accelerating potential 15 kV, with a 2-kV option, dynamic focusing, a built-in photometer for automatic adjustment of contrast and brightness settings, and a working distance factor meter. A tilting, rotating stage allows a 32-mm



specimen to be examined in its entirety. Optionally available is a large universal specimen stage that allows a specimen of 3-in. diameter and 1-in. thick to be examined in its entirety.—*International Scientific Instruments, Inc., 1400 Stierlin Rd., Mountain View, CA 94043.*

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Laser radiometer

The model 581 laser radiometer system provides absolute measurement of average power of high-power, repetitively pulsed lasers at 1.06 μ m. It is also capable of power measurements of other types of repetitively pulsed lasers as well as cw lasers in the spectral range 0.35–1.1 μ m. System

stability is obtained by use of a high-speed, silicon PIN photodiode as the detector. The photodiode is maintained at a constant temperature, resulting in a fixed value of sensitivity and dark current regardless of ambient temperature variations. Repeatability of readings is said to be better than 1%.—*EG&G, Inc., 35 Congress St., Salem, MA 01970.*

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Centrifuge

The model J-6 6000-rpm centrifuge processes up to 6 liters of sample in a single run and features adapters that permit the use of virtually every popular size centrifuge tube. The adapter disks can be stacked to support various tube lengths. A rotor imbalance detector shuts the instrument off in case a rotor is unbalanced to such a degree that it could damage the rotor or the instrument drive. Five rotors are offered, including 4- and 6-liter swinging bucket rotors and a special rotor for radioimmunoassay racks. The instrument accommodates fixed-angle and swinging bucket rotors for the model J-21B centrifuge. The large lids of the rotors can be stored on the inside of the instrument door while the rotor is being loaded.—*Beckman Instruments, Inc., Spinco Div., 1117 California Ave., Palo Alto, CA 94304.*

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New Literature

Data acquisition systems—A 22-pp. brochure describes the modular AN-5400 system that can provide up to 512 channels in a single chassis or can be extended to more than 4000 input channels and 500 output channels.—*Analogic, Audubon Rd., Wakefield, MA 01880.*

Electrolyte system—Bulletin 6400, 8 pp., describes a complete electrolyte capability for Na, K, Cl, and CO₂, using a semiautomated Cl/CO₂ analyzer and a fully automated K, Li, Na flame system. The system will report results in less than 2 min and will routinely run 55 samples/h on the Cl/CO₂ analyzer and more than 100 samples/h on the KLiNa flame system.—*Beckman Instruments, Inc., 2500 Harbor Blvd., Fullerton, CA 92634.*

NMR spectrometer—A 16-pp. brochure describes the expanded capabilities that a 32k-word Fourier transform disk adds to the model XL-100 spectrometer.—*Varian Instrument Div., 611 Hansen Way, Box D070, Palo Alto, CA 94303.* □

COMPUTER PLOTTING



Model 1653

A high speed, 22 inch recorder designed to operate on-line to scientific and general purpose computers in graphic output applications.

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