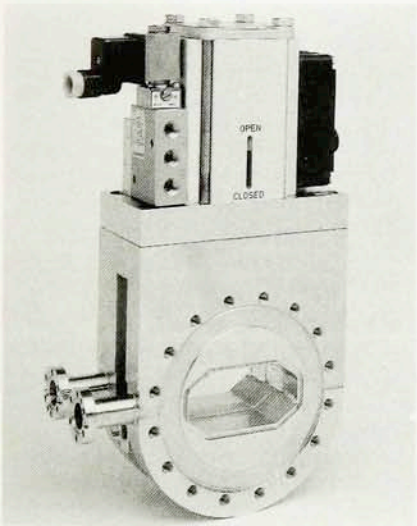
NEW PRODUCTS

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers, and in some cases by independent sources. PHYSICS TODAY can assume no responsibility for their accuracy. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

Small Vacuum Valves for High-Energy Accelerators

Vat has received an order for 75 special gate valves with rf contacts. These vacuum valves will be used as rf sector valves in HERA, the new high-energy electron–proton collider ring under construction at DESY in Hamburg. The manufacturer tells us that rf gate valves of such small



dimensions and such low flange-to-flange rf resistance could only be realized using VAT's new Monovat configuration. Monovat is the name of the firm's unusual sealing configuration and gate-valve mechanism. The Monovat configuration lets the user specify cross-section geometry—octagonal or oval, for example. It also permits very compact valve designs. *Vat, 600 West Cummings Park, Woburn, Massachusetts 01801*

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Gridless ion source covers wide areas

The new Mark I gridless ion source from Commonwealth Scientific provides a high-current, low-energy ion beam for wide area coverage. The Mark I uses the end-Hall effect, which provides an accelerating potential via a magnetic field and a substantial electron current. The Mark I generates a maximum beam current of approximately 200 milliamps over a variable peak energy range of 40–120 eV. Operation has been documented with argon, nitrogen and oxygen.

The Mark I fits easily into existing process chambers. It is 4.17 inches long and 2.5 inches in diameter. It is fabricated primarily of stainless steel and alumina, rugged enough for production operation. The Mark I is well suited for ultra-high vacuum operation, including baking cycles. Applications include substrate precleaning and ion-assisted deposition. *Commonwealth Scientific, 500 Pendleton Street, Alexandria, Virginia 22314.*

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Nuclear Magnetic Resonance Magnetometer

Scanditronix has introduced what it describes as "a sophisticated nuclear-resonance magnetometer easily controlled by personal computer." This Model NMR851PC magnetometer is suitable for measuring and mapping magnetic fields with high accuracy and for maintaining closed-loop control of electromagnet fields. Without changing probes one has a field-strength range from 0.08 to 2.3 tesla.

The magnetometer is operated by simple menu commands from an IBM PC, PC/XT, PC/AT or other compatible hardware. It makes use of proton magnetic resonance in a sample placed in the uniform magnetic field. The instrument's modular design lets the user monitor and regulate as many as 100 different magnets simultaneously. Fields with gradients up to 0.5 tesla per meter can be measured

by using gradient correction units. The NMR851PC offers a field resolution of a milligauss. Fast automatic search with resonance lock over the instrument's entire range takes less than five seconds. *Scanditronix, 106 Western Avenue, Essex, Massachusetts 01929*

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Laser Beam Power Management

Cambridge Research & Instrumentation has introduced a new laser power controller. This system provides complete management of laser-beam power—measurement, modulation and stabilization—in one unit. The instrument comes with an RS-232 or GP1B computer interface for computer control.

This new controller is similar to the firm's LS series of laser stabilizers, but new proprietary optical techniques are claimed to have reduced the cost of this system significantly. When the new controller is placed in a laser beam, it lets the user select and maintain a desired beam power. It employs an electro-optic servo to maintain the desired intensity and to compensate for fluctuations in the input beam. The result is a 50:1 reduction in laser drift, with long-term stability of about 0.05%. This facilitates detector calibration, transmission and scattering measurements, and exposure control.

The laser power controller is offered in four models: LPC-VIS for visible and infrared wavelengths up to 1.1 micron, LPC-IR for infrared lasers down to 1.6 microns, LPC-HP for high-power visible lasers up to 20 W, and LPC-YAG for high-power Nd:YAG lasers. Prices begin at $2890. *Cambridge Research & Instrumentation, 21 Erie Street, Cambridge, Massachusetts 02139*

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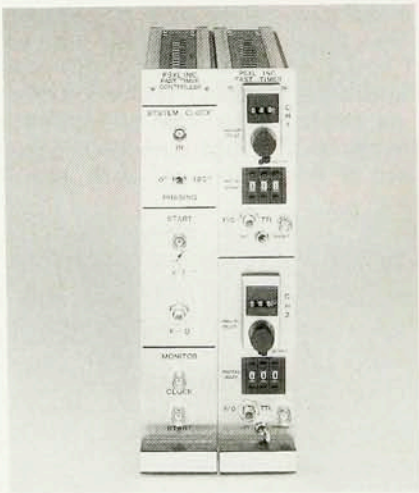
Fast Timer System with Picosecond Resolution

The new Fast Timer System from Princeton X-Ray Laser provides precise delayed trigger pulses with a resolution of 5 psec for high-accuracy timing requirements. The System consists of a controller and a number of timer modules. The controller accepts the experiment's basic clock to maintain system synchronism, and a start pulse, either electrical, manual or fiber optic. Its output is a buffered system clock and a start pulse for use in other parts of the experiment. The fast timer makes a specific count, selected via front panel thumbwheel switches and a vernier, and puts out both fiber optic and TTL trigger pulses. The length of the output pulses is adjustable from 0.1 to 1 μsec. Each digital step, controlled by the thumbwheel switches, provides integer increments of delay equal to the system clock period. The vernier provides an analog control for fine tuning the delay between digital steps. The analog delay can be adjusted from 0 to 50 nsec., using the system's three-digit linear potentiometer. The least significant digit corresponds to 50 psec, and each



graduation corresponds to 10 psec. The circuitry for the analog delay uses a temperature-compensated band-gap voltage reference for high stability.

An important feature of the system is the acceptance of an external clock to maintain synchronism with the external events. When the fast timer is triggered by sources synchronous with the system clock, such as the companion master timer system, the outputs are essentially jitter free. The Fast Timer System is suitable for particle accelerators, laser systems using cavity dumpers, pulse slicers, streak cameras, laser firing systems and Q-switch controls. *Princeton X-Ray Laser, Princeton Corporate Plaza, 1-H Deerpark Drive, Monmouth Junction, New Jersey 08852*

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High-Power Helium–Neon Laser

Spectra Physics offers its Model 127 helium–neon laser at 25 and 35 mW

output power, at a wavelength of 632.8 nm. This is claimed to be the highest power available for a helium–neon laser of its size. It is the only high-power helium–neon laser whose laser head and power supply are integrated into a single compact unit, we are told. The housing is designed to comply with CDRH regulations.

The Model 127 is suitable for many spectroscopic applications. Its lifetime typically exceeds 20 000 hours. An improved mirror configuration, mounted on adjustable plates, enhances stability over a broad temperature range. Hard-sealed windows, which render the plasma trube impervious to contamination, and a large cathode are said to contribute to increased operating lifetime. *Spectra Physics, 1250 W. Middlefield Road, P. O. Box 7013, Mountain View, California 94039*

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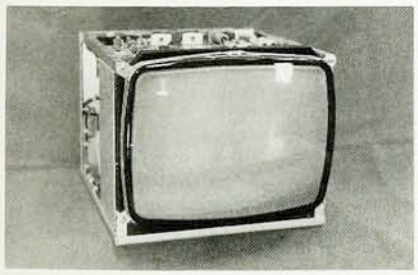
Image Monitor for Scanning Electron Microscopy

Modern Instrumentation Technology has introduced a new image monitor, the Model IM-10. The monitor accepts extra horizontal and vertical deflection signals from dc to television scan rates. The unit serves as an image monitor for applications where television imaging is either not possible or where slower scanning produces better quality images. These applications include scanning elec-



tron microscopy and secondary ion imaging.

The Model IM-10 has a 12-inch CRT with long- and short-persistence phosphor, to produce fast images as well as slow scan images. The monitor is available without a cabinet. A 19-inch rack-mountable enclosure can be ordered as an option. A spot killer and automatic brightness control protect the screen from damage in case of deflection signal failure or a significant drop in the scanning rates. *Modern Instrumentation Technology, 2595-1 Clyde Avenue, State College, Pennsylvania 16801*

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Copper and Gold Compact Vapor Lasers

Oxford Lasers has introduced its new A-Series of copper and gold vapor lasers. The new compact CU10-A (10 W copper), CU15-A (15 W copper) and AU2-A (1.5 W gold) vapor lasers provide the user with totally "hands-free" laser operation, we are told. The compact power supply and control unit operates from a single phase, 3 kW supply, insuring the stability of the laser output power. This power supply controls the laser power at whatever repetition frequency the user selects. The A-Series lasers are air-cooled and hence transportable; they can be installed quickly in almost any location.

Oxford Lasers has recently achieved 100-watt average output power from a single copper vapor laser unit operating at 0.8% efficiency for 8-hour periods in their development laboratory. The firm expects to announce a commercial model in the near future. *Oxford Lasers, 60/62 Magdalen Road, Oxford, OX4 1RD, U. K.*

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Inductively Coupled Plasma Mass Spectrometer

The new Elan 500 from Perkin–Elmer is an inductively coupled plasma mass spectrometer. Intended for the low-level multielement determination of elemental and isotopic species, the instrument offers enhanced mass resolution and abundance sensitivity.

The spectrometer's platinum sampler and skimmer cones are said to yield substantially longer orifice lifetimes. The corrosion-resistant sample-introduction system lets the user sample concentrated solutions of hydrofluoric acid without difficulty. The Elan 500's enhanced software package allows one to determine major, minor, trace and ultratrace element concentrations in a single analytical run.

A remote-control function lets a personal computer control the instrument's data-acquisition cycle, returning the data to the computer sample-by-sample. A 33-megabyte hard disk for data storage and an Epson printer are included with the Elan 500. *Perkin–Elmer, 761 Main Avenue, Norwalk, Connecticut 06859.*

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