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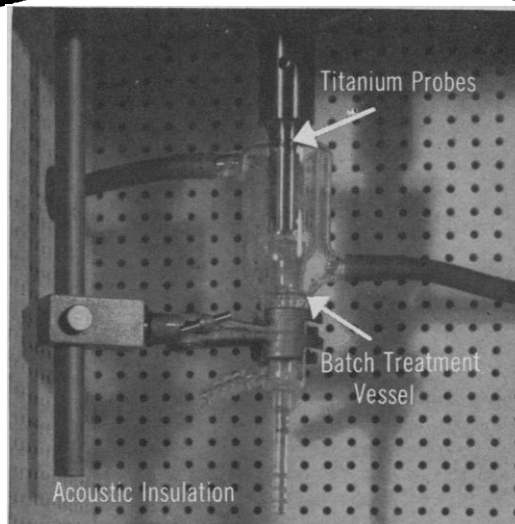
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**TITANIUM? Why are MSE probes made of a unique, difficult to machine and costly metal?**

because research\* proved that titanium has superb acoustical properties—twice that of stainless steel—and is so tough that it eliminates erosion, flaking and contamination.

**Why are there two interchangeable probes?**

research\* has shown that probe amplitude and sample volume must be matched for greatest sonic efficiency—too high a probe amplitude increases heat and turbulence which in turn decrease cell disruption—MSE provides a large probe of low amplitude for small volumes or reduction of viscosity of large volumes, and a smaller probe of high amplitude (9 times higher) for large volumes.

**Why an acoustically insulated cabinet?**

to minimize acoustic trauma to investigators, an important consideration in a busy laboratory.

**Why a glass batch treatment vessel with cooling jacket?**

research\* has proven that thick walled glass withstands sonic power, conducts heat transfer satisfactorily, and increases sonic efficiency—stainless steel, although a more efficient cooling material, decreases cell disruption. (The 500 watt model has a Titanium flow through cooling assembly, the ultimate in cooling and sonic efficiency!)

**Why 60 watt and 500 watt models?**

again, sonic efficiency—cell disruption is the true measure of ultrasonic disintegrators—the only reason for higher wattage is heavy duty production work. Therefore MSE offers the 60 watt laboratory instrument for research and the 500 watt heavy duty model for production and large volumes (up to 1,000 ml).



\**The Disintegration of Bacteria and other Microorganisms*, D. E. Hughes, *Journal of Biochemical and Microbiological Technology and Engineering*, Vol. III, No. 4 pp. 405-433 (1961)  
*Cell Disruption by Ultrasound*, D. E. Hughes and S. L. Nyborg, *Science Volume* 138, No. 3537 pp. 108-114 (1962)

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# New Products

**Portable modular radiation laboratory equipment** consists of: (i) an a-c/d-c power supply accurate to 0.1 percent and capable of operating most geiger tubes and scintillation counters in the 700- to 1800-volt range; (ii) a scaler with a 7-decade Numerik read-out which will count better than 1,000,000 count/sec with lights on or off; (iii) a ratemeter that will count 0 to 100,000 count/min in three ranges; (iv) a battery-operated recorder that fits on top of the scaler module. Each module can be fitted to any other module both mechanically and electrically. A lever mechanically locks two or more modules together and electrical connections are made by a multipronged connector and receptacle in the top and bottom of each module cabinet. A detachable handle can be fitted on any one module or group of modules for portability. As all the modules can be used in any combination, it is only necessary to purchase just what is needed. As more modules are required, they can be purchased and added with assurance they will fit with those previously purchased. The power module derives power to operate the ratemeter and/or scaler modules from three common 6-volt lantern batteries or from 117-volt, 50/60 cy a-c. The recorder module has its own battery pack. Battery life varies with each module, ranging from 40 hours for the scaler, operated with lights off, and 10 hours with lights

on full time, to 8 hours for the recorder module. The power supply, scaler, ratemeter, and recorder modules weigh 13, 8, 5, and 13 lb, respectively.—R.L.B. (Atomic Laboratories, Inc., 3086 Claremont Ave., Berkeley, Calif.)

## Circle 1 on Readers' Service card

**Arc melting furnace** (model AF-92) is designed for laboratory melting of highly refractory metals such as tungsten or extremely reactive metals like titanium. Melting is accomplished with an electric arc struck from a nonconsumable water-cooled tungsten electrode. The furnace chamber may be maintained either at reduced pressure or filled with an inert gas atmosphere. Interchangeable water-cooled copper hearths permit casting various shapes. The equipment features a high-vacuum manipulator that permits moving samples, adding alloying ingredients, and so forth, without opening the chamber. A 400-amp power supply is available for operating the furnace.—J.S. (MRC Manufacturing Corp., Orangeburg, N.Y.)

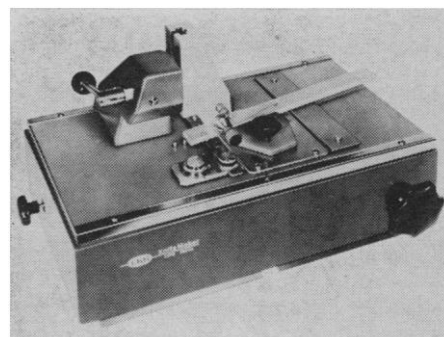
## Circle 2 on Readers' Service card

**Hyperbaric oxygen therapy chambers**, designed to manage all forms of hypoxia, can be used in the application of hyperbaric oxygen therapy in such areas as open heart surgery, treatment of cancer, and treatment of carbon monoxide poisoning and gas gangrene. This new line of Bethlehem chambers consists of the model 1501, a 5-ft (1.5-m) animal-infant chamber, and the model 1502, a 7-ft (2.1-m) adult chamber, as well as large hyperbaric complexes. In the models 1501 and 1502, the table on which the subject is placed is integral with the chamber door. The entire door assembly, including the table, is caster-mounted so that it rolls easily to and from the chamber proper. This feature facilitates the attachment of all necessary transducers and electrodes for monitoring with a minimum of patient dis-

turbance. Fittings can be changed at any time to accommodate different types of monitoring equipment. Two 6-inch (15-cm) access ports, one in the door and one in the chamber body, are provided for this purpose. Also, six 1-inch (2.54-cm) threaded openings with caps are provided to facilitate removal of blood samples from the chamber or the introduction of medication, while the experiment is in progress. Three 6-inch view ports, one in the door and two in the tank, provide adequate viewing of the subject. Connections are supplied for pressurizing with a motor compressor or with gas from cylinders. Pressure within the tank is maintained constant at the preset level regardless of flow from the source, and a preset safety valve prevents the pressure from exceeding 75 lb in.<sup>2</sup> (gage). The door is interlocked so that the pressure must be vented from the tank before it will open. Other standard equipment includes explosion-proof light, thermometer, and pressure gage.—D.J.P. (Hyperbaric Oxygen Therapy Div., Bethlehem Corp., Bethlehem, Pa.)

## Circle 3 on Readers' Service card

**KnifeMaker** is a precision apparatus for making the high-quality glass knives needed for cutting the ultra-thin sections used by electron microscopists. The KnifeMaker accepts glass strips up to 1½ inches (3.8 cm) wide and 9/32 inch (0.7 cm) thick and produces, from strips with smooth regular sides, knives with much straighter edges than those usually obtained manually. To score the glass the instrument uses a sintered tungsten carbide wheel, which outlasts by many times the usual steel cutter wheels. For each fracture the scoring and breaking is done in succession without removing or repositioning the glass, a principle which contributes greatly to the high reproducibility. The KnifeMaker can be adjusted quickly to break knives with any scoring angle between 40d and 55d.



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).

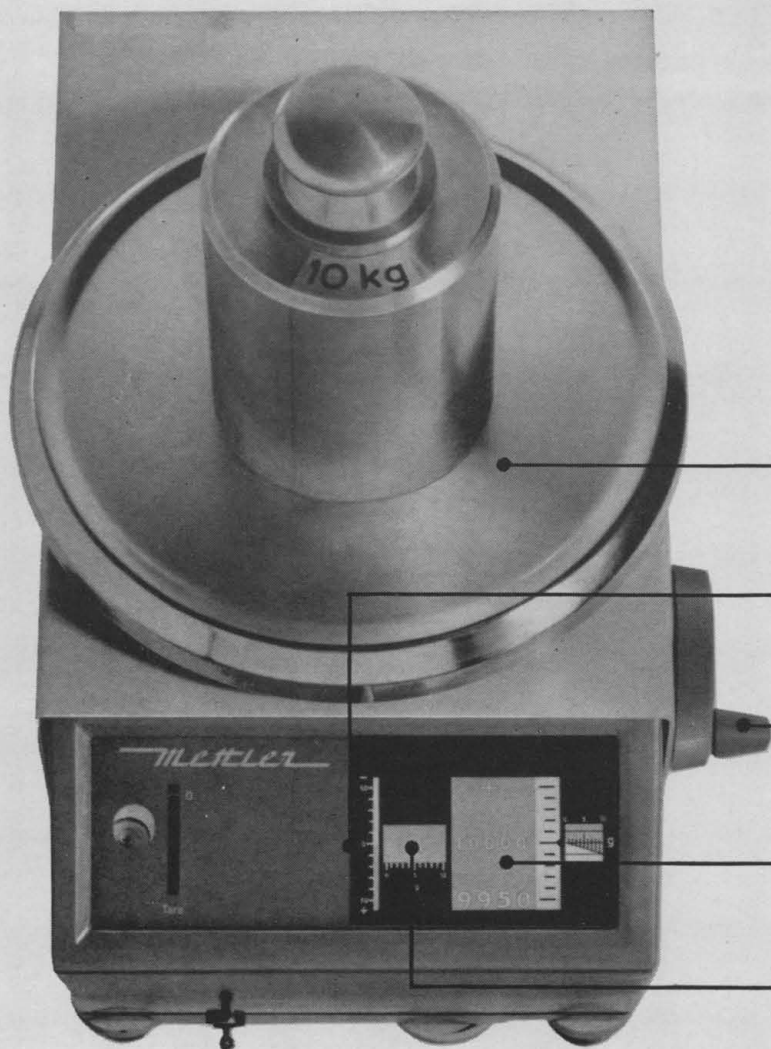
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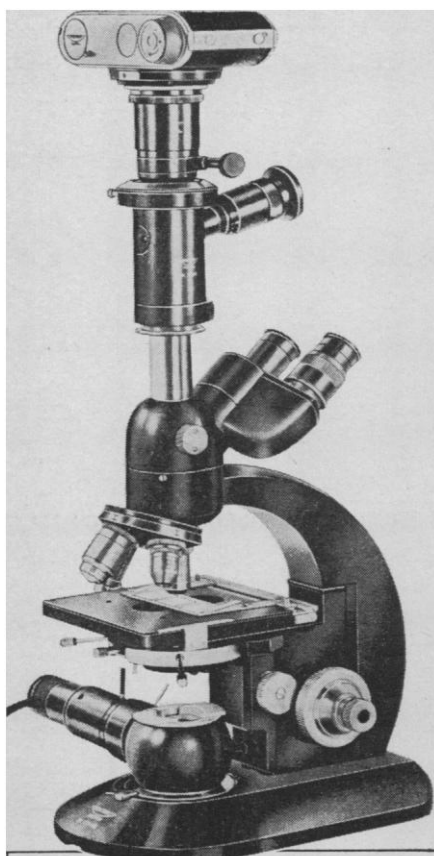
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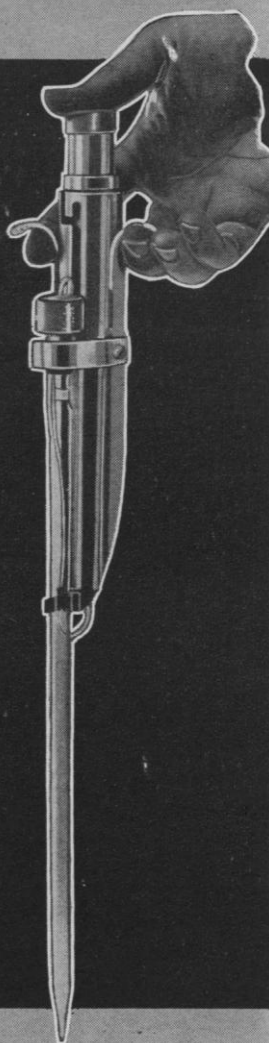
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The KnifeMaker can be used to break glass knives which fit in all commercially made ultramicrotomes. Built as an elegant table-top model, it weighs 35 lb (16 kg).—R.L.B. (LKB Instruments, Inc., 4840 Rugby Ave., Washington 14, D.C.)

Circle 4 on Readers' Service card

**Glove bag** is an inexpensive, disposable, polyethylene bag for use when it is desired to work in an inert, dry atmosphere. The entire bag is of polyethylene and consists of a pair of integral gloves, a large access port, and an inlet for nitrogen. In use, the glove bag is spread out flat and the equipment inserted. Residual air is purged by using nitrogen or other inert gas. The access port is then closed with the spring clips provided, and the nitrogen inflates the bag. The flexible gloves reach anywhere inside the inflated bag and thus allow a freedom of operation. This device is particularly useful for chemists involved with hygroscopic or pyrophoric materials and for scientists requiring dust-free atmospheres. For use in medical research, the bag may be gas-sterilized to provide germ free atmospheres.—D.J.P. (Instruments for Research and Industry, 10 Franklin Ave., Cheltenham, Pa.)

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**Temperature-controlled cooling** for photomultiplier tubes is provided by a thermoelectrically operating device. The device allows the tube to be operated at any desired set point from room temperature to  $-35^{\circ}\text{C}$ . The tube fits into a zero-gradient solid enclosure that can, if desired, accommodate a mu-metal shield. The tube may operate in any position or axis and side viewing tubes can be accommodated. The target can also be cooled thermoelectrically. Units are available for water cooling or for air cooling with fan. The unit draws less than 100 watts and operates on 10.5 volts d-c.—J.S. (Frigitronics Inc., 525 Broad St., Bridgeport, Conn.)

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**Dilutors and repetitive pipets** facilitate the running of routine laboratory procedures rapidly and precisely. The automatic dilutor consists of two syringes, one for aspirating and one for diluting, connected to a dispensing tip. Each syringe plunger is fitted with an external rod and locking pointer which limit the plunger travel to volumes set with the pointer against

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CONSTANCY				
At 100°C.....	±0.8°C	±1.0°C	±1.0°C	±1.5°C
At 200°C.....	±1.8°C	±1.1°C	±0.5°C	±0.9°C
UNIFORMITY				
At 100°C.....	±0.5°C	±0.7°C	±0.2°C	±0.5°C
At 200°C.....	±1.4°C	±2.6°C	±1.0°C	±1.5°C
HEATING RATE				
Ambient to 100°C.....	54 min	120 min	76 min	83 min
Ambient to 200°C.....	83 min	165 min	110 min	130 min
VOLTAGE	115 or 230 volt, 50/60 cycle a-c		115 or 230 volt, 50/60 cycle a-c	
OVERALL DIMENSIONS				
Width.....	16½ in	22¼ in	16½ in	22¼ in
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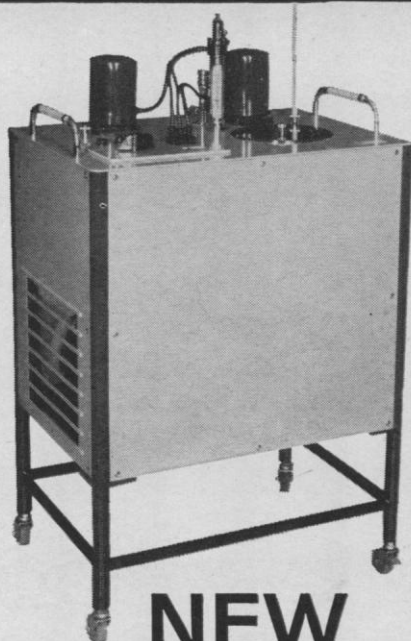


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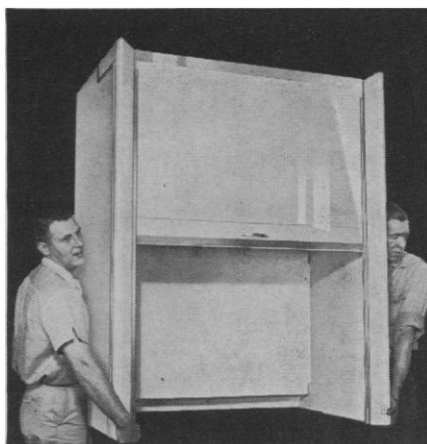
a scale of 100 divisions. Mounting directly on bottles or flasks, the dilutor has an air inlet tube for filtering out interfering ions and particles. To operate, the pointers are first set to the desired volumes on the aspirating and diluent syringes. The dispensing tip is then placed in the fluid to be diluted and dispensed, and the aspirator plunger lifted to draw the desired volume into the device. This volume is then dispensed into a suitable container and is diluted to the set ratio by lifting and depressing the diluent plunger. Accuracy of 1 percent with reproducibility of 0.1 percent is claimed and dilutions up to 1:50,000 may be made in a single operation using the tips furnished. Dilutors are available with aspirators and diluent syringes in any combination of 1-, 10-, 20-, and 50-ml volumes. The repetitive pipets, called Repipets, are pyrex, adjustable, autoclavable syringes for dispensing from ordinary bottles, flasks, test tubes, beakers, or remote storage containers. They employ the same rod and pointer plunger limit and have a pyrex spigot near the bottom for dispensing. Volumes of 1-, 10-, 20-, and 50-ml are available and models to fit specified containers may be requested.—D.J.P. (Labindustries, 1740 University Ave., Berkeley, Calif. 94703)

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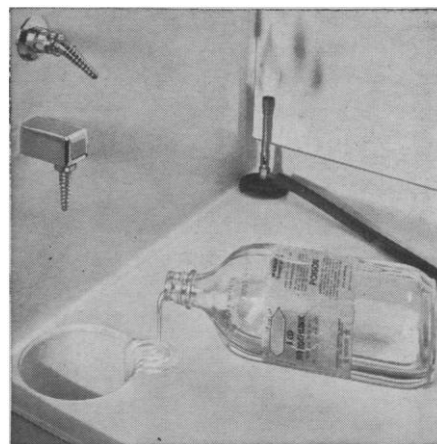
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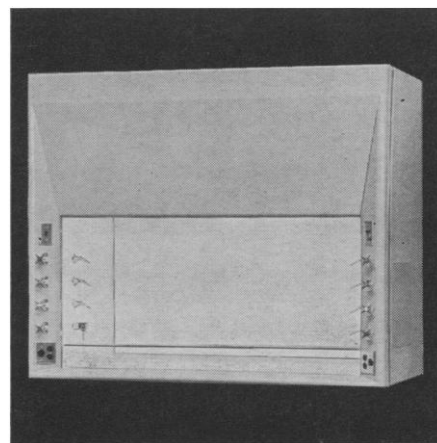
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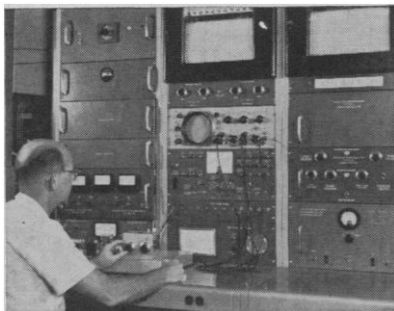
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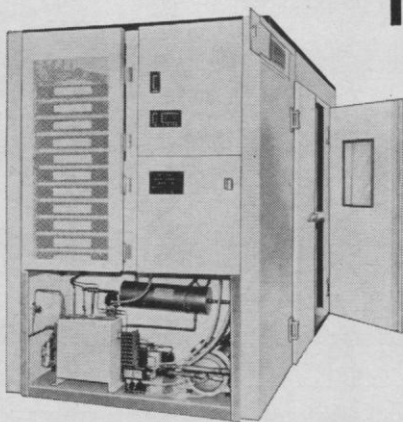
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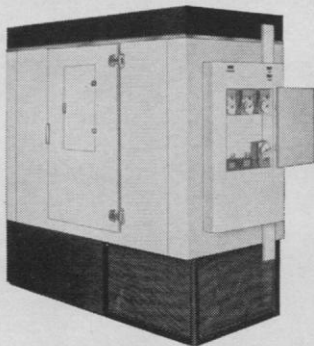
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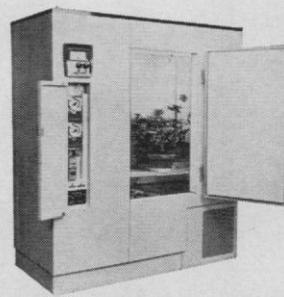
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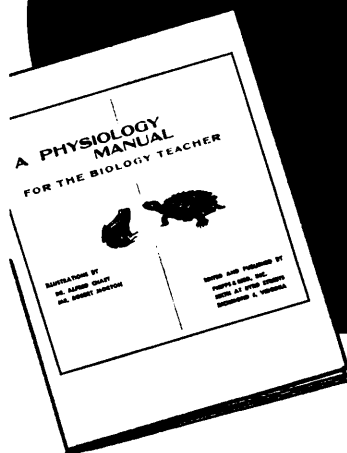
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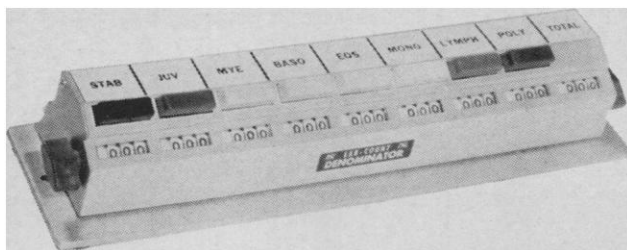
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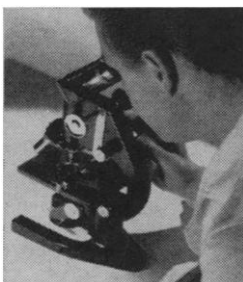
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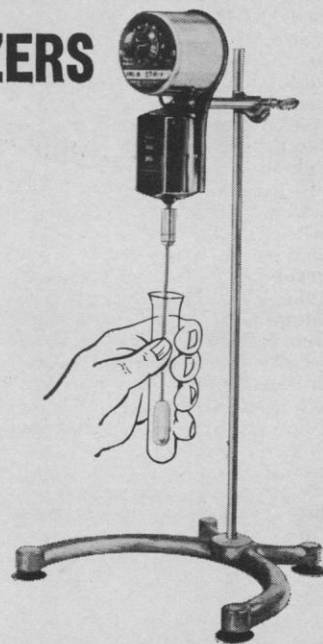


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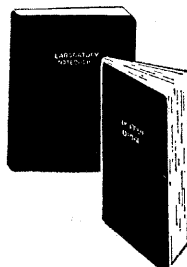
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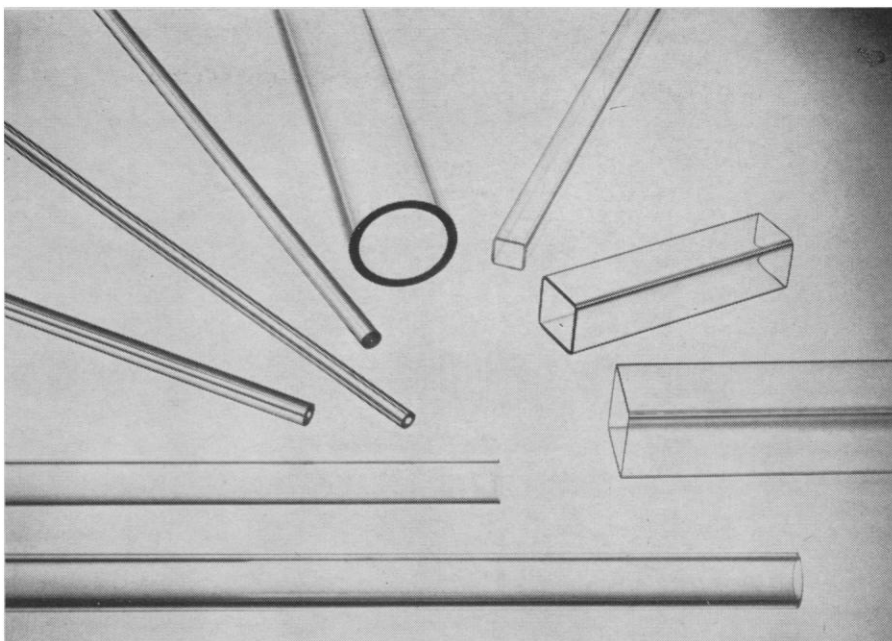
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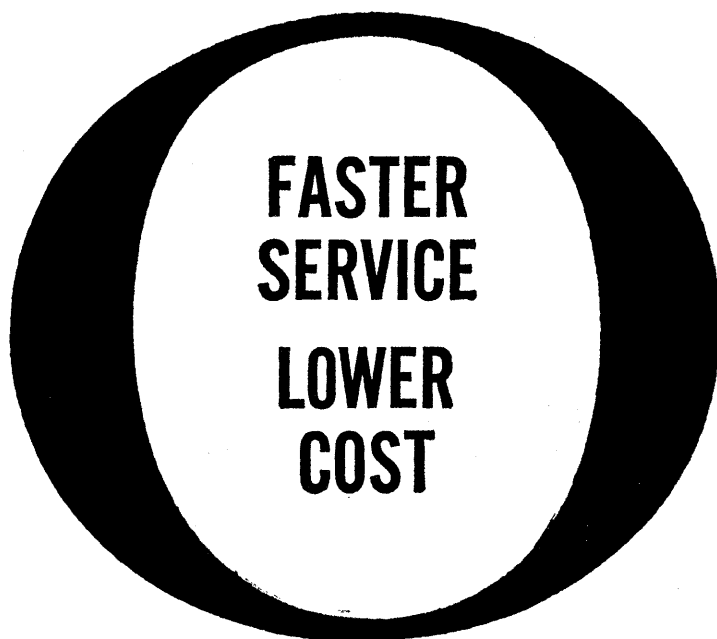
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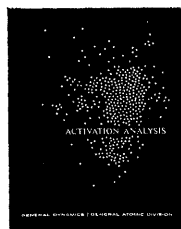
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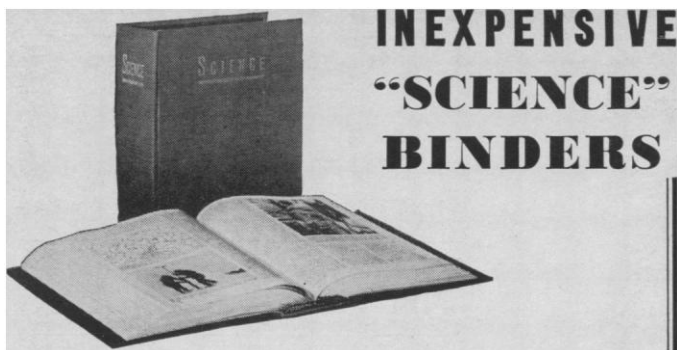
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