

According to the methods described or referred to as having been employed in this study, it would appear that some patients in a group of 18 received a chemically effective analgesic (morphine) soon after surgery whereas the remainder of the group did not receive this treatment until at least 2 hours later, after they first had been given an ineffective treatment (papaverine). If this is so, it is possible to explain the results that were obtained on the basis of (i) differences in the duration of pain before chemically effective analgesia or (ii) the influence of prior experience with the ineffective papaverine treatment upon subjective reactions to morphine. Neither of these explanations implies drug synergy. That is, it is possible that the patients whose pain remained untreated for the longer period simply appreciated eventual treatment to a greater extent and, consequently, judged the treatment to be more effective. Or, by comparison with an ineffective treatment, the perceived effects of an active treatment may have been enhanced over those perceived without any reference.

It might be argued that these alternative interpretations of the findings in this study are less plausible than the synergy explanation offered by the authors. However, it would seem that the very existence of alternative explanations that are consistent with the literature on subjective measurement raises an appreciable doubt that, in this study, pharmacologic synergy" has been clearly demonstrated."

RICHARD M. RITTER

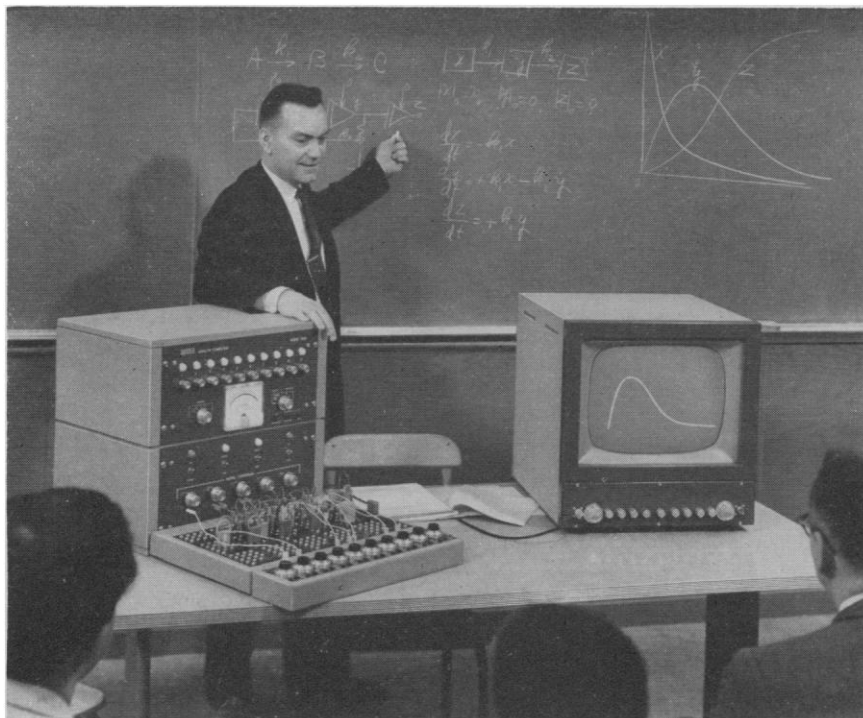
San Antonio, Texas

In clarifying the situation, points to emphasize are the following: (i) patients do not know what they are getting; (ii) the order of drug administration is randomized; (iii) papaverine itself is equally ineffective as an analgesic whether it follows or precedes morphine. This could hardly be so if Ritter's argument is correct. In view of this we do not believe that Ritter's points (i) and (ii) have validity, although we have of course discussed such an "explanation" over the years. Evidence is lacking here that a subsequent dose is significantly influenced by the fact of a single postoperative medication. If this is not the case, we must have better grounds for giving up this positive evidence than Ritter's vague reference to the "literature on subjective measurement." I am familiar with this literature, having just completed a long book on the *Measurement of Subjective Responses* with over 1000 references, but I do not know what Ritter refers to. As we said in the report, "No clue about the nature of this interaction is available."

HENRY K. BEECHER

Department of Anaesthesia,
Massachusetts General Hospital, Boston

3 OCTOBER 1958



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■ **VHF FREQUENCY METER** is accurate to 1 part per million over the range 20 to 3000 Mcy/sec. The instrument is capable of measuring and generating signals over the 10 kcy to 3000 Mcy/sec range. Frequency may be read directly. (Lavoie Laboratories, Inc., Dept. 357)

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■ **BALLISTOCARDIOGRAPHY TRANSDUCER** is a variable-reluctance accelerometer with full-scale output range of ± 5 -g. Response

is uniform from 0 to 40 cy/sec. The device is designed for 3000-cy/sec, 3-v r.m.s., excitation. (Northam Electronics, Inc., Dept. 367)

■ **RESISTANCE THERMOMETER** for the temperature range near absolute zero uses arsenic-doped germanium as the sensing element. Reproducibility is better than a few ten thousandths of a degree at 4.2°K, even after repeated cycling from room temperature. Resistance is determined by measuring the potential drop when a current of approximately 10 μ a is passed through the element. The instrument is not yet commercially available. (Bell Telephone Laboratories, Dept. 380)

■ **ULTRASONIC DRILL** is designed for drilling into hard, brittle materials. The equipment consists of a drill assembly and an ultrasonic generator that provides excitation power at 20 to 22 kcy/sec. Power output is 100 w. (Gulton Industries Inc., Dept. 368)

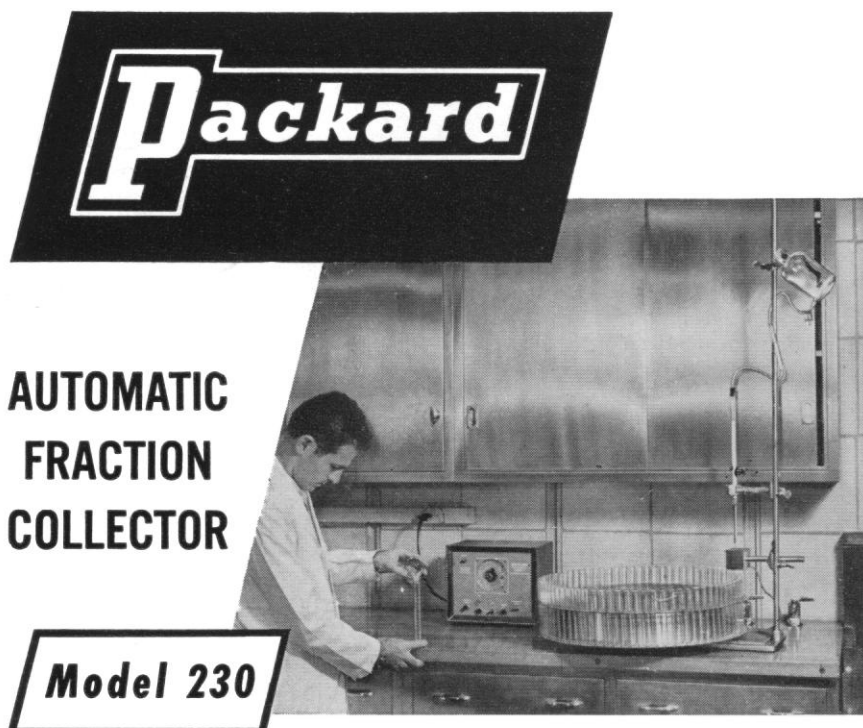
■ **WASHABILITY MACHINE** is designed to measure washability, scrubability, cleanability, removability, and abrasion resistance of coatings and other surfaces. A counter records the number of scrubbing cycles made during a test. An automatic timer and other accessories are available. (Gardner Laboratory Inc., Dept. 369)

■ **INSTRUMENT MOTOR** is battery-operated for balloon, oceanographic, and similar applications. No brushes or commutator are used. The rotating assembly is an Alnico disk; the stationary field coils are commutated by transistors. A 6-v model draws 6 ma and provides torques of the order of 10 oz in. at 1 rev/min. (Brailsford & Co., Inc., Dept. 378)

■ **MICROSCOPE ILLUMINATOR** is equipped with either a xenon lamp which supplies light of 6300°K, or with a high-pressure mercury-vapor lamp. Light collectors are quartz. (Wild Heerbrugg Instruments Inc., Dept. 379)

■ **FREQUENCY-PERIOD COUNTER** has range 0 to 220 kcy/sec in frequency and 10 μ sec to 100,000 sec in period. A memory circuit holds the reading while the counter accumulates data for the next reading. Readings are displayed as 2 1/2-in. numerals in an 8-by-5-matrix of neon bulbs. Thus a large amount of redundancy is provided that prevents misreading because of lamp failure. (Computer Measurements Corp., Dept. 382)

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■ **BETA-RAY SPECTROMETER** is an intermediate-image lens type capable of measuring electrons up to 8.3 Mev, or, when used as a pair spectrometer, gammas up to 17.6 Mev. Transmission is a maximum of 8 percent of 4π , and resolving power is 0.7 percent at 1 percent transmission or 1.2 percent at 6 percent transmission. An iron jacket reduces the effect of stray fields. Maximum deviation from linearity is ± 0.1 percent in the range 36 kev to 8.3 Mev. (LKB-Produtor Fabriksaktiebolag, Dept. 389)

■ **GLASS-MARKING STYLUS** deposits titanium to provide chemical- and heat-resistant marking on glass and ceramic surfaces. The marking is impervious to solvents, heat, and steam but may be removed by brief immersion in hot HCl. (Oxford Laboratories, Dept. 388)

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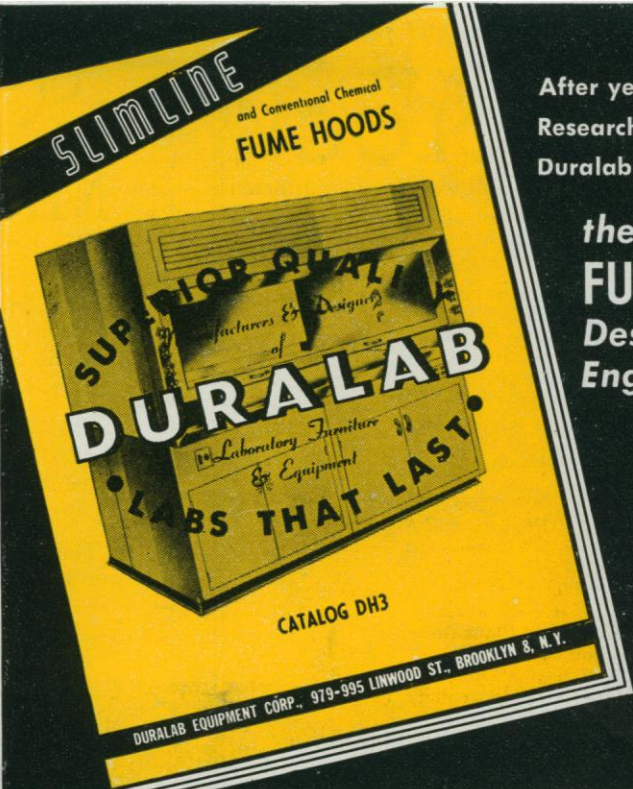
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JOSHUA STERN

National Bureau of Standards

3 OCTOBER 1958



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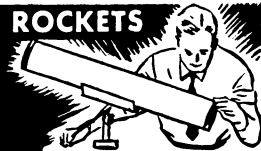
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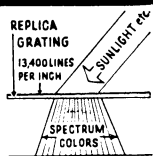
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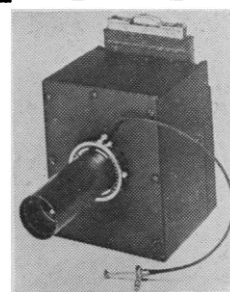
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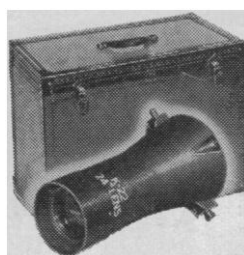
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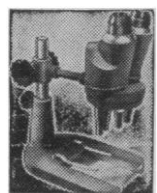
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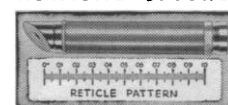
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Here, the No. 682G Camera is being used with the AO Spencer Series 4 Microstar . . . an ideal combination. The built-in base illuminator provides convenient Koehler-type illumination. You select specimen area and do all preliminary focusing through binocular portion of trinocular body . . . focus critically with the telescopic eyepiece.

The sturdy vertical pillar, the easily adjustable camera support, the camera back and the Microstar all combine to provide a compact unit. Perfect alignment and rigidity is assured . . . successful photomicrography becomes a "snap".

Try it and see for yourself. Your AO Representative will be happy to arrange a demonstration for you.



American Optical
Company

INSTRUMENT DIVISION, BUFFALO 15, NEW YORK

Dept. J-1

- ☐ Please send me Brochure SB682 describing the entire line of AO Spencer Photomicrographic Cameras.
☐ Please send me Brochure SB124 describing the new Microstars.

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