MPI Indium DTPA In 111

(Pentetate Indium Disodium In 111)

In Cisternography

Cisternography presents the dynamics of CSF flow

When you need to know *function*—
cisternography is useful in the evaluation of:

- Patients who may need ventricular shunts
- Shunt patency and/or site of blockage
- Patients with symptoms of "normal pressure" hydrocephalus
- Patients with symptoms of "communicating" hydrocephalus
- CSF rhinorrhea patients

CLINICAL CRITERIA

"An ideal radiopharmaceutical for cisternography would satisfy the following criteria: (I) physiologically governed by CSF flow, (II) adequate half-life for desirable period of study, (III) photons suitable for scanning, (IV) low radiation dose, (V) least probable chemical toxicity, and (VI) controlled pharmaceutical quality. Chelated ^{111}In satisfies all these conditions."[1]

COMPARISON OF TWO RADIOPHARMACEUTICALS USED IN EVALUATION OF CEREBROSPINAL FLUID PATHWAYS[2]

	^{169}Yb DTPA	^{111}In DTPA
Physical Half-Life	32 days	2.8 days
Biological Half-Life	12 hours	10 hours
Useful Photons (energy MeV)	0.177, 0.198	0.173, 0.247
Useful Photons (% disintegration)	0.57	1.85
Whole Body Dose (rads)	0.069/500 μCi	0.039/500 μCi
Spinal Cord Surface Dose (rads)	8.0/500 μCi*	1.9/500 μCi*

*Dose to spinal cord and brain surface

[1] Chelated ^{111}In: An ideal radiopharmaceutical for cisternography, F. Hosain, D. Phil., and P. Som, D.V.M.M.S. British Journal of Radiology, 45:677-679, Sept. 1972.

[2] Preparation, Physiology and Dosimetry of ^{111}In Labeled Radiopharmaceuticals for Cisternography, David Goodwin, M.D., Chung Hun Song, B.S., Roland Finston, Ph.D. and Philip Matin, M.D., Radiology, 109:91-98, July 1973.

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FOR COMPLETE PRESCRIBING INFORMATION PLEASE CONSULT PACKAGE INSERT, A SUMMARY OF WHICH FOLLOWS:

MPI Indium DTPA In 111

(Pentetate Indium Disodium In 111)

DESCRIPTION: MPI Indium DTPA In 111 is a diagnostic drug for intrathecal use. It is available as a sterile, apyrogenic, isotonic, aqueous solution, buffered to pH 7 to 8. At calibration time each milliliter contains 1 millicurie of Pentetate Indium Disodium In 111 (no-carrier-added), 20 to 50 micrograms of pentetic acid, and sodium bicarbonate for pH adjustment. *The drug is to be discarded after single use.* Radionuclidic purity at calibration time is at least 99.0% with less than 0.1% Indium In 114m and 0.1% Zinc Zn 65. The concentration of each radionuclidic contaminant changes with time.

INDICATIONS AND USAGE: Pentetate Indium Disodium In 111 is recommended for use in radionuclide cisternography.

CONTRAINDICATIONS: None known.

WARNINGS: The contents of the vial are radioactive. Adequate shielding of the preparation must be maintained at all times.

Since the drug is excreted by the kidneys, caution should be exercised in patients with severely impaired renal function.

PRECAUTIONS:
Pentetate Indium Disodium In 111, as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize external radiation exposure to clinical personnel, and to minimize radiation exposure to the patients consistent with proper patient management.

Do not use after the expiration time and date (7 days after calibration time) stated on the label.

Discard vial after a single use. Do not use if contents are turbid.

Carcinogenesis, Mutagenesis, Impairment of Fertility

No long-term animal studies have been performed to evaluate carcinogenic potential, or whether Pentetate Indium Disodium In 111 affects fertility in males or females.

Pregnancy Category C

Animal reproductive studies have not been conducted with MPI Indium DTPA In 111. It is also not known whether Pentetate Indium Disodium In 111 can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Pentetate Indium Disodium In 111 should be given to a pregnant woman only if clearly needed.

PRECAUTIONS: Ideally, examinations using radiopharmaceuticals, especially those elective in nature of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Nursing Mothers

It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when Pentetate Indium Disodium In 111 is administered to a nursing mother.

Pediatric Use

Safety and effectiveness in children have not been established.

Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides, and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

ADVERSE REACTIONS: Aseptic meningitis and pyrogenic reactions have been rarely (less than 0.4%) observed following cisternography with Pentetate Indium Disodium In 111.

HOW SUPPLIED: Pentetate Indium Disodium In 111 (no-carrier-added) is supplied in single dose glass vials, each containing 1.5 ml of solution with a concentration of 1 millicurie per ml and a total activity of 1.5 millicurie per vial at calibration time.

NEN announces

PYROLITE™

Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates Kit

our new blood pool imaging agent

☐ High target-activity concentration
☐ Efficient labeling that persists for several hours
☐ Rapid, simple preparation

INDICATIONS AND USAGE: Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates may be used as a bone imaging agent to delineate areas of altered osteogenesis.

Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates may also be useful in myocardial imaging as an adjunct in the diagnosis of acute myocardial infarction. False negative images can occur if done too early in the evolutionary phase of the infarct or too late in the resolution phase. False positive images have been reported following coronary bypass graft surgery, in unstable angina pectoris, old myocardial infarcts, and in cardiac contusions.

PYROLITE is a blood pool imaging agent which may be used for gated cardiac blood pool imaging. When administered intravenously thirty minutes prior to the intravenous administration of sodium pertechnetate Tc 99m approximately 75% of the injected activity remains in the blood pool.

CONTRAINDICATIONS: None known.

WARNINGS: It has been reported that false-positive or false-negative brain scans may result when brain scans using sodium pertechnetate Tc 99m are performed after a bone scan has been done using an agent containing stannous chloride, e.g., a pyrophosphate or polyphosphate bone agent. Therefore, in those cases where both brain and bone scans are indicated, the brain scan should be performed first, if feasible. Alternatively, another brain imaging agent, such as Technetium Tc 99m Pertechnetate DTPA, may be employed.

PRECAUTIONS: Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates, as well as any radioactive agent, must be handled with care. Once sodium pertechnetate Tc 99m is added to the vial, appropriate safety measures should be used to minimize external radiation exposure to clinical personnel. Care should also be taken to minimize radiation exposure to patients in a manner consistent with proper patient management.

To minimize radiation dose to the bladder, the patient should be encouraged to void when the examination is completed and as often thereafter as possible for the next 4-6 hours, if not contraindicated by the patient's cardiac status.

Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates should be used within six hours of preparation.

Carcinogenesis, Mutagenesis, Impairment of Fertility

No long term animal studies have been performed to evaluate carcinogenic potential or whether Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates affects fertility in males or females.

Pregnancy Category C

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse affects on the fetus. Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates should be used in pregnant women only when clearly needed.

Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Nursing Mothers

Technetium Tc 99m is excreted in human milk during lactation, therefore, formula feedings should be substituted for breast feeding.

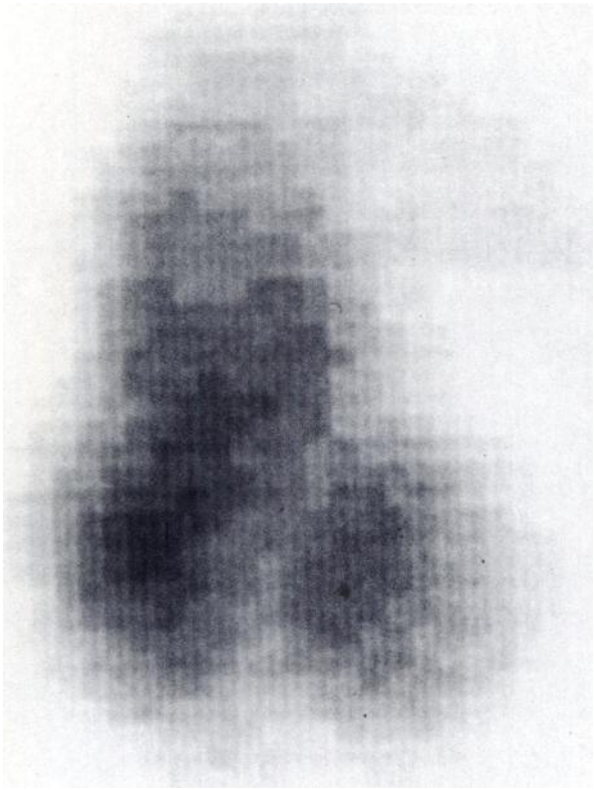
Pediatric Use

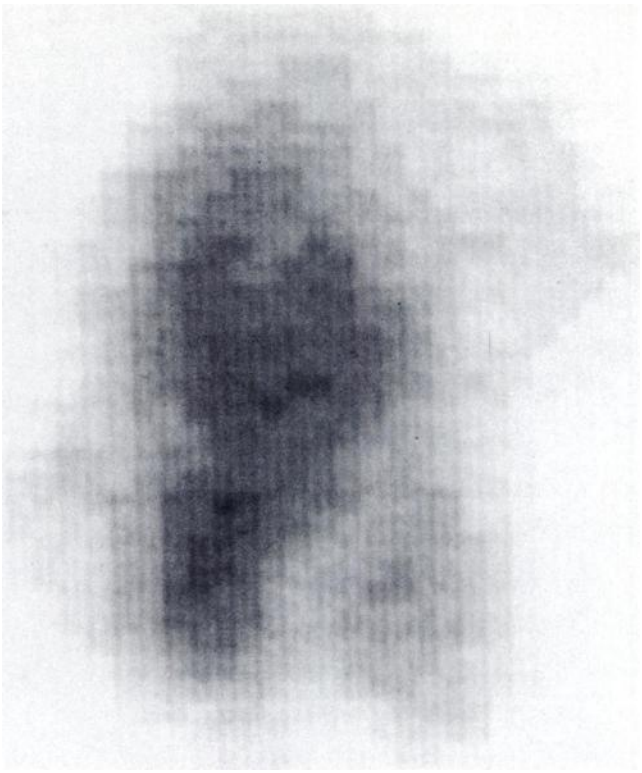
Safety and effectiveness in children have not been established.

General

Radiopharmaceuticals should be used by persons who are qualified by specific training in the safe use and handling of radionuclides produced by nuclear reactor or particle accelerator and whose experience and training have been approved by the appropriate government agencies authorized to license the use of radionuclides.

ADVERSE REACTIONS: No adverse reactions specifically attributable to the use of Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates have been reported.





DOSAGE AND ADMINISTRATION: The suggested dose range for i.v. administration to be employed in the average patient (70kg) is:

Bone imaging: 5-15mCi Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates

Scanning post-injection is optimal at about 3-4 hours

Myocardial Imaging: 10-20mCi Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates

Scanning post-injection is optimal at 60-90 minutes.

Blood pool imaging: 5-20mCi of sodium pertechnetate Tc 99m.

For blood pool imaging the PYROLITE kit is reconstituted with three to four ml of sterile sodium chloride injection, U.S.P. and sufficient solution is injected intravenously to yield a patient dose of 14-42mg Sodium (Pyro- and Trimeta-) Phosphates (to provide a range of 3-15μg of tin per kilogram body weight). Five to thirty minutes later, 5 to 20mCi of sodium pertechnetate Tc 99m is administered intravenously. Imaging can begin at once for "first pass" studies and after about five minutes for static blood pool imaging.

The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

The components of the PYROLITE Kit are supplied sterile and non-pyrogenic. Aseptic procedures normally employed in making additions and withdrawals from sterile, non-pyrogenic containers should be used during addition of pertechnetate solution and the withdrawal of doses for patient administration.

Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates is prepared by simply adding 3-7 ml of sodium pertechnetate Tc 99m solution to the vial and swirling for about one minute.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration.

Shielding should be utilized when preparing the Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates.

HOW SUPPLIED: NEN's PYROLITE™ Technetium Tc 99m Sodium (Pyro- and Trimeta-) Phosphates Kit is supplied as a set of five or thirty vials, sterile and non-pyrogenic. Each vial contains in lyophilized form:

Sodium Pyrophosphate—10mg

Sodium Trimetaphosphate—30mg

Stannous Chloride ($SnCl_2 \cdot 2H_2O$) (Minimum)—0.95mg

Total Tin, maximum (as stannous chloride $SnCl_2 \cdot 2H_2O$)—1.8mg

Prior to lyophilization the pH is adjusted to between 4.5-5.5 with hydrochloric acid and/or sodium hydroxide solution. The contents of the vial are lyophilized and stored under nitrogen. Store at room temperature (15°-30°C). Contains no bacteriostatic preservative.

Included in each five vial kit is one (1) package insert and twelve (12) radiation labels. Included in each thirty vial kit is one (1) package insert and seventy-two (72) radiation labels.

Catalog Number NRP-430 (5-Vial Kit)
Catalog Number NRP-430C (30-Vial Kit)

February 1983

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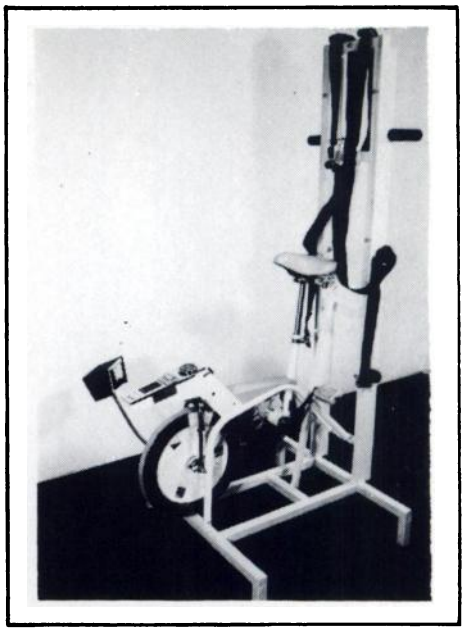

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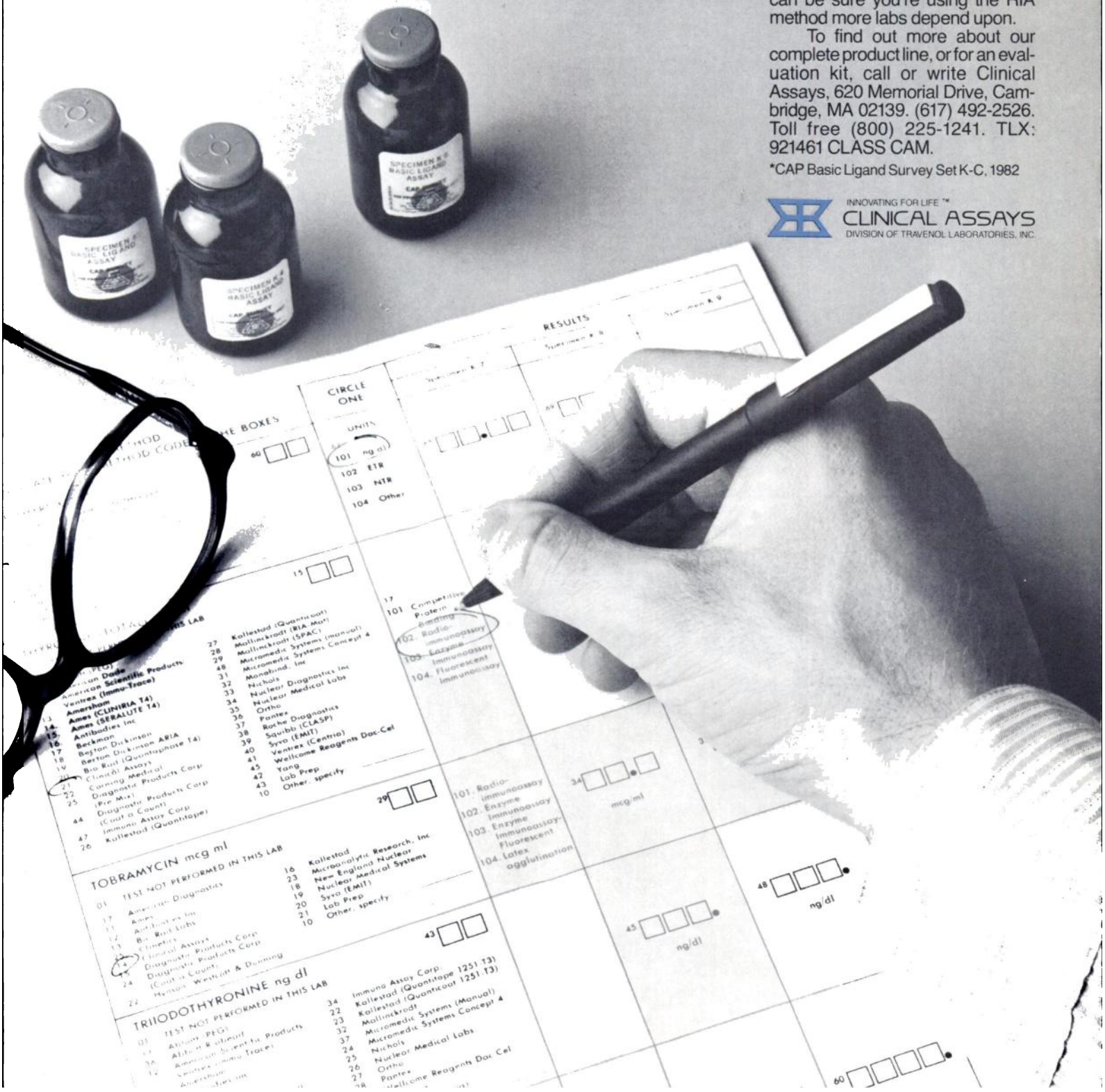

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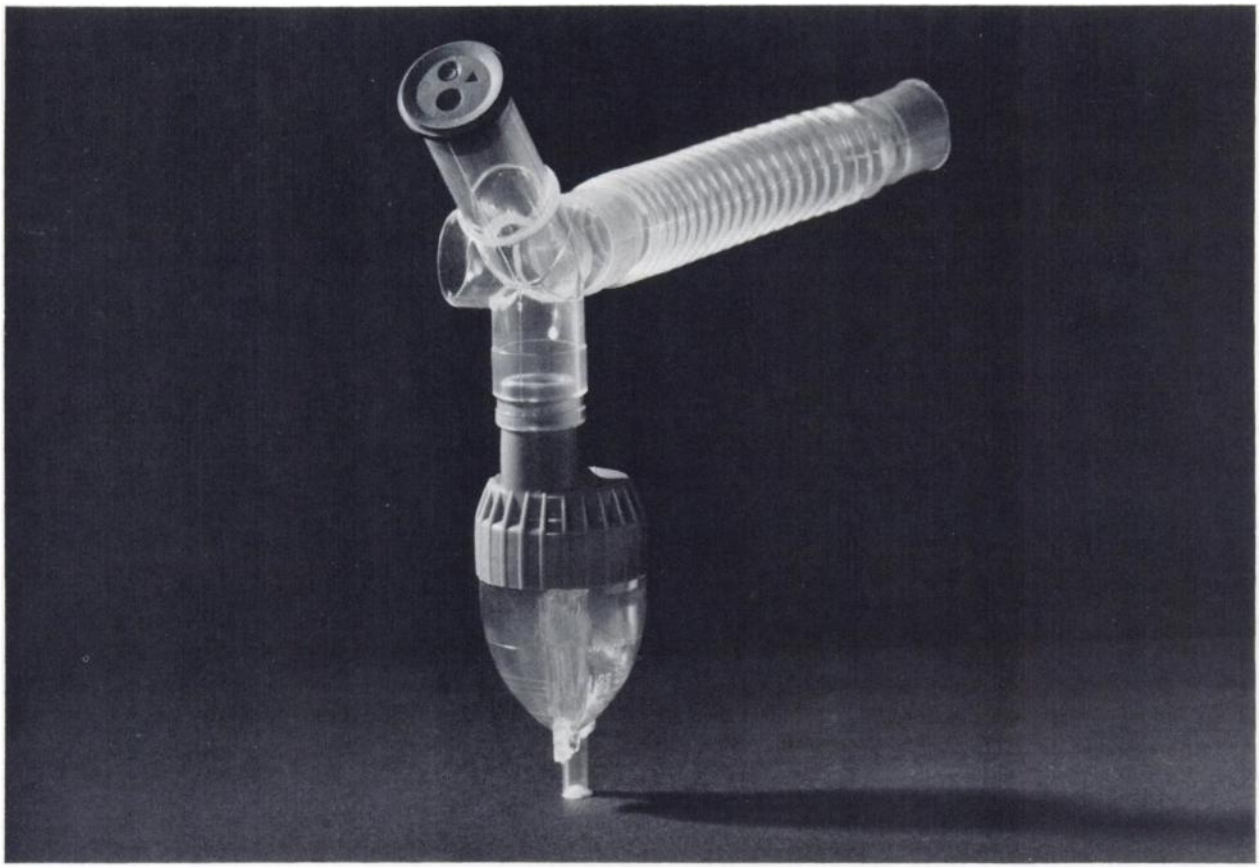

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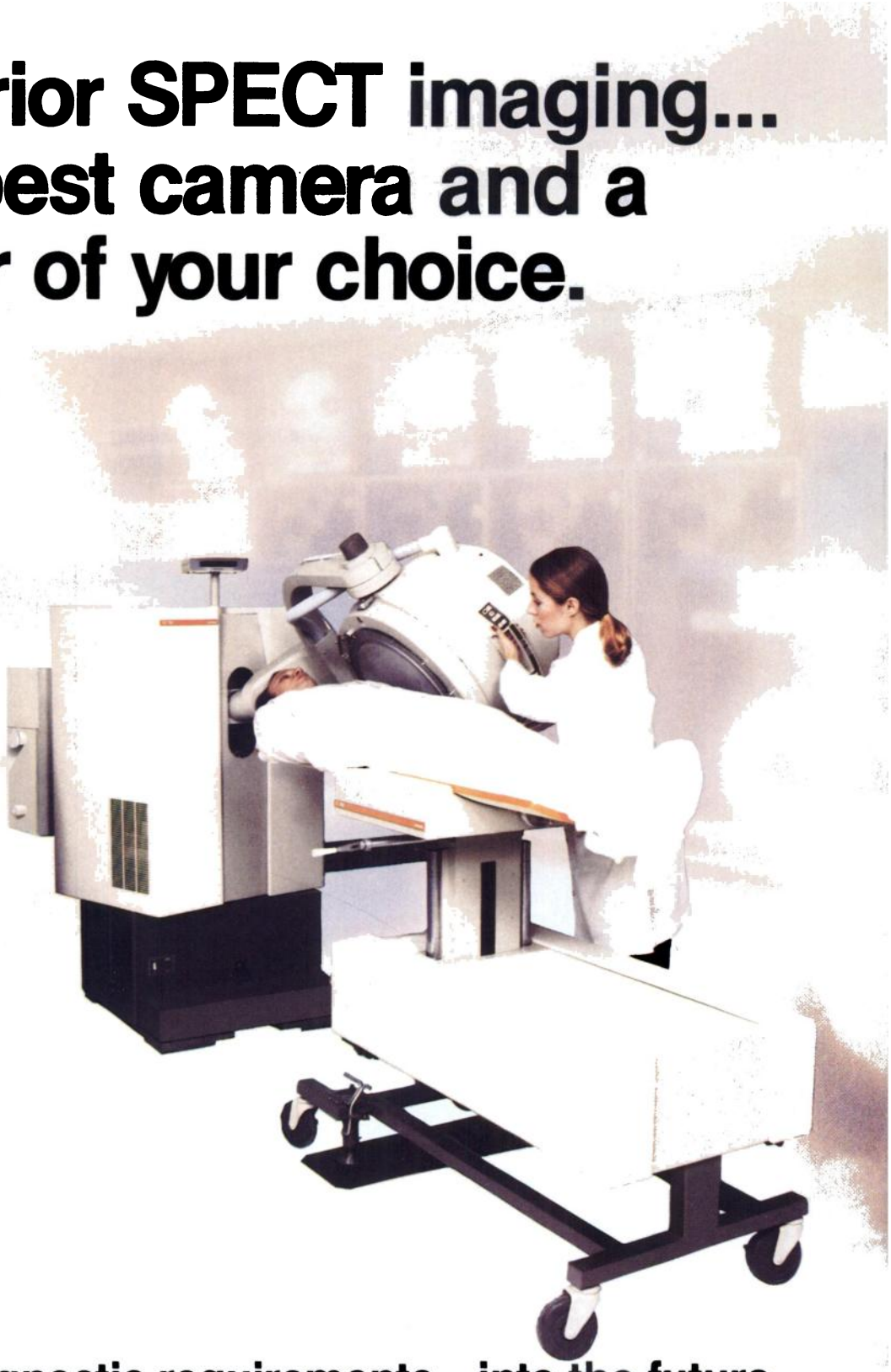

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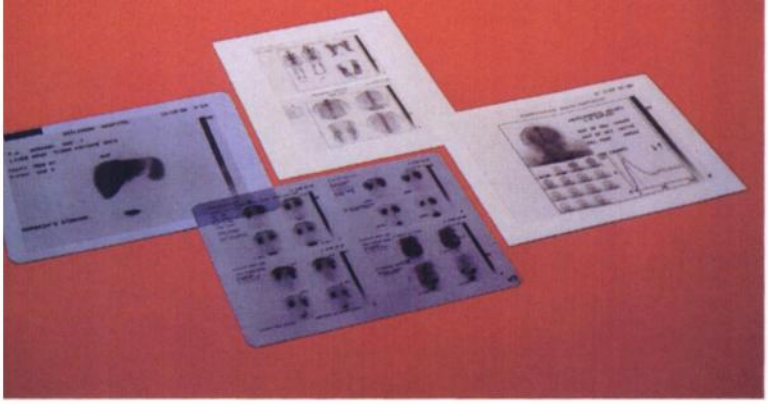
400



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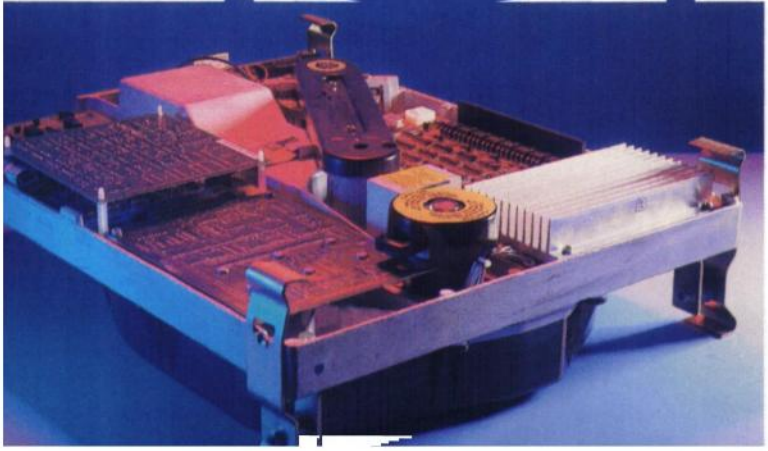

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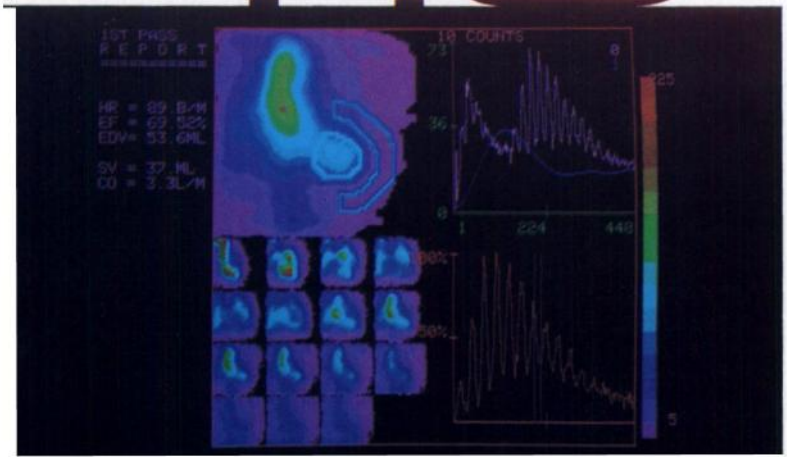
409

410

415



per second (64×64 matrix), resulting in comprehensive ventriculographic calculations.

apex 410. In addition to all the features of the foregoing models, Apex 410 provides complete study management on the disk, as well as patient archiving.

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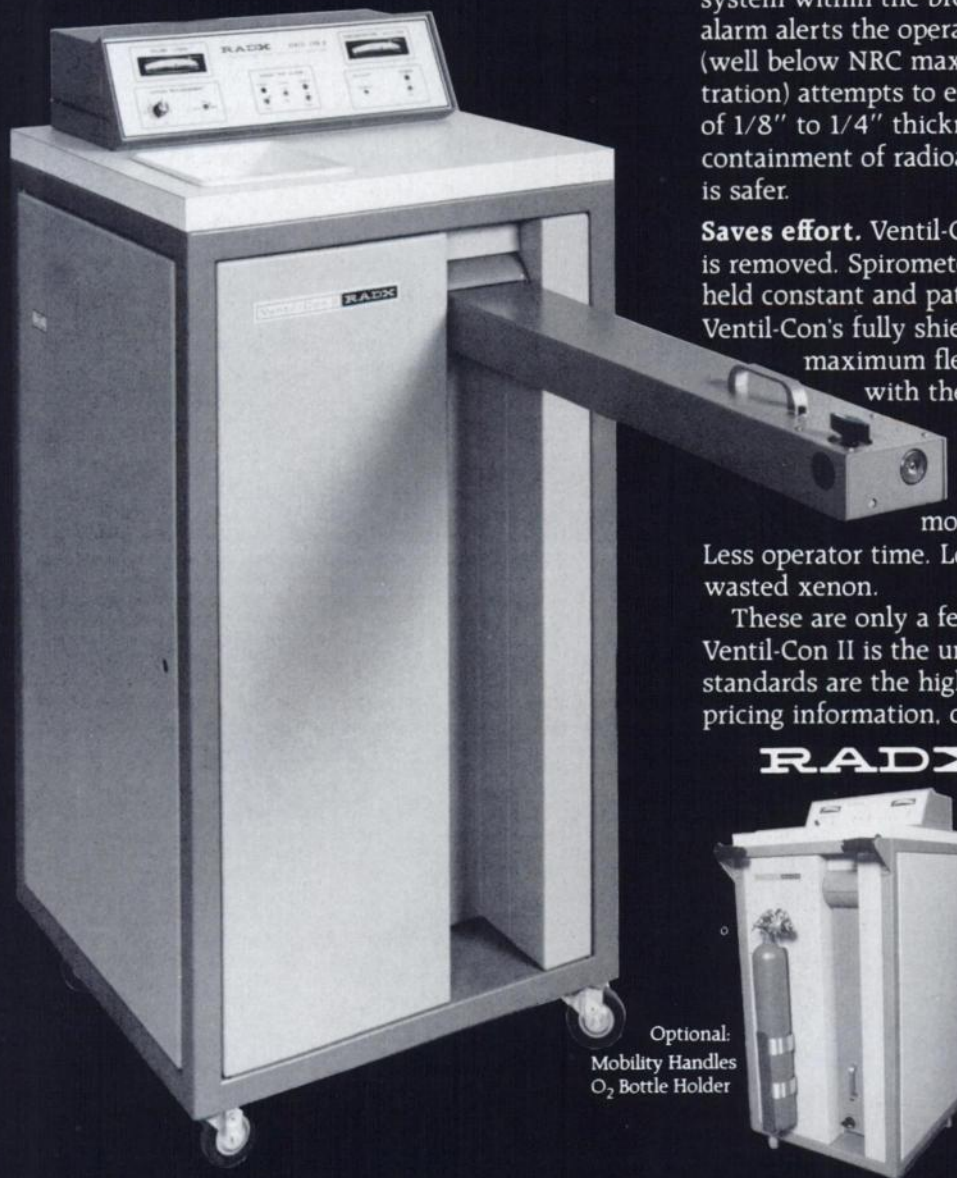

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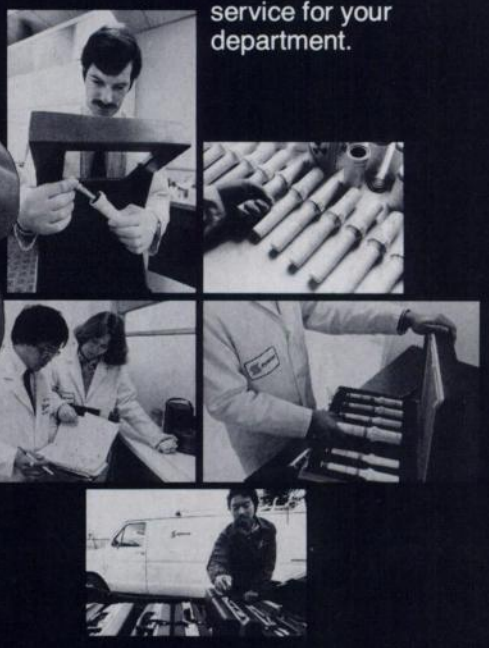

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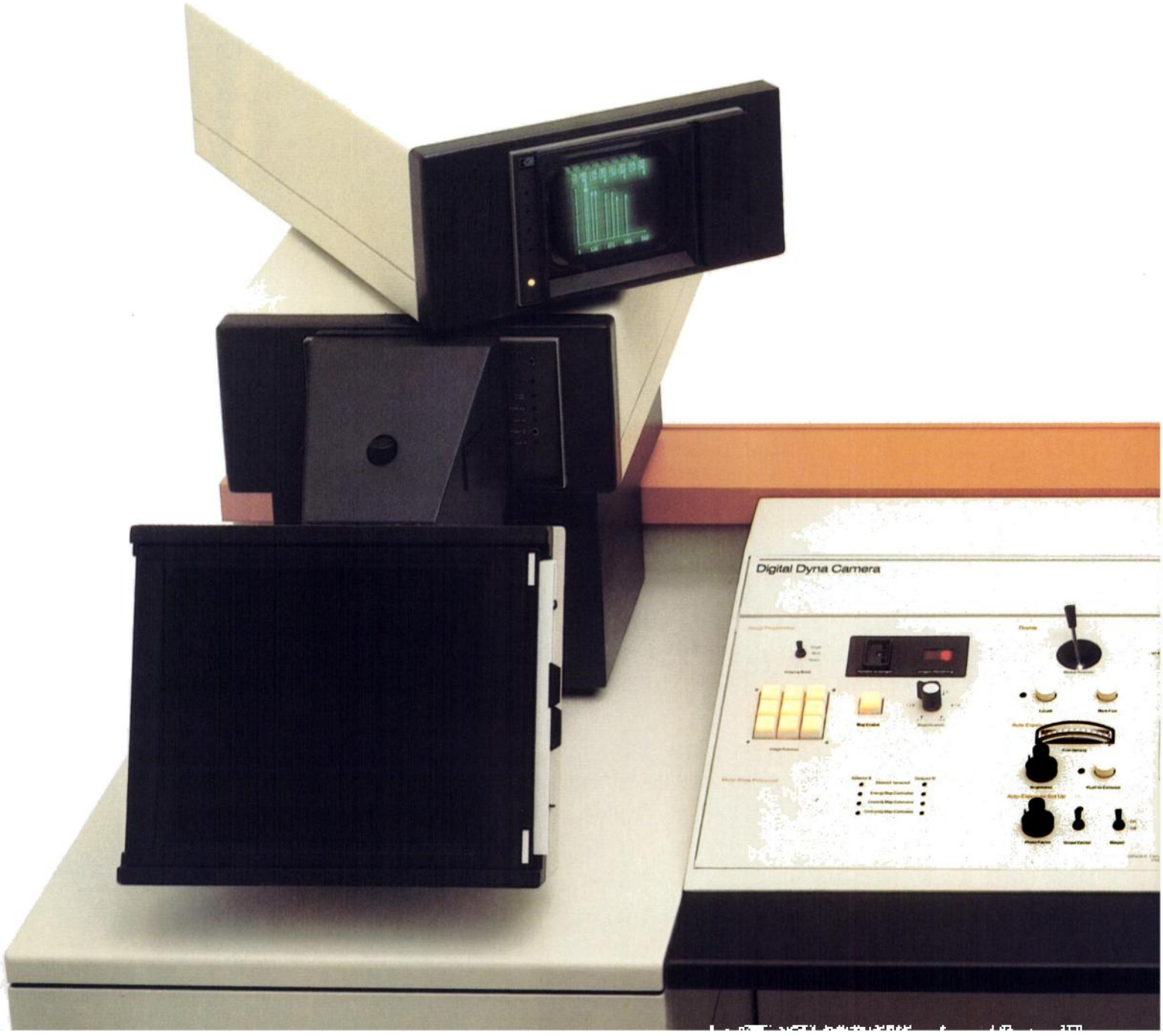

- Variable Integration Circuitry (VIC) for high count rates
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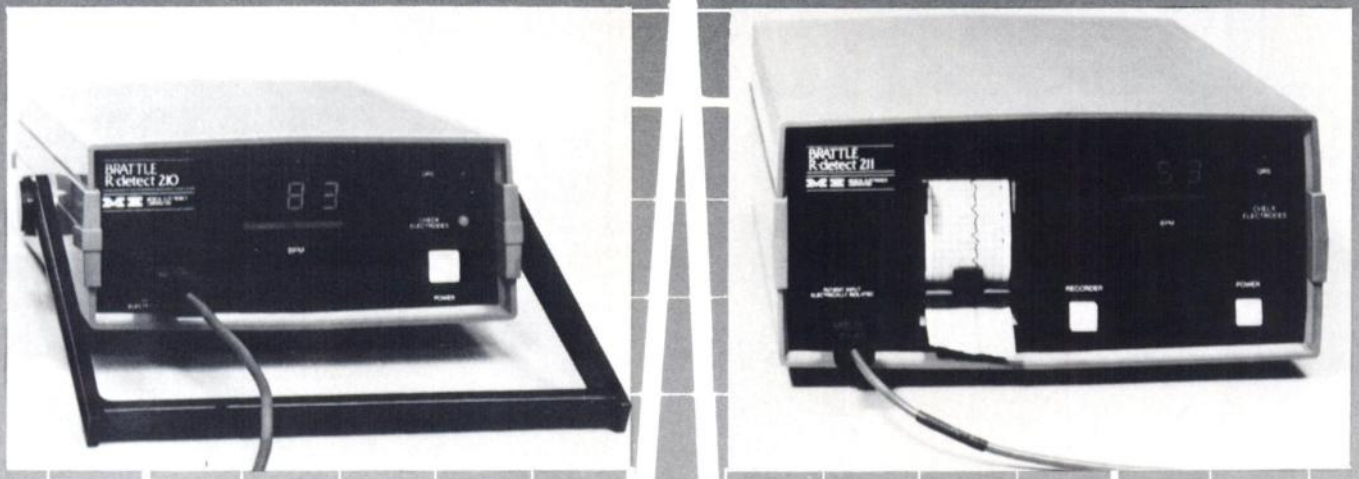

MODEL 210 **MODEL 211**

The BRATTLE R-DETECT offers you fully automatic R-wave triggering and is compatible with all nuclear medicine computers. In addition, the model 211 has a strip chart with EKG and event marker indicating the exact location of the R-DETECT signal.

Special Features

- Fully automatic threshold
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- High heartrate capability . . . ideal for stress testing
- Selectable PVC rejection
- Digital heartrate readout
- Pacemaker pulse rejection
- Flashing LED indicates QRS
- LED indicates faulty electrode connections
- Analog ECG output
- Compatible with all nuclear medicine computers
- Stripchart with EKG and R-DETECT event marker (model 211 only)

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(617) 536-8300

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56-211B	"All-Vue" Syringe Shield, 1 cc	$110.00
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- **For viewing, handling and dispensing the radioactive contents of shielded vials and containers without removal from their shielding.**

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Has ¼" lead walls; ideal for ^{99m}Tc and other low-energy gamma emitters. Accepts vials up to 3⅛" high x 1½" diam. Measures 4" high x 2" O.D. Weighs 2¼ lbs.

56-230B	"All-Vue" Vial Shield	$185.00
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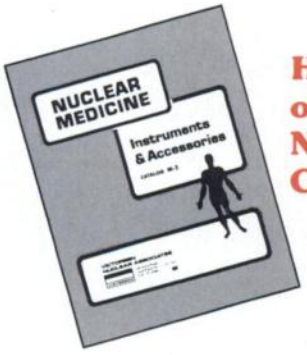

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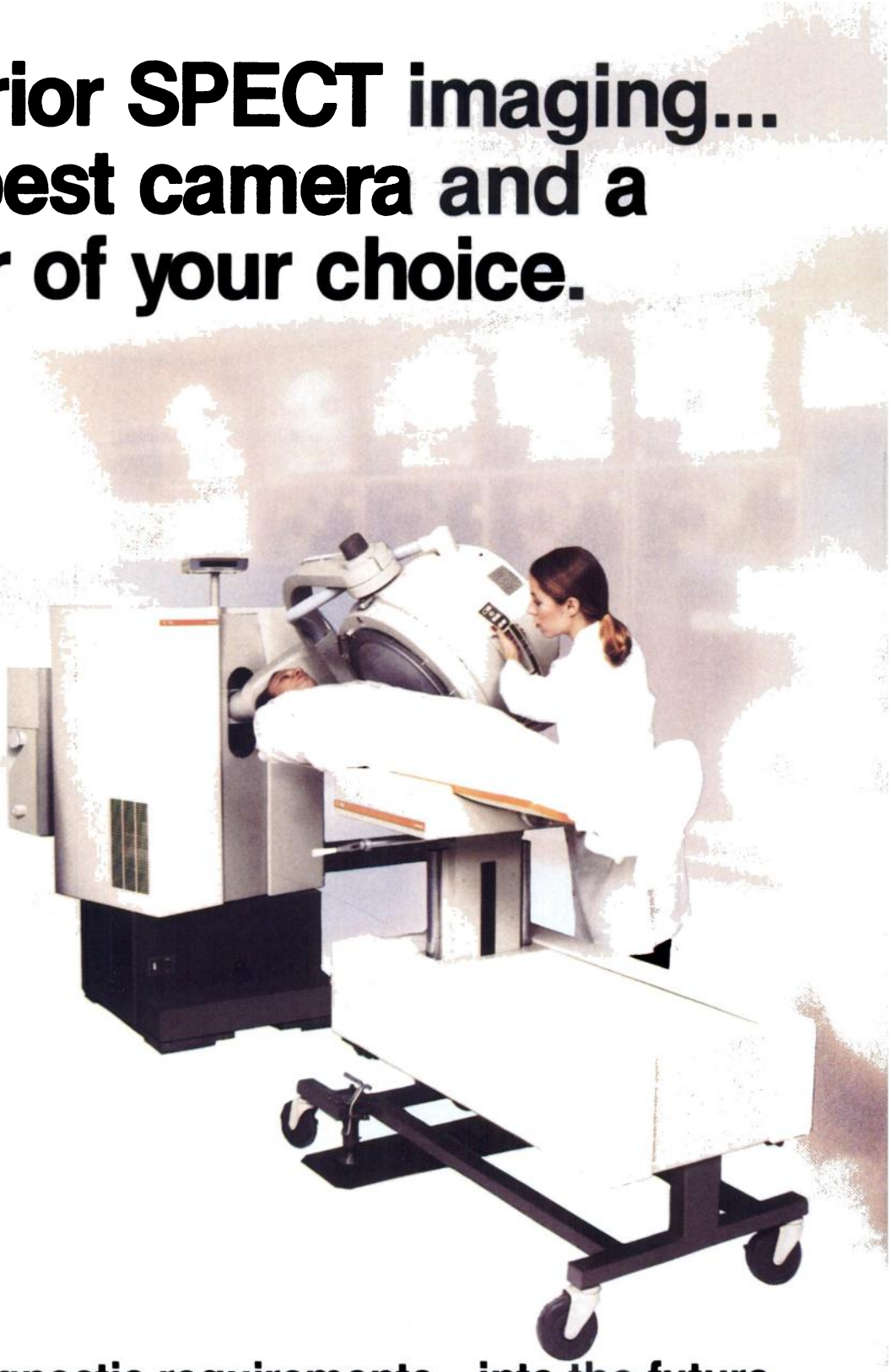

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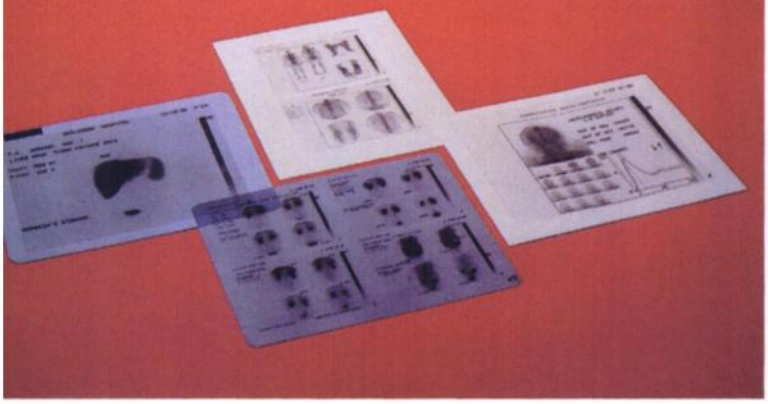
400



apex 400. A 400 mm stand-alone camera providing excellent image quality through digital detector control, on-the-fly energy and linearity correction, and post-acquisition sensitivity correction. Detector drift is eliminated by Elscint's exclusive Digital Guard™ circuit.

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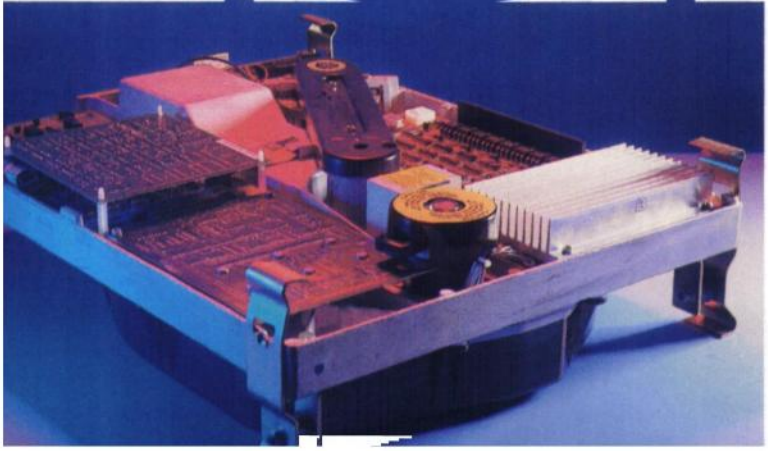

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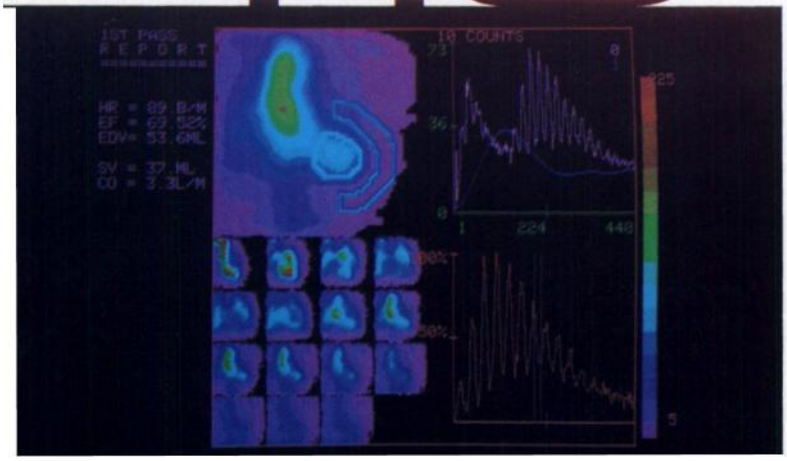
410

415



per second (64×64 matrix), resulting in comprehensive ventriculographic calculations.

apex 410. In addition to all the features of the foregoing models, Apex 410 provides complete study management on the disk, as well as patient archiving.

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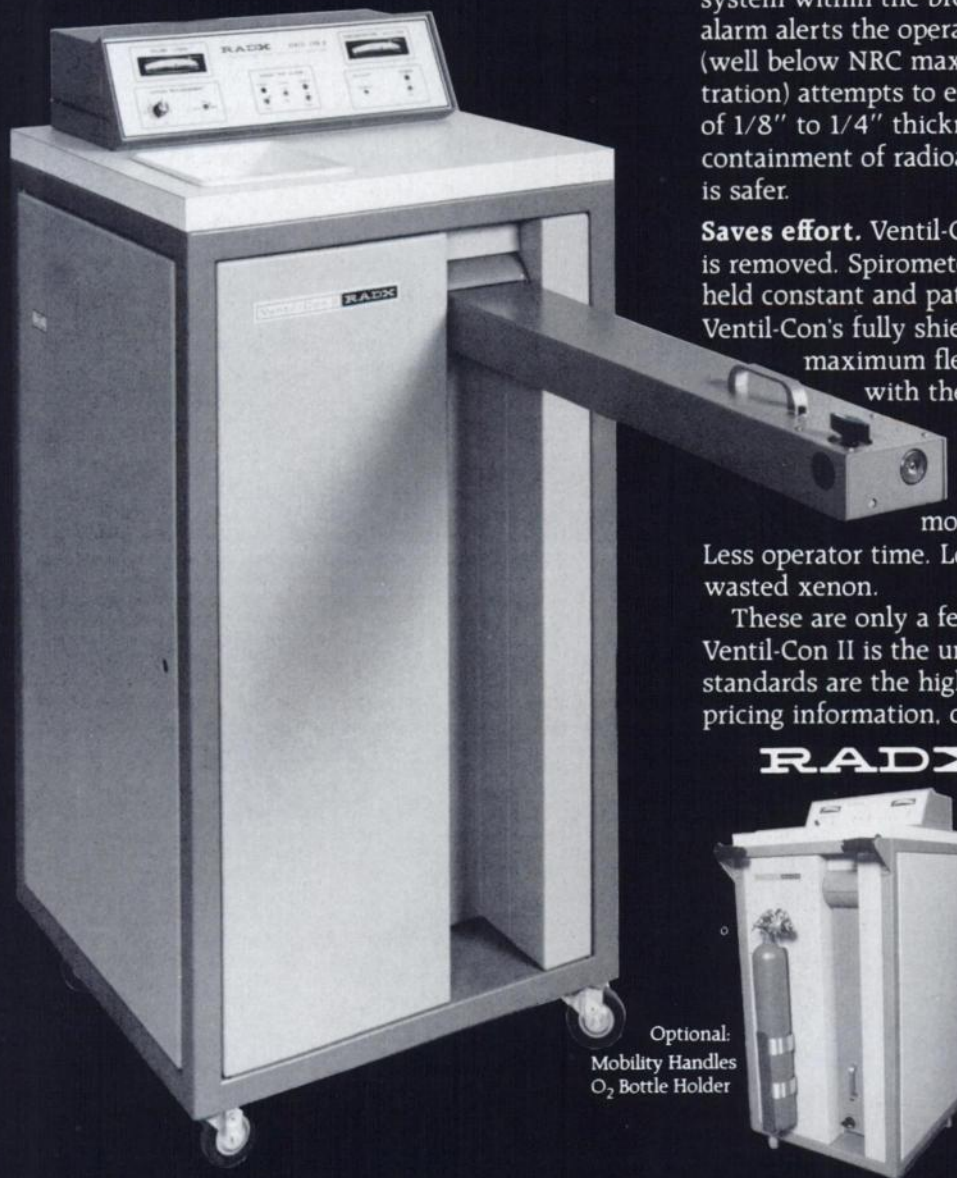

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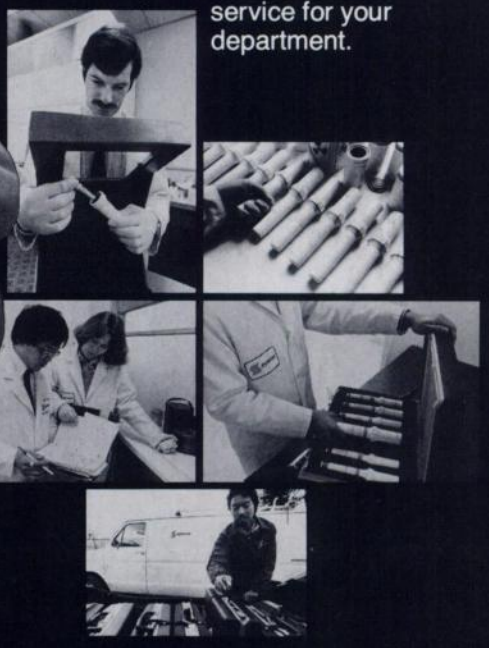

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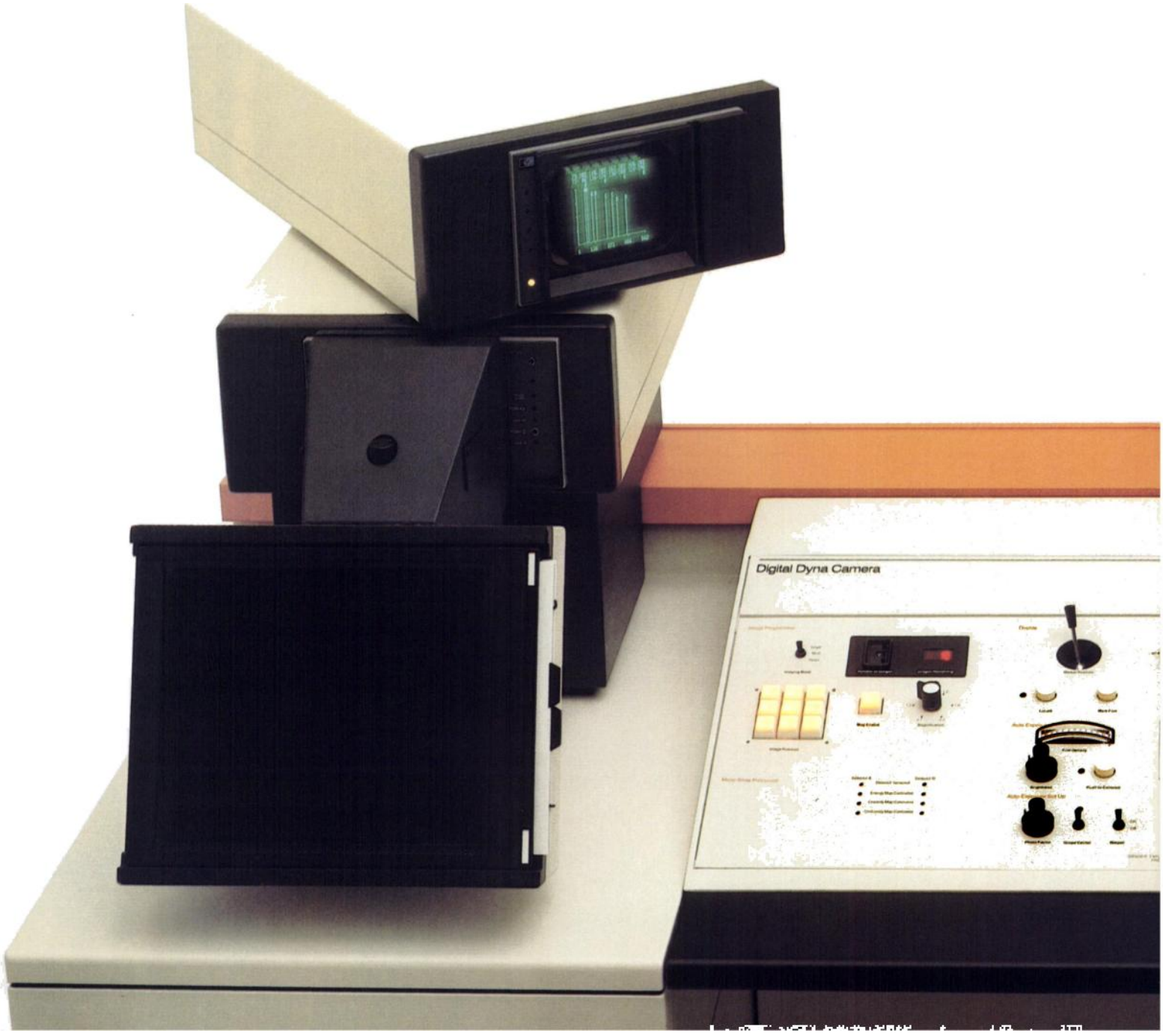

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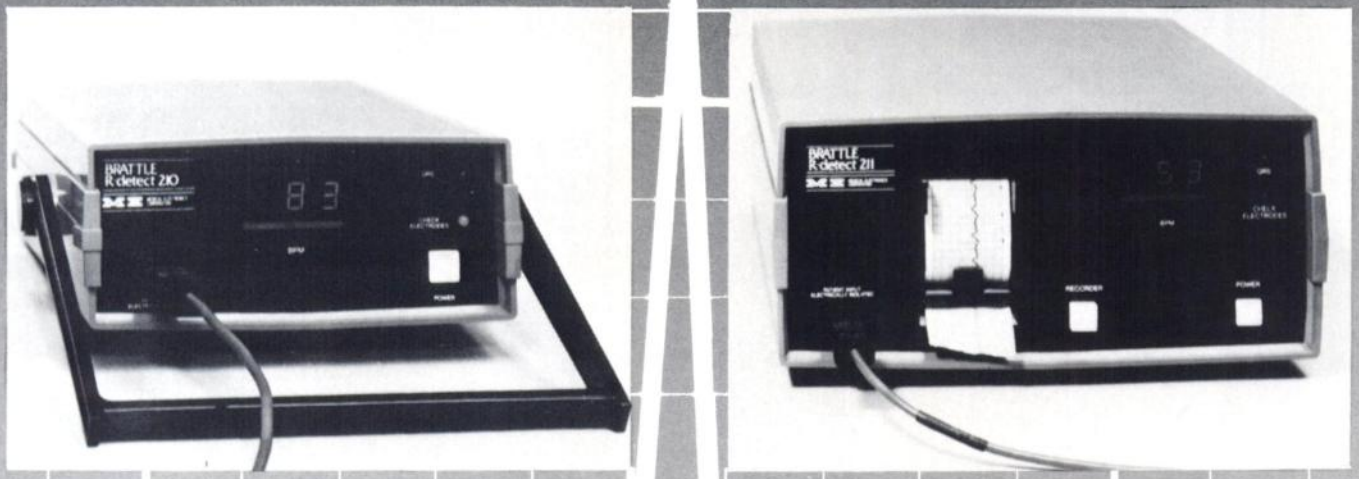

MODEL 210 **MODEL 211**

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Special Features

- Fully automatic threshold
- Only two electrodes
- High heartrate capability . . . ideal for stress testing
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- **Large, crystal-clear viewing area assures maximum visibility of syringe.**

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Has ¼" lead walls; ideal for ^{99m}Tc and other low-energy gamma emitters. Accepts vials up to 3⅛" high x 1½" diam. Measures 4" high x 2" O.D. Weighs 2¼ lbs.

56-230B	"All-Vue" Vial Shield	$185.00
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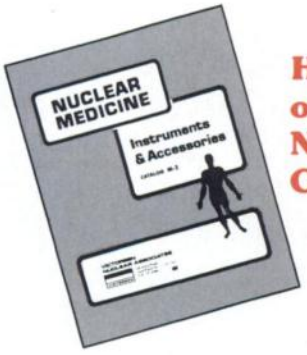

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A SYMPOSIUM ON
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SNM Computer and Instrumentation Councils
Sheraton World Hotel — Orlando, Florida

SUNDAY, FEBRUARY 5, 1984

Indian Room **5 hrs. AMA Category I credit**

8:30 **Opening Remarks.** R. Eugene Johnston, *University of North Carolina, Chapel Hill, NC;* Jon J. Erickson, *Vanderbilt University, Nashville, TN;* Michael L. Goris, *Stanford University, Stanford, CA;* Bryan R. Westerman, *University of Arizona, Tucson, AZ*

8:45 **Introduction.** G.A. Johnson, *Duke University Medical Center, Durham, NC*

9:00 **Pulse Sequence Considerations for Computed T_1, T_2, and Spin Density Images.** James MacFall—Invited Speaker. *General Electric Medical Systems Group, Milwaukee, WI*

9:30 **Uncertainties in the In Vivo Measurement of Relaxation Parameters.** G. Allan Johnson, Robert Herfkens, Mark A. Brown, *Duke University Medical Center, Durham, NC;* James MacFall, *General Electric Medical Systems, Milwaukee, WI*

10:00 **Break** (refreshments in lobby)

10:30 **A Systematic Approach to Optimization of Pulse Sequences in NMR Imaging by Computer Simulations.** G. Bielke, M. Meves, S. Meindl, A. Bruckner, P. Rinck, W. von Seelen, P. Pfannenstiel, *NMR Research Group, Deutsche Klinik fur Diagnostik, Wiesbaden, FRG*

11:00 **NMR Image Synthesis in Realtime.** Stephen J. Riederer, Steven A. Suddarth, Stuart A. Bobman, James N. Lee, Henry Z. Wong, *Duke University Medical Center, Durham, NC;* James MacFall, *General Electric Medical Systems Group, Milwaukee, WI*

11:30 **In Vivo Breast Magnetic Resonance Imaging Using a Prototype Breast Coil.** Paul C. Wang, Carol B. Stelling, Sally S. Mattingly, Deborah E. Powell, *University of Kentucky Medical Center, Lexington, KY*

12:00 **Lunch**

1:30 **An Overview of MR System Design.** David D. Faul—Invited Speaker. *Siemens Medical Systems, Inc., Iselin, NJ*

2:00 **Optimization of Signal-to-Noise Ratio in NMR System Design.** Mark Riehl, *General Electric Medical Systems, Milwaukee, WI*

2:30 **Unified Description of NMR Imaging, Instrumentation, Data Collection Strategies, and Reconstruction Techniques.** Kevin F. King, *University of Wisconsin, Madison, WI;* Paul R. Moran, *Bowman Gray School of Medicine, Winston-Salem, NC*

3:00 **Break** (refreshments in lobby)

3:30 **Gated Cardiology Imaging with NMR Techniques.** W. MacIntyre, R.T. Go, J.K. O'Donnell, H. Yeung, B. Sufka, *Cleveland Clinic Foundation, Cleveland, OH*

4:00 **Council Business Meeting** (Indian)

MONDAY, FEBRUARY 6, 1984

Indian Room **5 hrs. AMA Category I credit**

8:30 **Overview of NMR Image Reconstruction Principles.** T.M. Peters—Invited Speaker. *Montreal Neurological Institute, Montreal, Quebec, Canada*

9:00 **Some Uses of the Fast Fourier Transform in Medical Imaging.** William G. Hawkins, Peter D. Esser, Philip O. Alderson, *College of Physicians & Surgeons, Columbia University, New York, NY*

9:30 **Three-Dimensional Display of NMR Images.** John D. Austin, B.M.W. Tsui, Stephen M. Pizer, Edward V. Staab, *University of North Carolina, Chapel Hill, NC*

10:00 **Break** (refreshments in lobby)

10:30 **Special Architectural Considerations in Designing an NMR Facility.** W. Pavlicek, W. MacIntyre, J.K. O'Donnell, R.T. Go, *Cleveland Clinic Foundation, Cleveland, OH*

11:00 **Installation of High-Field NMR Systems into Existing Clinical Facilities.** Steven G. Einstein, *Philips Medical Systems, Shelton, CT;* Andrew Maudsley, Sun Ki Mun, Howard Simon, Sadek Hilal, *Columbia Presbyterian Medical Center, New York, NY;* Richard Sano, *Philips Medical Systems, Shelton, CT;* Peter Roeschmann, *Philips Research Laboratory, Hamburg, FRG*

11:30 **Methods For Describing the Uniformity, Resolution, and Contrast of Off-Peak Images.** L. Stephen Graham, Richard La Fontaine, Mark A. Stein, James A. Winter, *VA Medical Center, Sepulveda, CA*

11:45 **Update on SPECT.** Barbara Y. Croft, *University of Virginia, Charlottesville, VA*

12:00 **Lunch**

1:30 **In Vivo Spectroscopic Imaging.** Andrew A. Maudsley—Invited Speaker. *College of Physicians & Surgeons, Columbia University, New York, NY*

2:00 **Imaging True Flow Velocity and All Higher Order Flow Quantities by Phase-Modulation Techniques in NMR Scanners.** Paul R. Moran, *Bowman Gray School of Medicine, Winston-Salem, NC*

2:30 **Flow and Motion in NMR Imaging: A Tutorial Introduction.** Richard E. Wendt, Paul H. Murphy, Joseph J. Ford, R. Nick Bryan, John A. Burdine, *Baylor College of Medicine, St. Luke's Episcopal-Texas Children's Hospitals, and The Texas Heart Institute, Houston, TX*

3:00 **Break** (refreshments in lobby)

3:30 **Radio Frequency Shielding for NMR Imaging Systems.** James A. Graham, Jr. *Keen Corporation, Norwalk, CT*

4:00 **A Universal Pulse Programmer for NMR Imaging.** J.L. Delayre, D. Jenson. *University of Texas Medical School, Houston, TX*

4:30 Adjourn

SNM Council members will receive their Programs in December. Others may call or write Registrar, SNM, 475 Park Avenue South, NY, NY 10016; (212)889-0717

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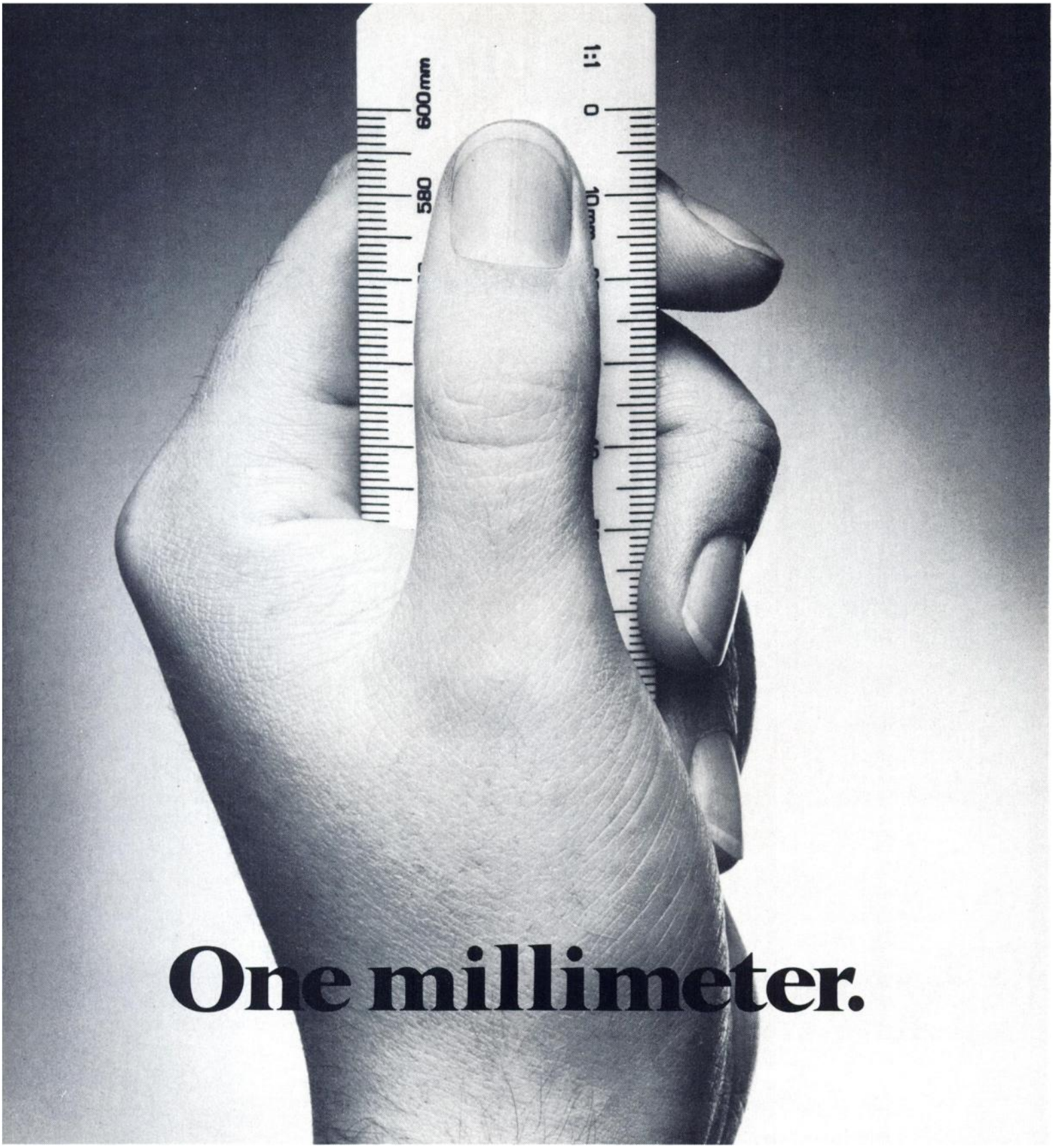

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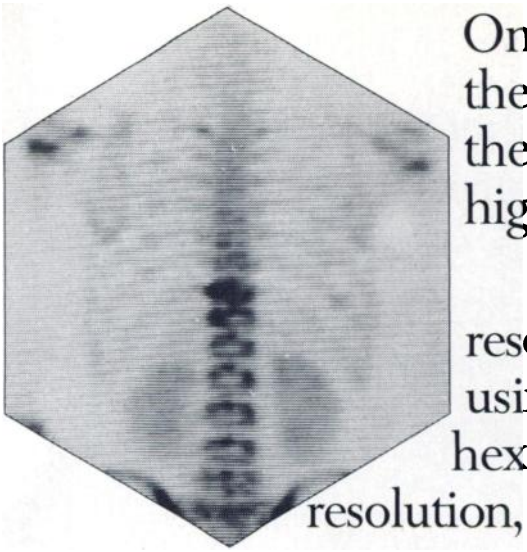

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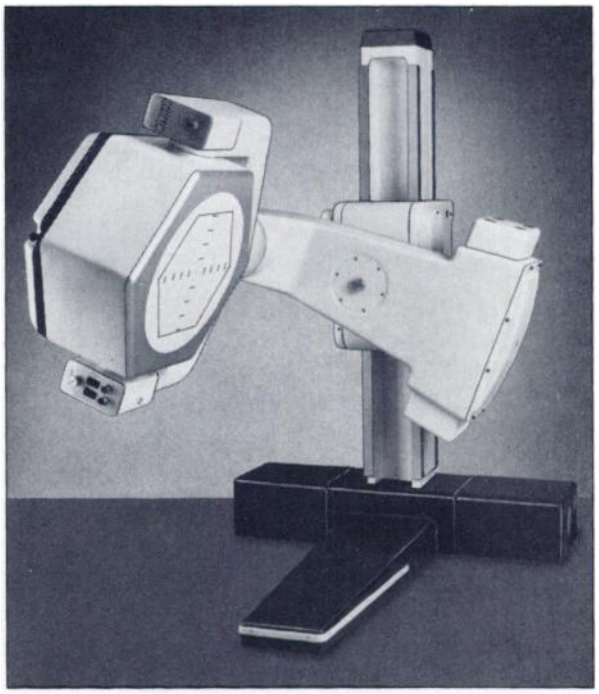

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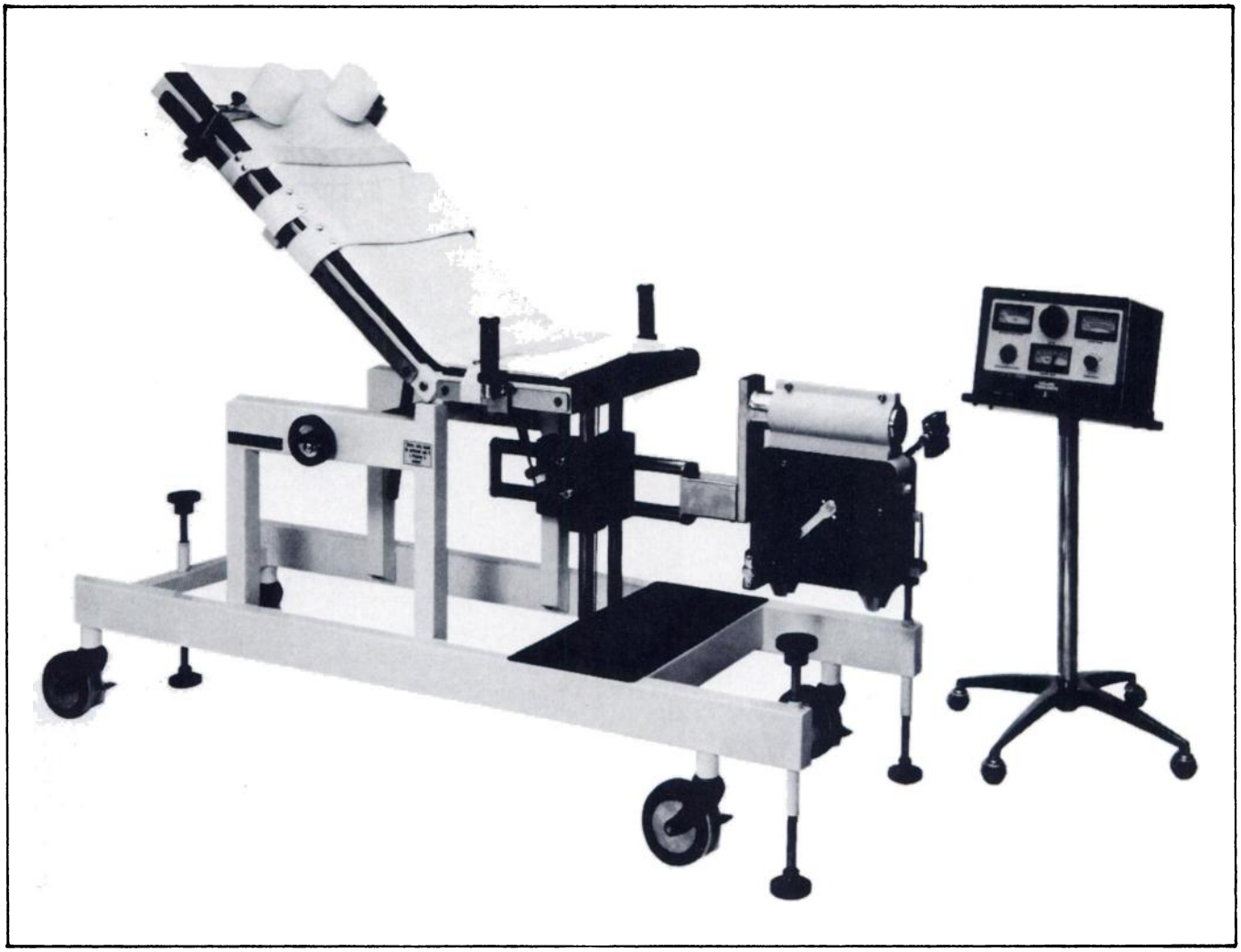

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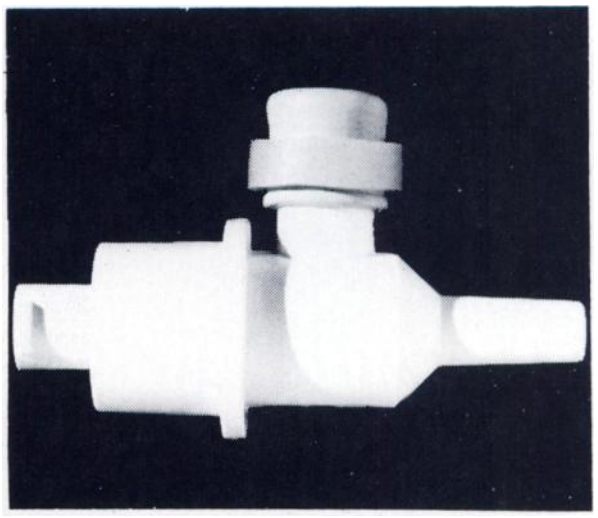

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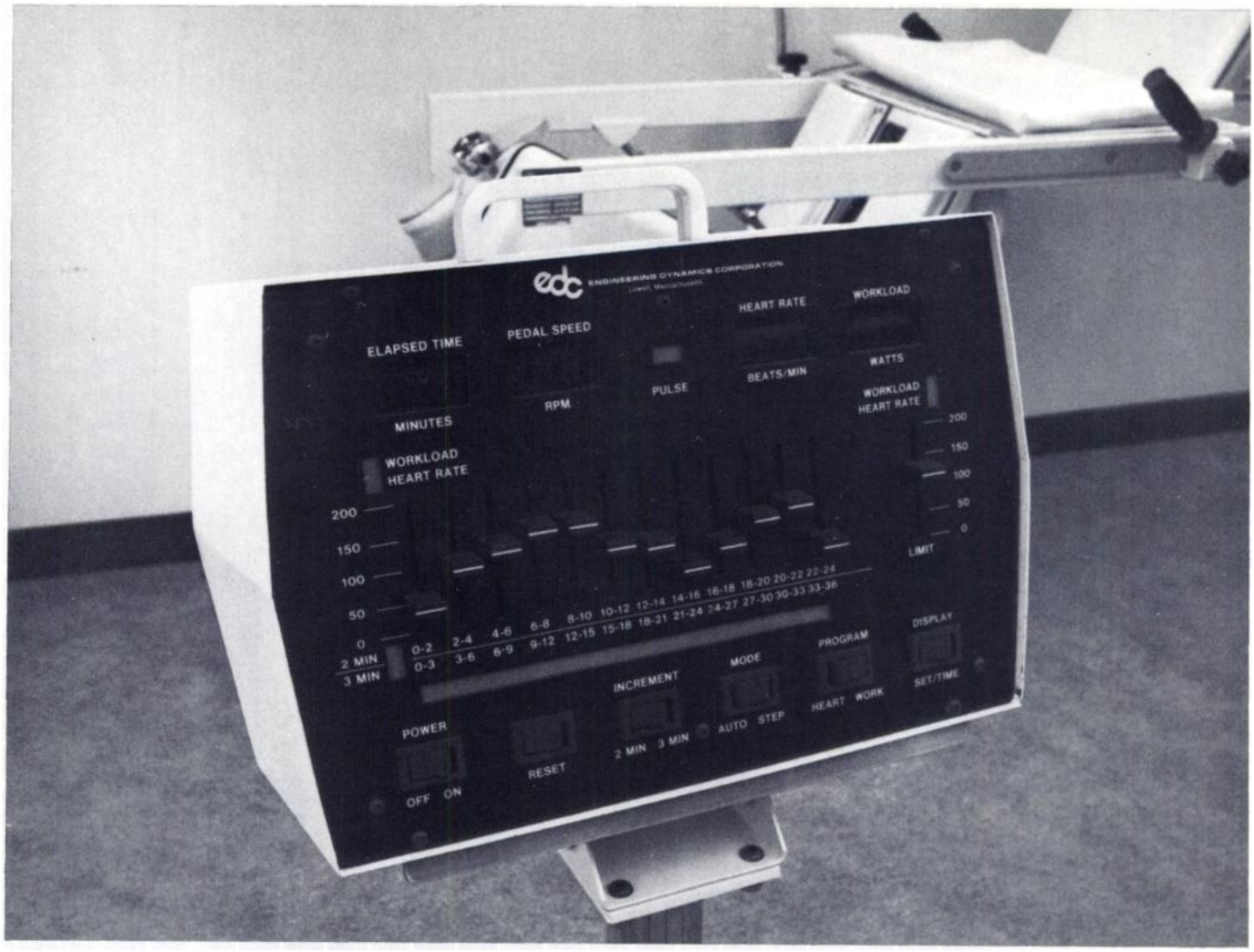

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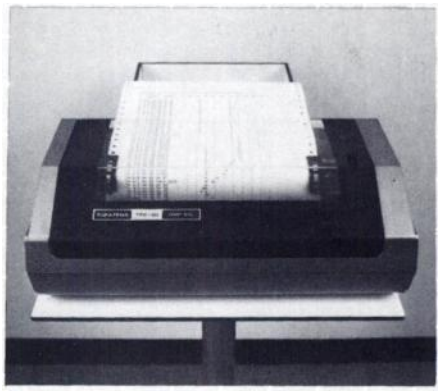

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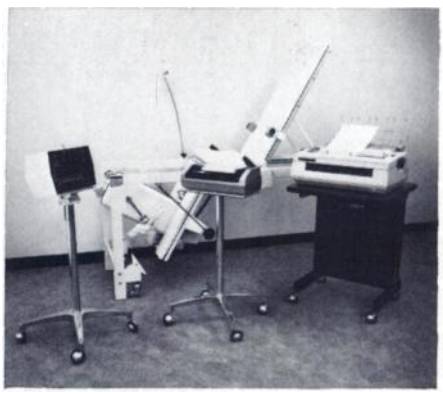

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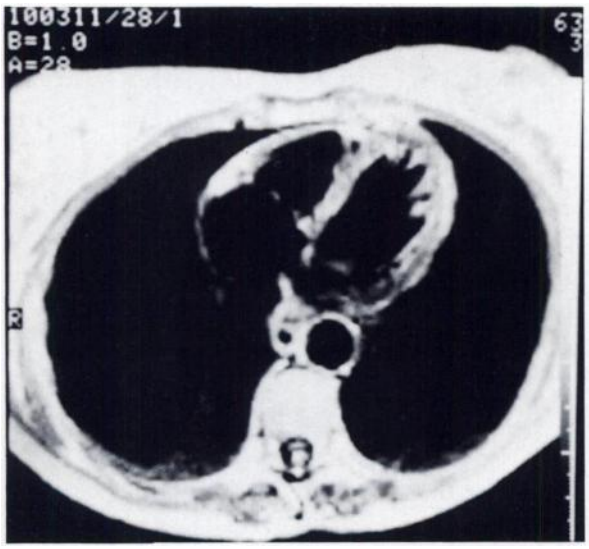

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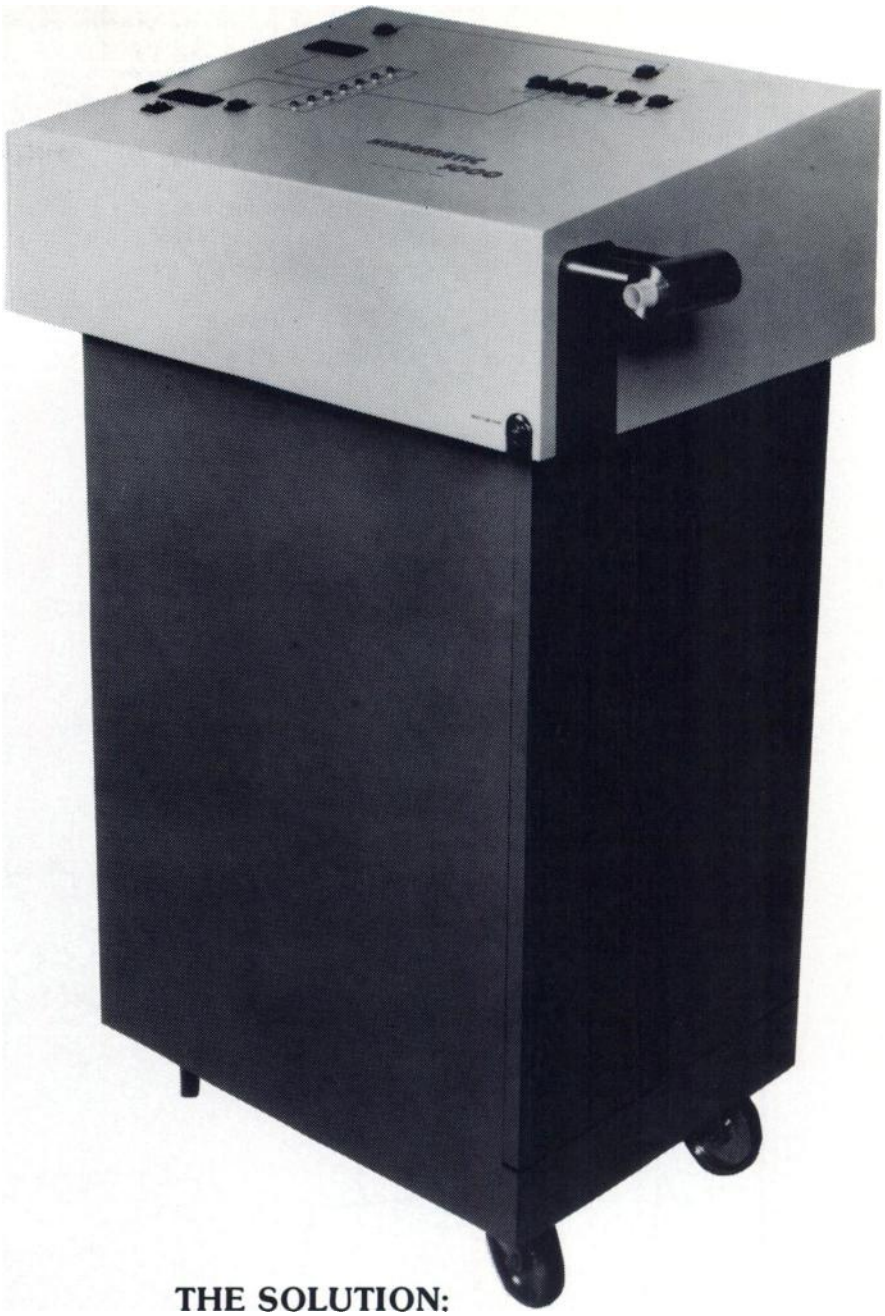

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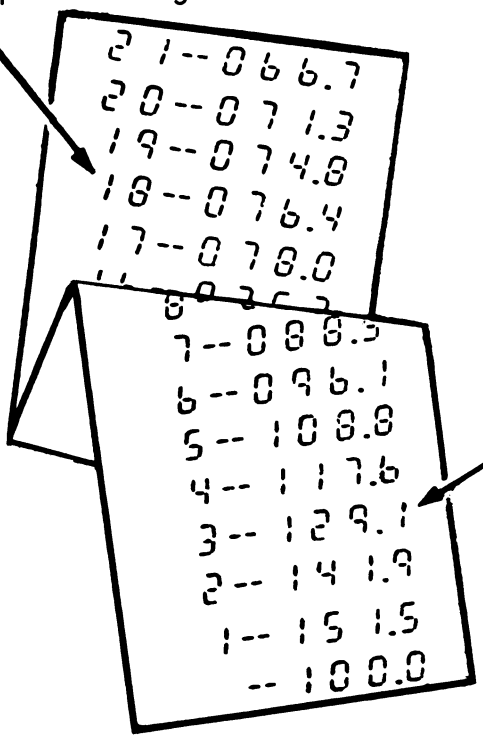

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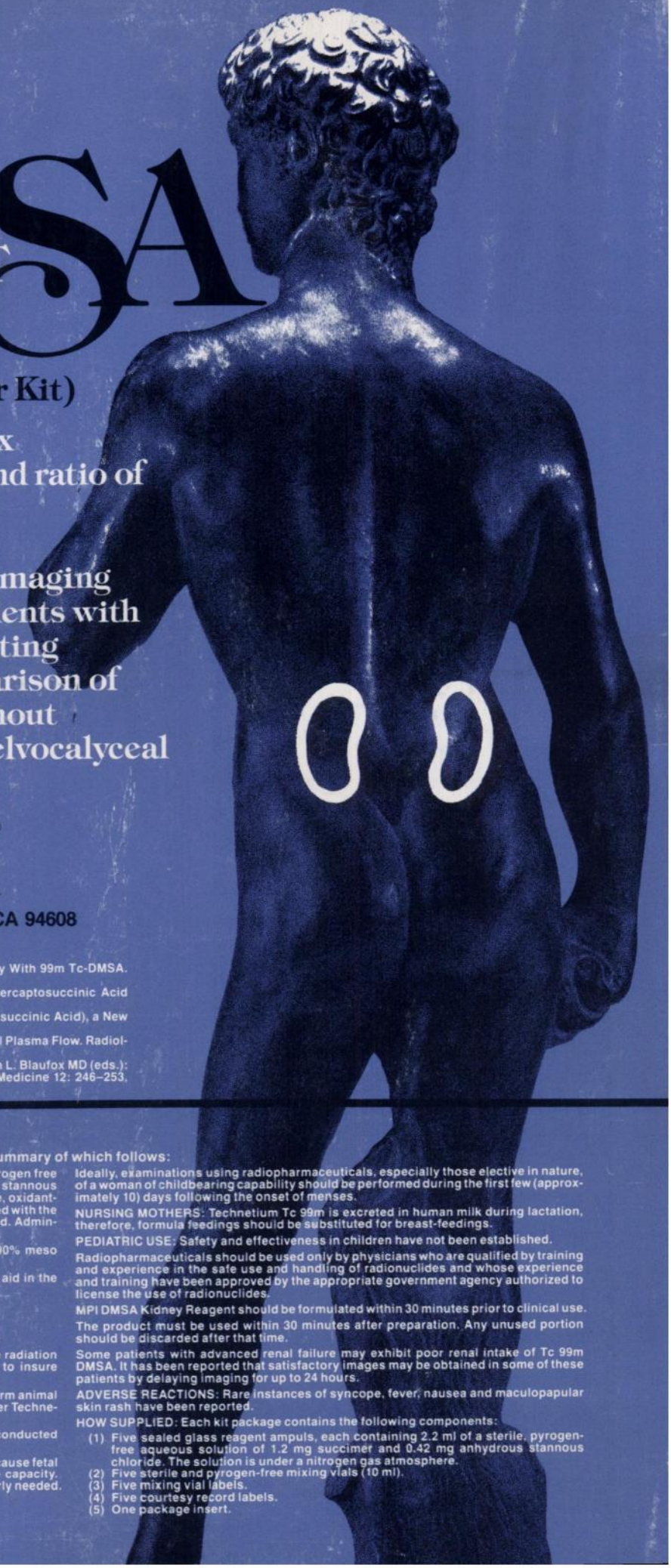

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MPI DMSA Kidney Reagent (Technetium Tc 99m Succimer Kit)

For complete prescribing information consult package insert, a summary of which follows:

DESCRIPTION: Each reagent ampul of the kit contains 2.2 ml of a sterile, pyrogen free aqueous solution containing 1.2 mg of succimer and 0.42 mg of anhydrous stannous chloride in aqueous solution under a nitrogen gas atmosphere. When sterile, oxidant-free, pyrogen-free sodium pertechnetate Tc 99m in isotonic saline is combined with the reagent, following the instructions provided with the kit, a complex is formed. Administration is by intravenous injection for diagnostic use.

The succimer component of MPI Kidney Reagent consists of more than 90% meso isomer and less than 10% d,l isomer.

INDICATIONS AND USAGE: MPI DMSA Kidney Reagent is to be used as an aid in the scintigraphic evaluation of renal parenchymal disorders.

CONTRAINDICATIONS: None known.

WARNINGS: None.

PRECAUTIONS: General

As in the use of any radioactive material, care should be taken to minimize radiation exposure to the patient consistent with proper patient management and to insure minimum radiation exposure to occupational workers.

CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY: No long-term animal studies have been performed to evaluate carcinogenesis potential or whether Technetium Tc 99m Succimer affects fertility in males or females.

PREGNANCY CATEGORY C: Animal reproduction studies have not been conducted with the MPI DMSA Kidney Reagent either with or without Tc 99m.

It is also not known whether Technetium Tc 99m alone or with Succimer can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Technetium Tc 99m should be administered to a pregnant woman only if clearly needed. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

NURSING MOTHERS: Technetium Tc 99m is excreted in human milk during lactation, therefore, formula feedings should be substituted for breast-feedings.

PEDIATRIC USE: Safety and effectiveness in children have not been established.

Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

MPI DMSA Kidney Reagent should be formulated within 30 minutes prior to clinical use.

The product must be used within 30 minutes after preparation. Any unused portion should be discarded after that time.

Some patients with advanced renal failure may exhibit poor renal intake of Tc 99m DMSA. It has been reported that satisfactory images may be obtained in some of these patients by delaying imaging for up to 24 hours.

ADVERSE REACTIONS: Rare instances of syncope, fever, nausea and maculopapular skin rash have been reported.

HOW SUPPLIED: Each kit package contains the following components:

(1) Five sealed glass reagent ampuls, each containing 2.2 ml of a sterile, pyrogen-free aqueous solution of 1.2 mg succimer and 0.42 mg anhydrous stannous chloride. The solution is under a nitrogen gas atmosphere.
(2) Five sterile and pyrogen-free mixing vials (10 ml).
(3) Five mixing vial labels.
(4) Five courtesy record labels.
(5) One package insert.