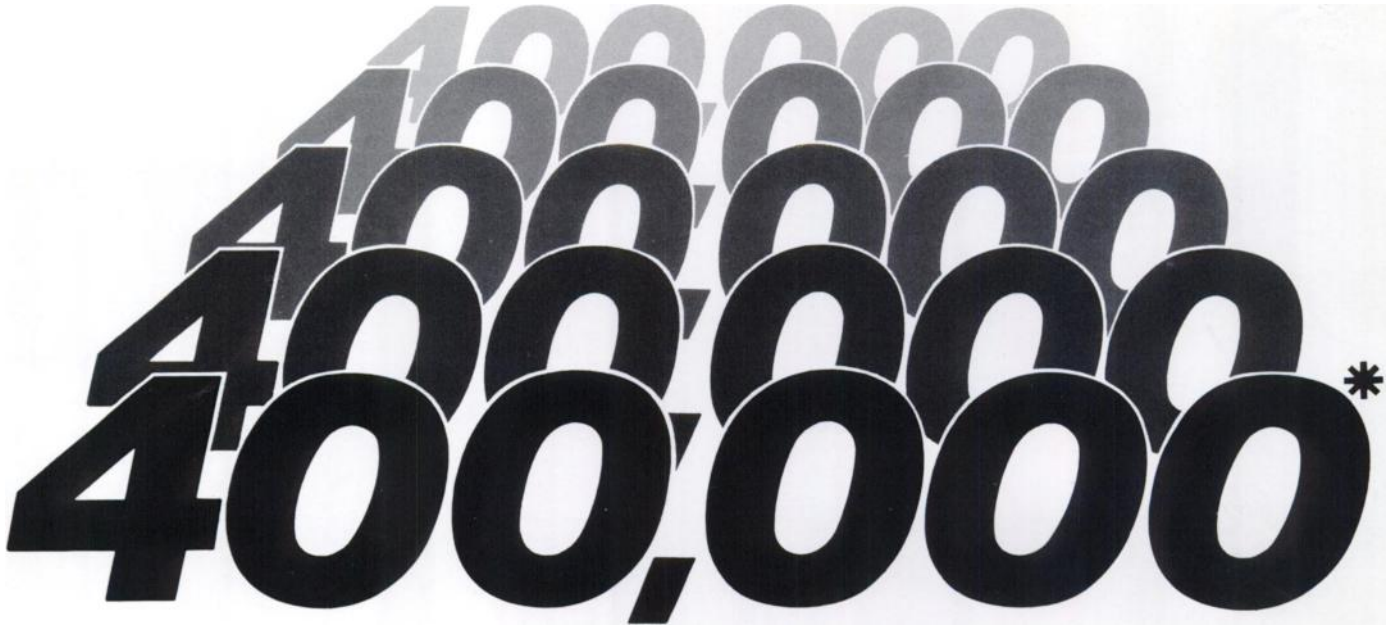

COUNTS PER SECOND

Baird-Atomic's System Seventy-Seven provides twice as many counts as other gamma cameras promise

(Four times as many as most deliver under clinical conditions)

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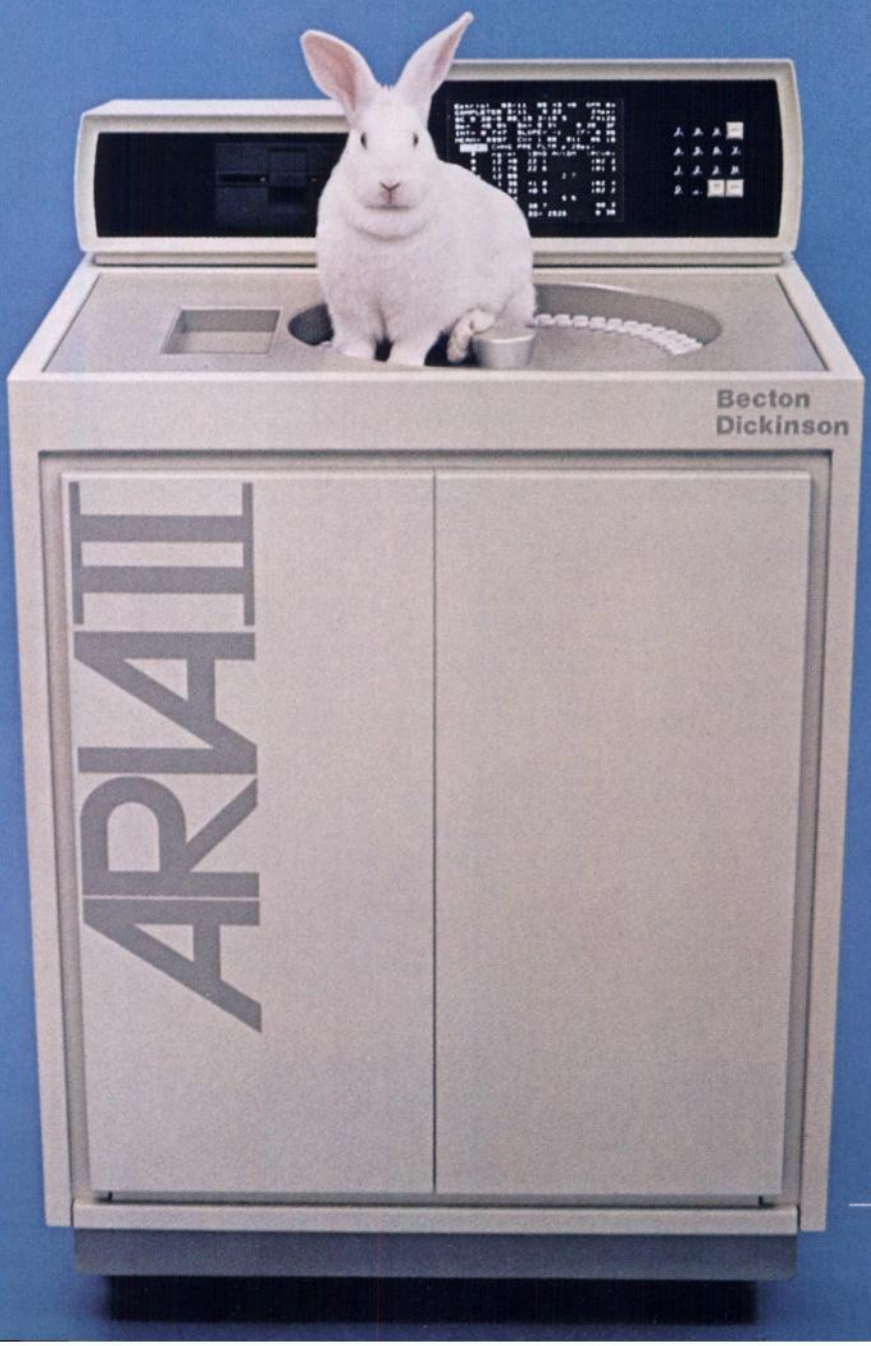
the new face of RIA



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Subsidiary of G. D. Searle & Co.

SR-514

Northwestern Memorial Hospital has put a new 91-tube image maker to work.

The Raytheon Cameray XL-91.

Northwestern Memorial Hospital is a major midwestern teaching hospital associated with Northwestern University. The busy nuclear medicine section is using the Raytheon Cameray XL-91 gamma camera.

Cameray XL-91 was specifically designed to give superior quality images. In fact, the Cameray XL-91 may be the ultimate medical gamma camera. It gives the widest undistorted field of view available from any gamma camera. 16½ inches.

Image uniformity also is no longer a problem with Cameray XL-91. Its exclusive Autocomp circuitry provides ±2% uniformity . . . automatically. Autocomp comes with as many as four memories . . . allowing users to calibrate to four different isotopes or collimators.

At Northwestern Memorial, Cameray XL-91 is being used each working day for a variety of clinical studies and is producing clinically useful images very rapidly. Hospital authorities are particularly pleased with the speed at which Cameray XL-91 was placed on-line after delivery as well as how quickly technicians were able to master its operation.

Get more details on Cameray XL-91 by phoning or writing today. Raytheon Company, Medical Electronics, 70 Ryan Street, Stamford, Conn. 06907. Telephone 800-243-9058.

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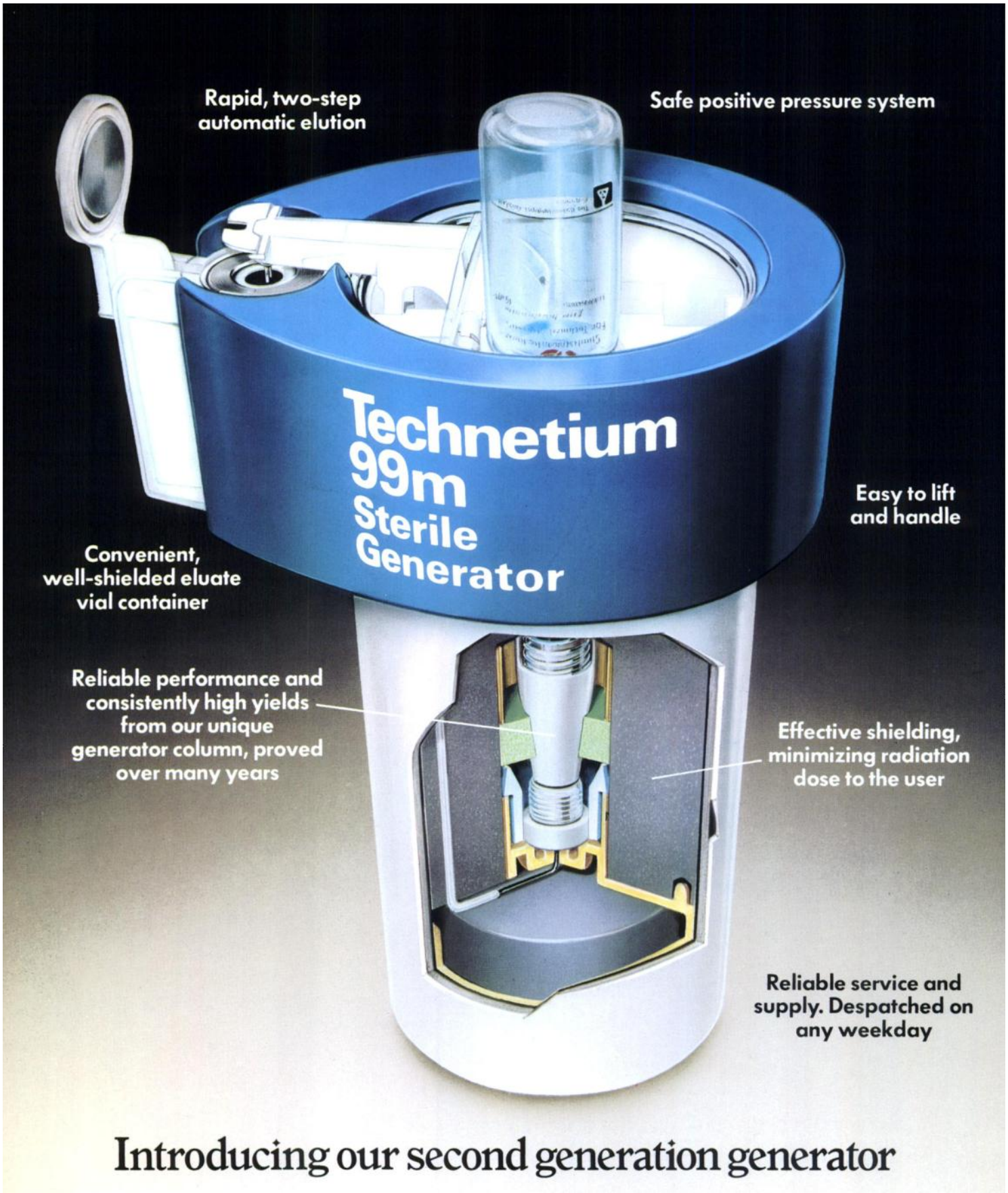
EUROPE: NEN Chemicals GmbH, D-6072 Dreieich, W. Germany, Daimlerstrasse 23, Postfach 401240, Telephone: (06103) 85034, Telex: 4-17993 NEN D



Introducing our second generation generator

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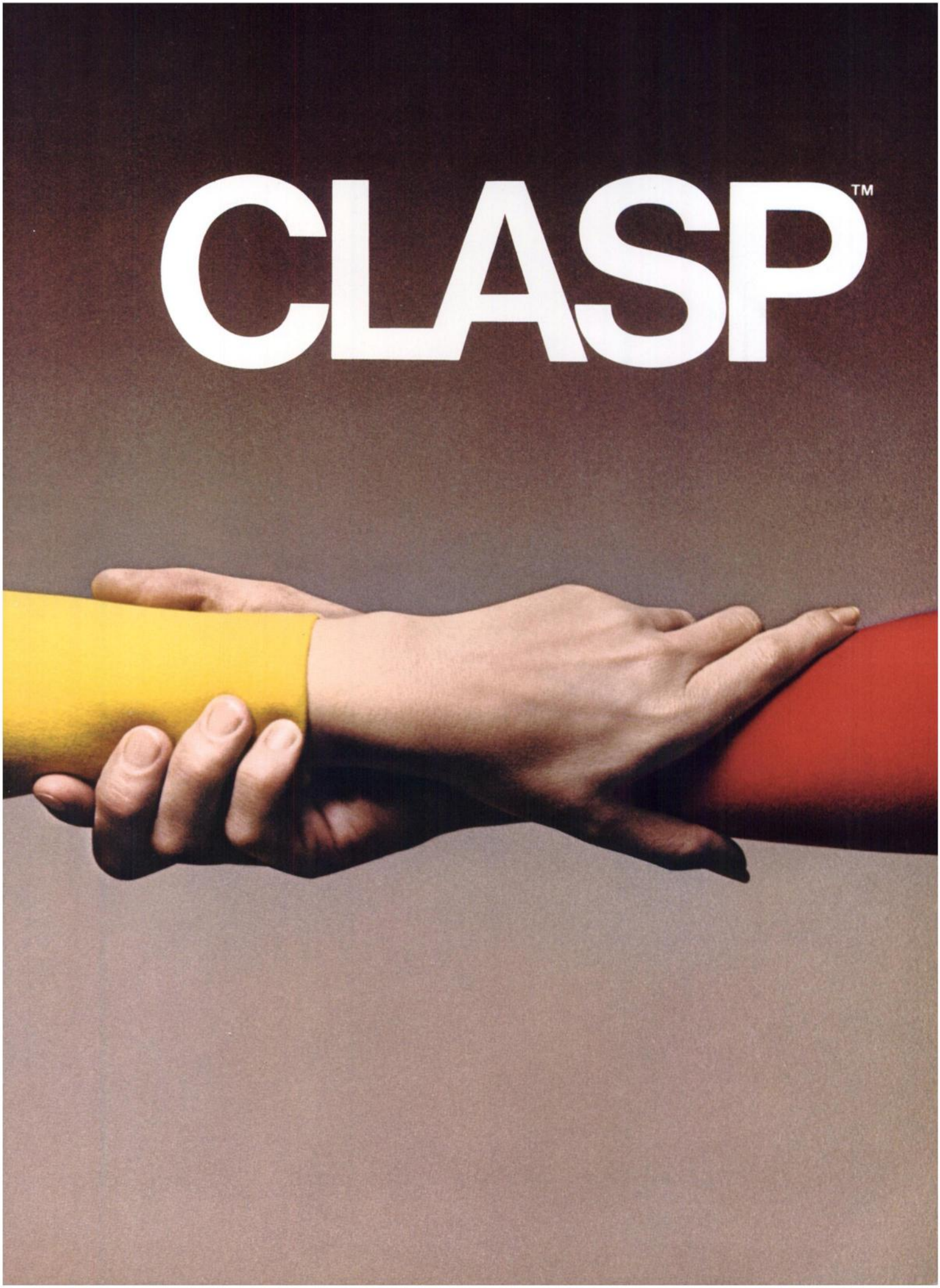
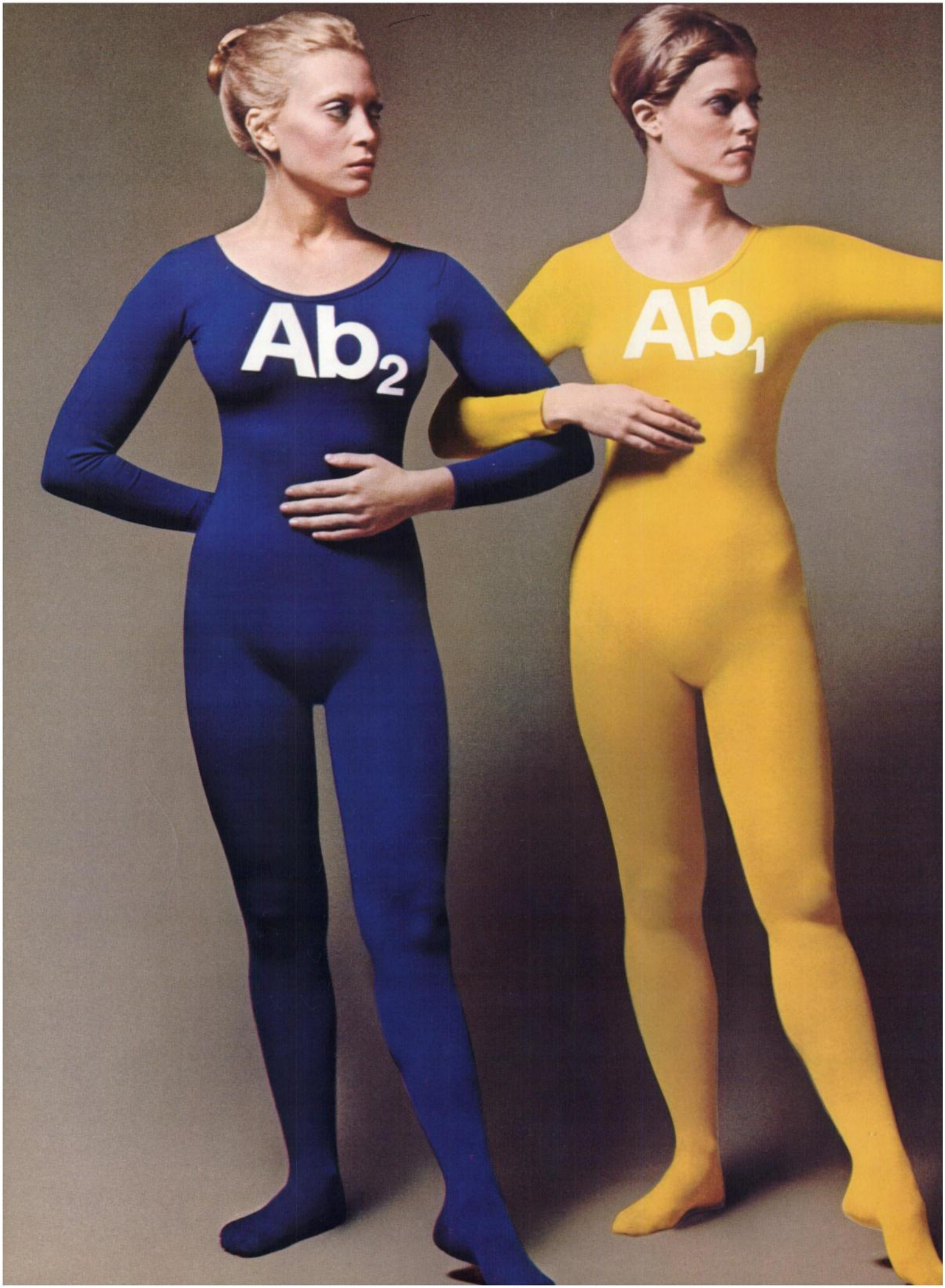
The Radiochemical Centre Limited, Amersham, England. Tel: Little Chalfont (024 04) 4444
In West Germany: Amersham Buchler GmbH & Co KG, Braunschweig. Tel: 05307-4693-97

7/77 1318

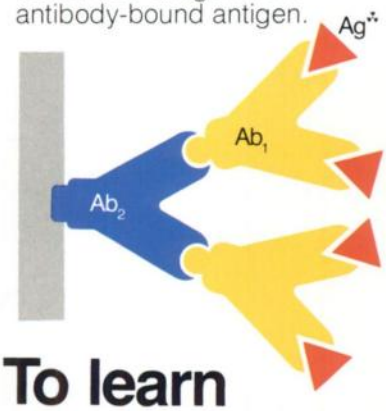

CLASP™


Ab2
Ab1

CLASP™

Chemically Linked Antibody Solid Phase

A unique Squibb methodology whereby an antibody specific to the antigen is coupled to the test tube wall or to a second antibody, depending on the assay. While assay procedure is greatly simplified, there is excellent sensitivity and reproducibility with highly specific separation of free antigen from antibody-bound antigen.



To learn how CLASP can save time and streamline lab work, see next pages.

Ag*

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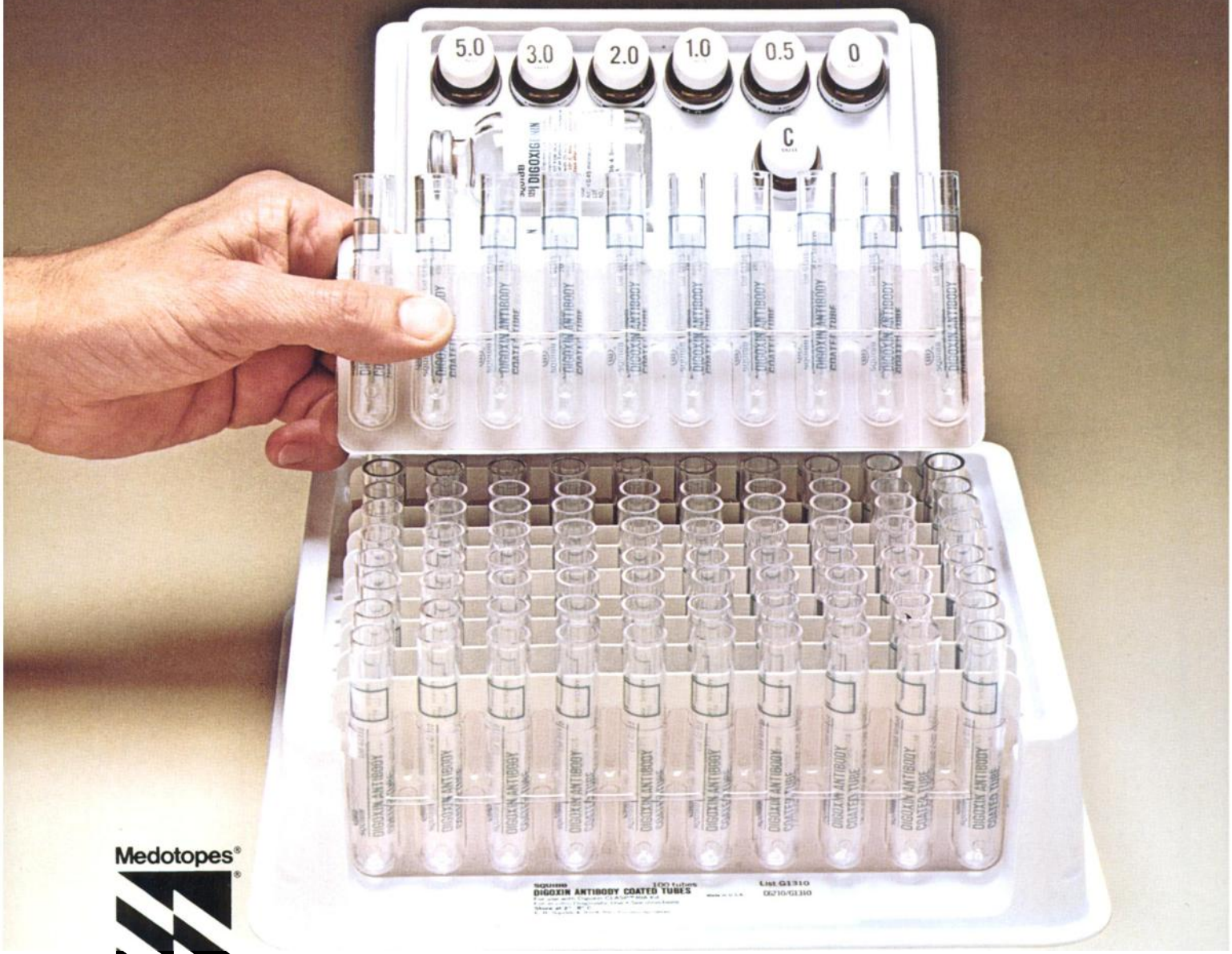
SQUIBB®

Introducing Digoxin CLASP™ RIA Kit

Streamlined for speed and accuracy

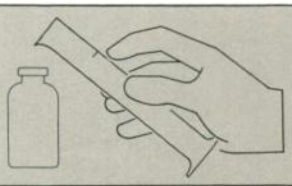
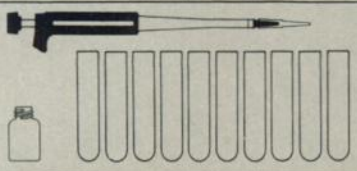
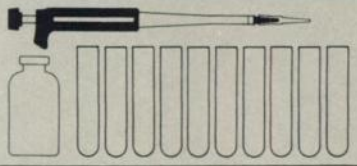
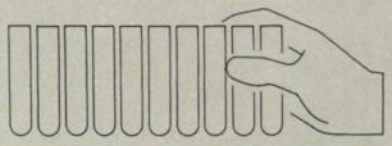
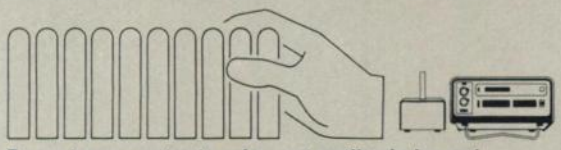


Medotopes®

SQUIBB®

100-test kit contains: 5 vials ^{125}I Digoxigenin
6 bottles Digoxin Standards
100 Digoxin Antibody Coated Tubes
1 bottle Digoxin Control

Bench timed at 63 minutes

Simple procedure	Time (1 serum sample)
1  Add distilled water to ^{125}I Digoxigenin	5 min.
2  Add standard or control or patient serum	3 min.
3  Add ^{125}I Digoxigenin Solution	1 min.
4  Shake *gently by hand* and incubate 30 minutes at 37° C (or 1 hr. at room temp.)	30 min.
5  Decant supernatant and count antibody-bound fraction remaining on tube	24 min.

See package insert for detailed description.

Total: 63 min.

- Reagent preparation reduced to a single reconstitution
- Only 2 pipetting steps per tube
- All standard additions of equal volume
- No centrifugation
- Easily adapted to automated systems
- Control serum provided
- Test can be interrupted without affecting final results

CLASP™
Streamlines RIA

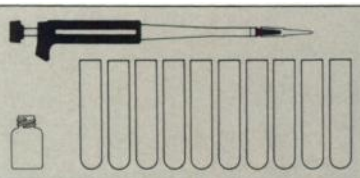
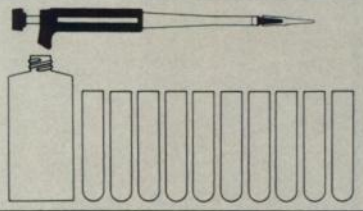
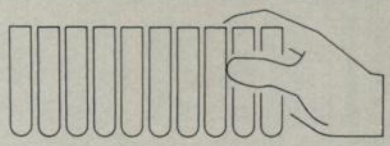
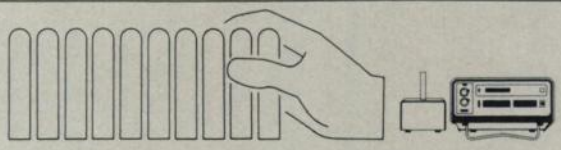
Introducing T4 CLASP™ RIA Kit Saves time and increases sensitivity

Medotopes®

SQUIBB®

100-test kit contains: 1 bottle ^{125}I T4 Reagent
5 bottles T4 RIA Standards
1 bottle T4 RIA Control
100 T4 Antibody Coated Tubes

Bench timed at 83 minutes

Simple procedure	Time (1 serum sample)
1  Add standard or control or patient serum	3 min.
2  Add ^{125}I T4 reagent	2 min.
3  Shake gently and incubate 1 hour at 37° C (or 90 min. at room temp.)	60 min.
4  Decant supernatant and count antibody-bound fraction remaining on tube	18 min.

See package insert for detailed description.

Total: 83 min.

- No preparation of reagents necessary
- Only 2 pipetting steps
- No centrifugation
- All standard additions of equal volume
- Count only bound fraction
- Control serum provided

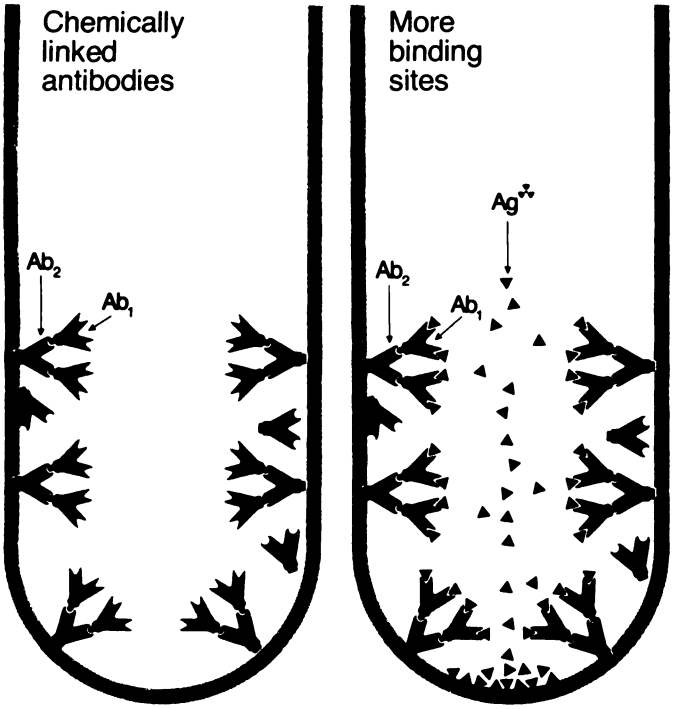
Available soon:

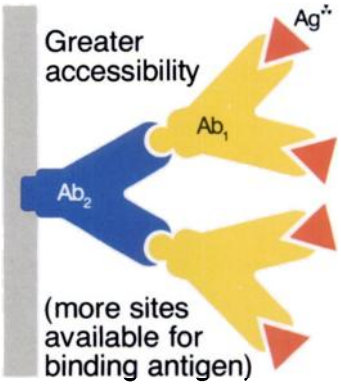
T3 CLASP™ RIA Kit
HTSH CLASP™ RIA Kit

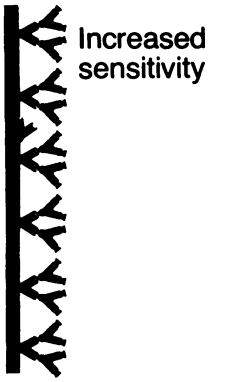
CLASP™—a significant advance in solid phase RIA technology

In the Digoxin CLASP RIA, a second antibody, attached to the test tube wall, is prelinked to the first antibody—provides greater accessibility of antigen to antibody binding sites.

Medotopes® SQUIBB®







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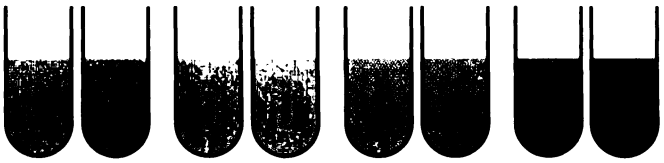

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OSTEOSCAN®

(5.9 MG DISODIUM ETIDRONATE, 0.16 MG STANNOUS CHLORIDE)

SKELETAL IMAGING AGENT

Excellent in vitro stability

Greater than 98% labeling efficiency 8 hours after preparation. Osteoscan contains sodium ascorbate, an antioxidant that inhibits action of radiolysis by-products and oxidants capable of causing complex break-down and resultant soft tissue visualization.

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Delivers consistently high-quality scans, using either instant or generator technetium.

Plus these other Osteoscan benefits

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For further information about Osteoscan, please contact: Arnold Austin, Technical Manager, Professional Services Division, Procter & Gamble (513) 977-8547.

In Europe, contact: Philips-Duphar B.V., Cyclotron and Isotope Laboratories, Petten, Holland.

See following page for a brief summary of package insert.

PROCTER & GAMBLE

OSTEOSCAN®

(5.9 MG DISODIUM ETIDRONATE, 0.16 MG STANNOUS CHLORIDE)

SKELETAL IMAGING AGENT

Brief summary of Package Insert. Before using, please consult the full Package Insert included in each kit.

DESCRIPTION

Each vial of OSTEOSCAN contains 5.9 mg disodium etidronate and 0.16 mg stannous chloride as active ingredients. Upon addition of ADDITIVE-FREE ^{99m}Tc-pertechnetate, these ingredients combine with ^{99m}Tc to form a stable soluble complex.

ACTIONS (CLINICAL PHARMACOLOGY)

When injected intravenously, ^{99m}Tc-labeled OSTEOSCAN has a specific affinity for areas of altered osteogenesis. Areas of bone which are undergoing neoplastic invasion often have an unusually high turnover rate which may be imaged with ^{99m}Tc-labeled OSTEOSCAN.

Three hours after intravenous injection of 1 ml ^{99m}Tc-labeled OSTEOSCAN, an estimated 40-50% of the injected dose has been taken up by the skeleton. At this time approximately 50% has been excreted in the urine and 6% remains in the blood. A small amount is retained by the soft tissue. The level of ^{99m}Tc-labeled OSTEOSCAN excreted in the feces is below the level detectable by routine laboratory techniques.

INDICATIONS

OSTEOSCAN is a skeletal imaging agent used to demonstrate areas of altered osteogenesis.

CONTRAINDICATIONS

None.

WARNINGS

This radiopharmaceutical should not be administered to patients who are pregnant or lactating unless the information to be gained outweighs the potential hazards.

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.

Radiopharmaceuticals should be used only by physicians 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 agency authorized to license the use of radionuclides.

The ^{99m}Tc-generator should be tested routinely for molybdenum breakthrough and aluminum. If either is detected, the eluate should not be used.

PRECAUTIONS

Both prior to and following ^{99m}Tc-labeled OSTEOSCAN administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the ^{99m}Tc-labeled OSTEOSCAN injection to minimize background interference from accumulation in the bladder and unnecessary exposure to radiation.

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

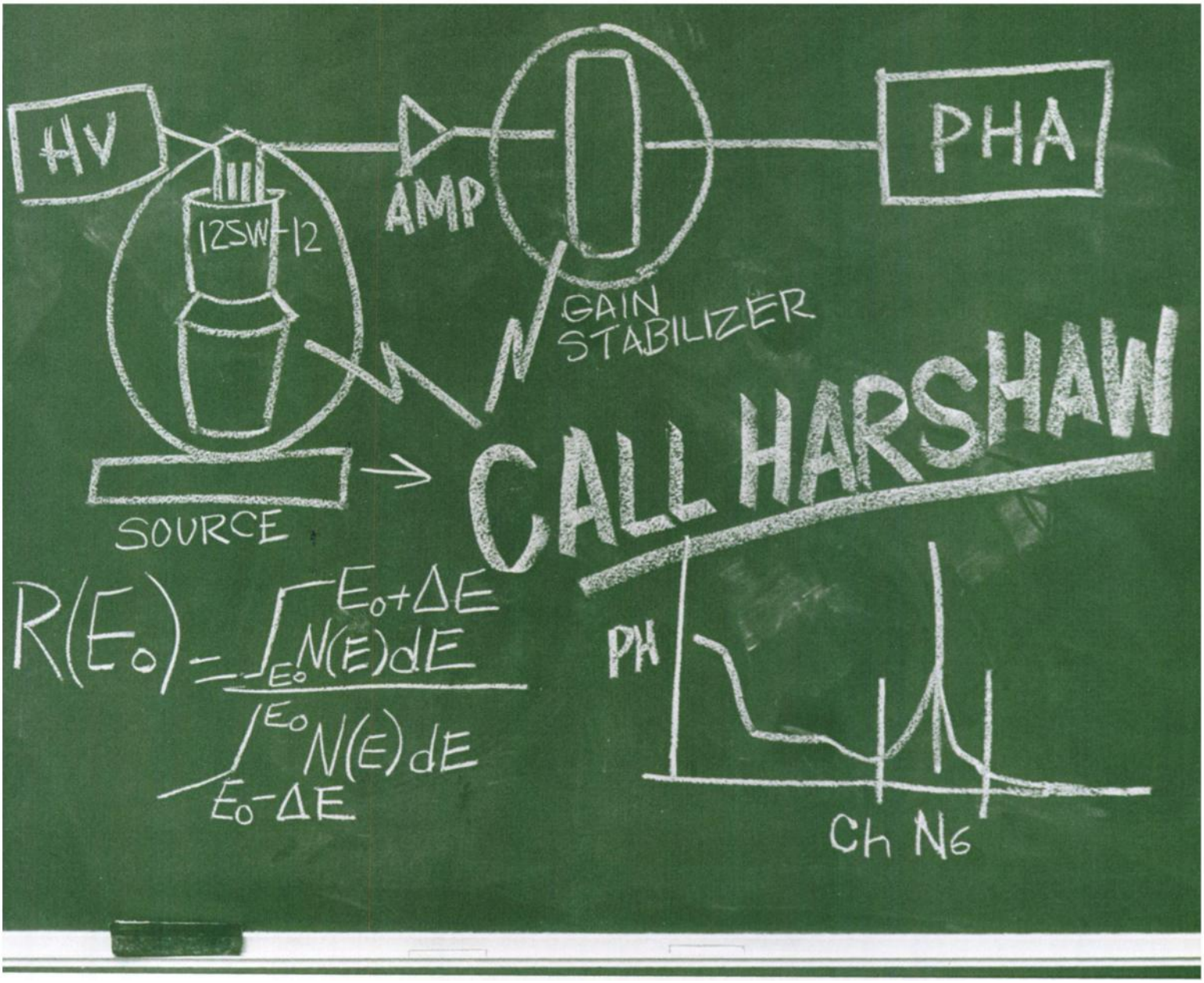
ADVERSE REACTIONS

None.

DOSAGE AND ADMINISTRATION

The recommended adult dose of ^{99m}Tc-labeled OSTEOSCAN is 1 ml with a total activity range of 10-15 mCi. ^{99m}Tc-labeled OSTEOSCAN should be given intravenously by slow injection over a period of 30 seconds within eight (8) hours after its preparation. Optimum scanning time is 3-4 hours postinjection.

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



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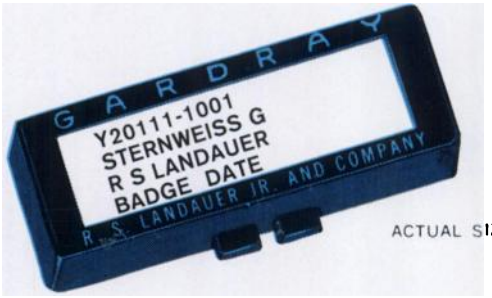

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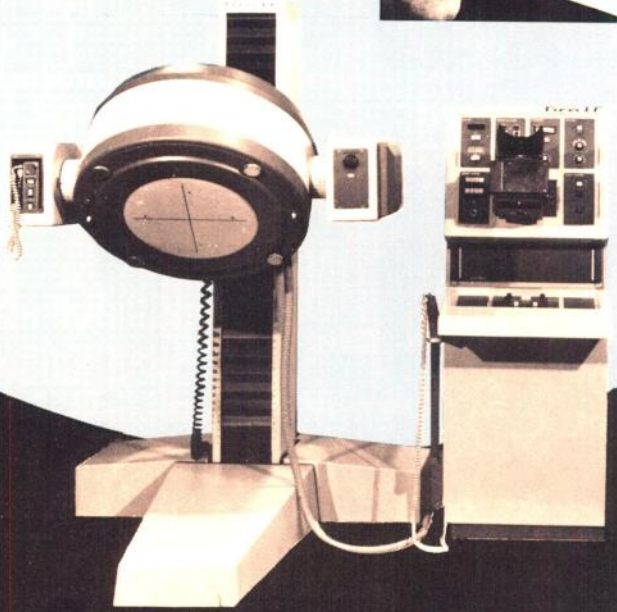

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A BRIEF SUMMARY OF PRODUCT INFORMATION
ALBUMIN MICROSPHERES (HUMAN) (10-35μ, DRIED) INSTANT MICROSPHERES FOR LABELING WITH TECHNETIUM 99m.

INDICATIONS Scintillation imaging of the lungs with ^{99m}Tc labeled Albumin Microspheres is indicated as an adjunct to other diagnostic procedures whenever information about pulmonary circulation is desired.[4,5] The most useful clinical applications of lung imaging are in the diagnosis of 1) pulmonary embolism, 2) chronic obstructive pulmonary diseases such as emphysema and chronic bronchitis, 3) pathological conditions which impede pulmonary abscess, and 4) other pulmonary diseases such as pneumonia and tuberculosis. **CONTRAINDICATIONS** The safety of Albumin Microspheres in patients with a known right-to-left cardiac shunt has not been established and its use in such patients is contraindicated. **WARNINGS** The possibility that hypersensitivity reactions may occur should be considered whenever protein-containing materials such as 3M Brand Instant Albumin Microspheres are administered. Administration of epinephrine, antihistamines and corticosteroid drugs should be considered whenever a hypersensivity reaction occurs. Since ^{99m}Tc is excreted in milk during lactation, formula-feedings should be substituted for breast-feedings. Radiopharmaceuticals should be used only by physicians 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 agency authorized to license the use of radionuclides. **PRECAUTIONS** As in the use of any other radioactive material, care should be taken to insure minimum radiation exposure to the patient, consistent with proper patient management, and to insure minimum radiation exposure to occupational workers. **ADVERSE REACTIONS** The most frequently reported adverse reactions associated with the use of Albumin Microspheres are transient facial flushing and dyspnea. Less frequent adverse reactions are transient nausea, perspiration and cyanosis. An adverse reaction, which occurs rarely, is severe respiratory distress. The literature contains one report of an alleged anaphylactoid reaction to Albumin Microspheres. Administration of epinephrine, antihistamines and corticosteroid drugs should be considered whenever a hypersensitivity reaction occurs.

For more information, write or call toll free: 1-800-328-1671.

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- **STAND-ALONE CAPABILITY** — All essential controls are at the camera. No need for a separate console; camera can interface directly with a computer system. (Mini-console with data scope and photo capability also available.)
- **P-SCOPE/DIGITAL "SCOREBOARD"** — Persistence scope with digital "scoreboard" mounts directly on the camera stand — gives continuous indication of COUNT-TIME-RATE in large, easy-to-read numerals.
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Specifications and data on request.

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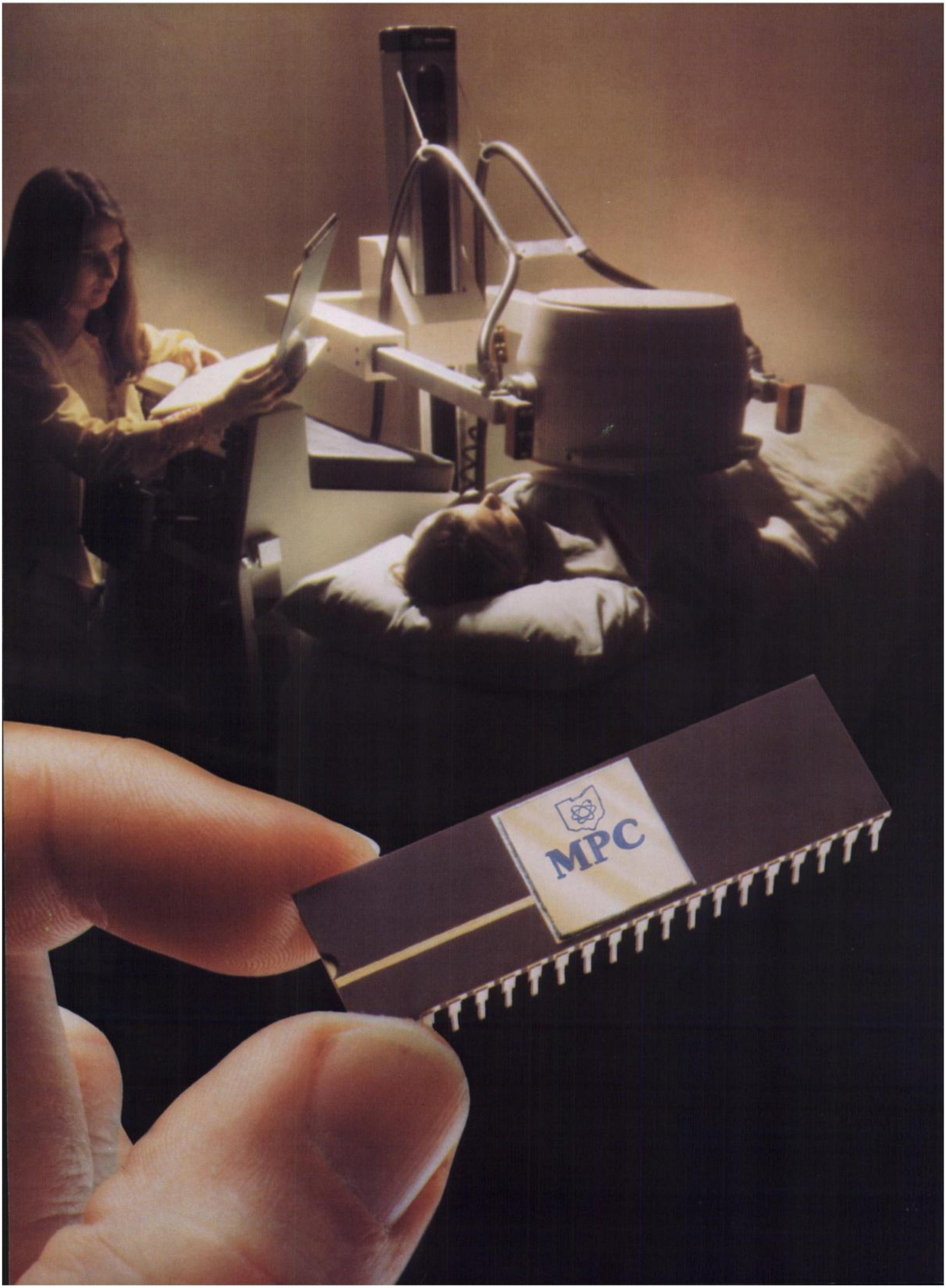
Most gamma cameras give you an image without thinking twice.

And that's the problem.

The solution: Smart cameras from Ohio-Nuclear.


MPC

Smart gamma cameras: a tiny electronic brain means greater clinical confidence.

Three scintillation cameras from Ohio-Nuclear are redefining the standard of excellence in image quality. A miniature computer-like brain and precise electronic balance give diagnostic teams a unique benefit: Guaranteed uniformity with high resolution.

A Sigma camera from Ohio-Nuclear does what no other gamma camera can do.

Prior to the start of a day's activities, a flood is loaded into the Dynamic Uniform Flood Correction (DUFC) memory. The Microprocessor Control (MPC) then analyzes the flood and determines the correction parameters necessary to assure ±5% uniformity.

These correction parameters are then applied to every study performed, assuring the physician that any abnormalities observed are anatomical rather than machine induced.

Advanced solid-state circuitry.

The microprocessor control, a feature of all Sigma cameras, incorporates arithmetic, logic and memory functions in one unit. Image uniformity and resolution are both optimized—with no trade-off. Result: Increased diagnostic confidence, faster patient throughput, and higher camera utilization.

Current owners of Ohio-Nuclear cameras can also realize Sigma benefits. All Series 100, 110 and 120 models can be retrofitted with MPC.

Sigma means smart.

A camera in the Sigma Series is not only smart electronically. It is an intelligent instrument for many other reasons.

Smart for physicians:

Fast analog, nonlinear circuitry provides consistently superior image quality and high count rate data collection. MPC data analysis permits better results from all peripheral equipment and photo options.

Smart for technologists:

A Sigma camera is pre-eminently stable. Because DUFC is continuously monitoring the flood, retuning is minimized.

Auto Peak Track (APT) automatically centers the primary photopeak in the desired window. It also makes the use of precalibrated pushbuttons for isotope selection practical.

The redesigned remote hand control contains a complete assortment of controls. In fact, the total Sigma design is function-oriented, simplifying patient positioning, camera operation and collimator changes.

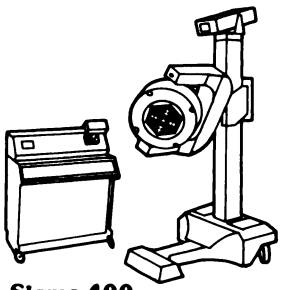
The confident alternative.

Ohio-Nuclear recognizes that you constantly strive to perfect imaging techniques. Now you can enhance your efforts with the first intelligent camera system.

A Sigma camera is, simply stated, the only confident alternative.

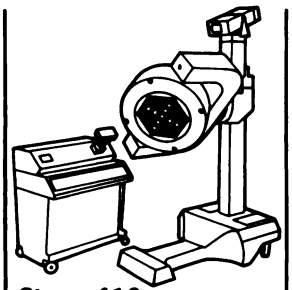
Considering a gamma camera? Ask us to prove that a Sigma camera is your best investment. Call or write us.

Three Sigma cameras, each with microprocessor control. One will meet your precise imaging needs.



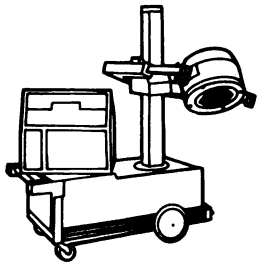
Sigma 400
Standard Field Camera

- Field of View: *24.8 cm minimum*
- Resolution: *4.5 mm FWHM (^{99m}Tc)*
- Count Rate: *200K cps*



Sigma 410
Wide Field Camera

- Field of View: *36.8 cm minimum*
- Resolution: *5.5 mm FWHM (^{99m}Tc)*
- Count Rate: *200K cps*



Sigma 420
Mobile Camera

- Field of View: *24.8 cm minimum*
- Transport: *Motor-driven, variable speed*
- Resolution: *4.5 mm FWHM (^{99m}Tc)*
- Count Rate: *200K cps*

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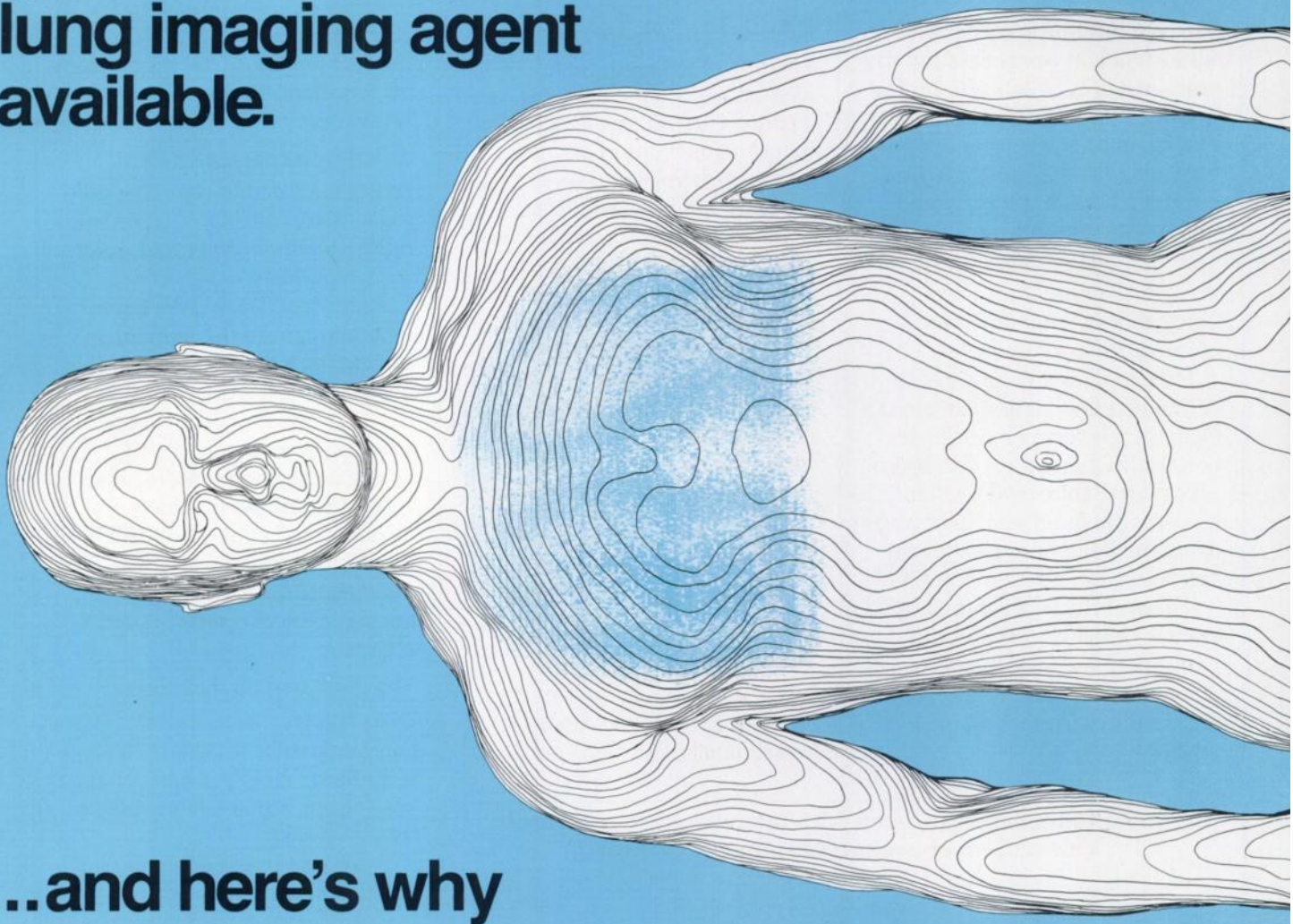
Macrotec®
Aggregated Albumin (Human)
for labeling with technetium 99m

STILL! the simplest, quickest to prepare lung imaging agent available.



...and here's why

Simple, two-step procedure. Not an ampul, not a frozen material. No waiting, no complicated procedures or specialized equipment required. Just two easy steps and you're ready to assay and inject.

Uniform particle size, excellent labeling efficiency. Particle size meets or exceeds Bureau of Biologics standards; 90% in 5-60 micron range. Excellent labeling efficiency when reconstituted with a compatible technetium 99m.

Won't agglomerate in the vial, loses virtually no labeling for 8 hours (if stored between 2°C. and 8°C.).

Ideal for the busy lab. Recommended amount of 99mTc for reconstitution high enough to allow numerous scans from a single vial.

BASIC STEPS IN PREPARING FOUR TECHNETIUM

Squibb Macrotec® Aggregated Albumin (Human)	**1. Add 1-3 ml. of 99mTc** Maintain shielding at all times.**	**2. Shake vigorously for 10-15 seconds.**
Mallinckrodt TechneScan™ MAA Aggregated Albumin (Human)	**1.** Remove reaction vial from *freezer* and *wait approximately 5 minutes* for contents to come to room temperature.	**2.** Add 99mTc** Maintain shielding at all times.
3M Albumin Microspheres (Human)	**1.** Add 4-10 ml. of 99mTc**	**2.** Shield completely and vigorously shake for 5-15 seconds.
Medi+Physics Lungaggregate™ Reagent Aggregated Albumin (Human)	**1.** Shake *ampul* vigorously to suspend particles.	**2.** Open ampul.

Emphasis added by Squibb to point out certain differences in procedures.

MACROTEC® (Aggregated Albumin [Human])

Macrotec (Aggregated Albumin [Human]) is a sterile, non-pyrogenic, lyophilized preparation of aggregated albumin. Each vial of the preparation contains 0.08 mg. tin as chloride, 1.5 mg. denatured human serum albumin, and 10 mg. Normal Serum Albumin (Human).

INDICATIONS: For use in perfusion lung imaging as an adjunct to other diagnostic procedures.

CONTRAINDICATIONS: At present there are no known contraindications to the use of this product.

WARNINGS: Radiopharmaceuticals should not be administered to patients who are pregnant, or during lactation, unless the benefits to be gained outweigh the potential hazards.

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.

Since ^{99m}Tc is excreted in milk during lactation, formula-feedings should be substituted for breast-feedings.

Radiopharmaceuticals should be used only by physicians 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 agency authorized to license the use of radionuclides.

Note: Macrotec (Aggregated Albumin [Human]) is not radioactive. However, after ^{99m}Tc is added, adequate shielding of the resultant preparation should be maintained.

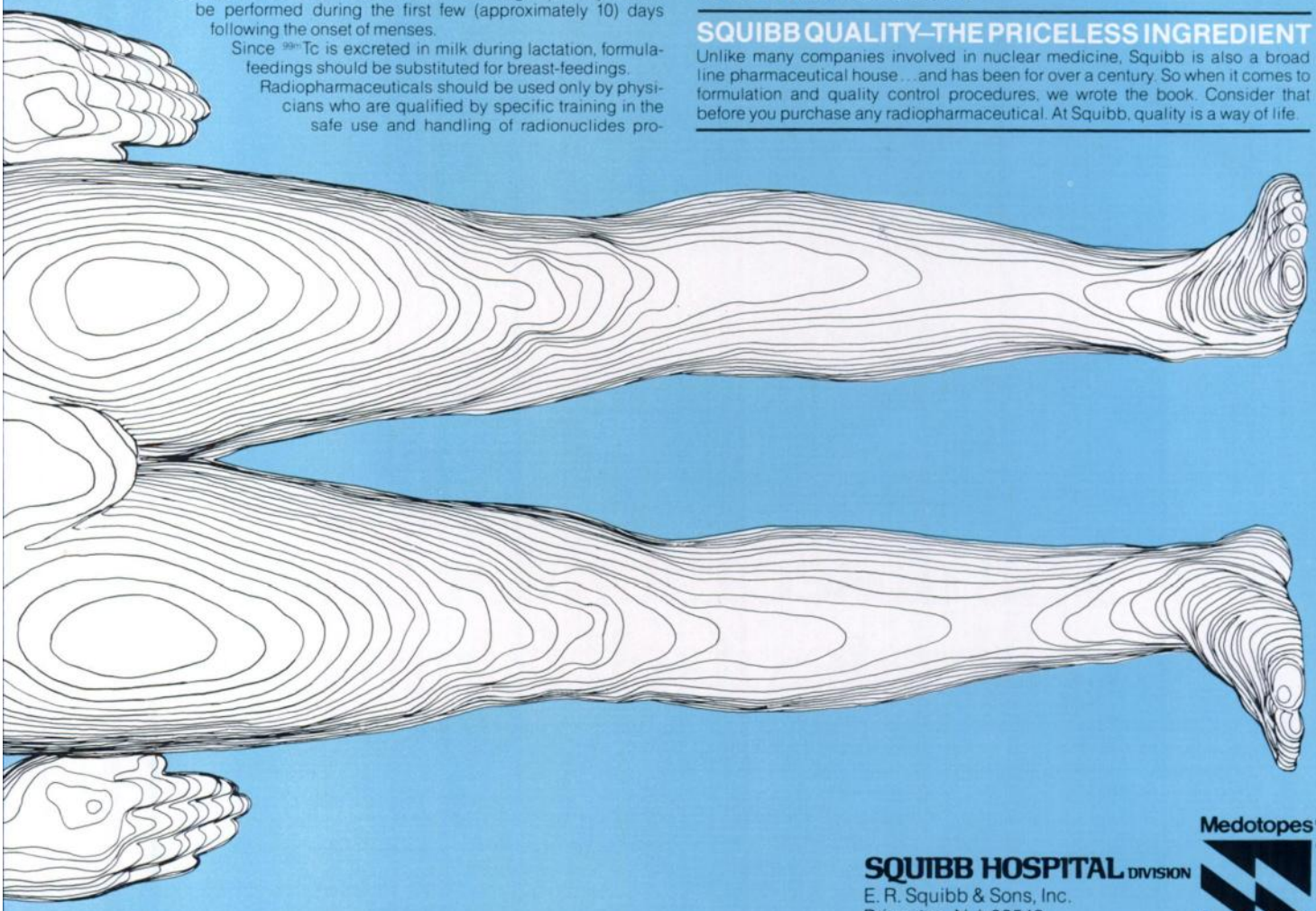
PRECAUTIONS: In the use of any radioactive material, care should be taken to insure minimum radiation exposure to the patient consistent with proper patient management, and to insure minimum radiation exposure to occupational workers.

Aseptic technique is essential in the preparation of Technetated (Tc-99m) Aggregated Albumin (Human).

ADVERSE REACTIONS: At present, adverse reactions have not been reported following the administration of this product.

For full prescribing information, consult package insert.

HOW SUPPLIED: In boxes of 5 vials.



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3. Gently agitate vial for few seconds. **4.** *Allow to stand for 15 minutes* at room temperature. **5.** Visually inspect vial for presence of large aggregates. *If present, do not use.* **6.** *Agitate* to effect homogenous suspension of the aggregated albumin.

**Recommended maximum activity: 60 mCi.

3. Remove vial from shield (with forceps) and place in center of operating *ultrasonic bath* containing 3/4" of water. Bath should be protected by *lead glass or bricks.* *Ultrasound for 5 minutes.*

**Recommended maximum activity: 30 mCi.

3. Withdraw (very slowly) 1.5-2.0 ml. of aggregate from ampul with *syringe.* **4.** Inject (very slowly) syringe contents into *mixing vial.* **5.** Wrap mixing vial in *absorbent paper disc* and place in lead shield. **6.** Add 0.5-2.0 ml. of 99mTc** in saline into shielded mixing vial. Shake vigorously for at least 30 seconds. *Incubate* at room temperature *for 2-5 minutes.* **7.** Shake contents vigorously just before removing aliquot intended for patient use.

**Recommended maximum activity: 25 mCi/ml.

**Recommended maximum activity: 50 mCi.

*Based on manufacturers' product information.

NOTE: See manufacturers' package inserts before the preparation of any of these products.

Meletron

The dosecalibrator that calibrates itself (almost)

Radx has now programmed its new Meletron to read its own calibration factors. The Meletron programmable microprocessor allows you to check each of the Isotope Selector Keys for proper multiplication factors.

Radx employs direct mathematical manipulation for the various radionuclides (other dosecalibrators vary the resistance to alter the signal from the ionization chamber to the digital meter) and these factors can now be recalled from memory and displayed on the digital readout. Since each radionuclide has a finite and discrete mathematical factor, the ability to recall and display this factor (as triggered by the Isotope Selector Key) will remove any doubt concerning this aspect of dosecalibration.

Hard copy data of your radionuclide calibrations is another RADX first. The Melecord prints; time, date, volume, calibration, patient dose, radionuclide — plus it calculates and then prints the volume to administer. Easy compliance with NRC requirements is also assured by Melefile, the RADX record keeping system which provides data cards, tab cards and a compact file to keep them in.

Obsolescence is eliminated. The Meletron employs the latest in microprocessor technology. The highly reliable microprocessor is readily programmable to perform a wide variety of functions. Further program modifications may be added to your unit in the field, as they are developed.

Area radiation can also be monitored by the new Meletron. With the key out, "Background – Error" will flash when the radiation level exceeds approximately 2.0 mr/hr (with an unshielded unit).

Area monitoring is standard on Meletron; an extra cost option on other dosecalibrators.

For a permanent solution to your dosecalibration and record-keeping problems, call RADX — the innovators in nuclear medicine. RADX, P. O. Box 19164, Houston, Texas 77024, 713/468-9628.

RADX

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J&S Model 145A Portable Localization Monitor for I-125 Labeled Fibrinogen Scanning.

Early detection of deep vein thrombosis of the legs can be accomplished using I-125 labelled fibrinogen and the Model 145A. The leg is scanned after intravenous injection of the labelled fibrinogen. As a thrombosis develops, the radio-active fibrinogen is detected at predetermined points and measured directly as a percentage of the pre-cordial count.

Handily compact and portable, with standard D cell battery operation providing at least 100 hours of uncycled use, the 145A Localization Monitor offers unlimited isotope selection, stainless steel collimator, and solid state design.

Features

- Direct *Percentage* Analog Display
- Compact & Portable (6½ lbs including batteries & probe)
- Powered by 3 flashlight batteries (No A.C. Hazards)
- Unlimited Isotope Selection

Specifications

Range: Percent Scale — 0-120%
CPS Scale — 30, 100, 300, 1000, 3000 CPS

Meter Response: Fast — 2 seconds
Slow — 14 seconds

Dimensions: 4½″ H × 5½″ W × 8″ L (exclusive of handle)

Recorder Output: 10 mv

Detector: NaI (Tl) crystal, 1″ diam. × 1 mm thick, mounted on PMT with 7 mg/cm² aluminum window

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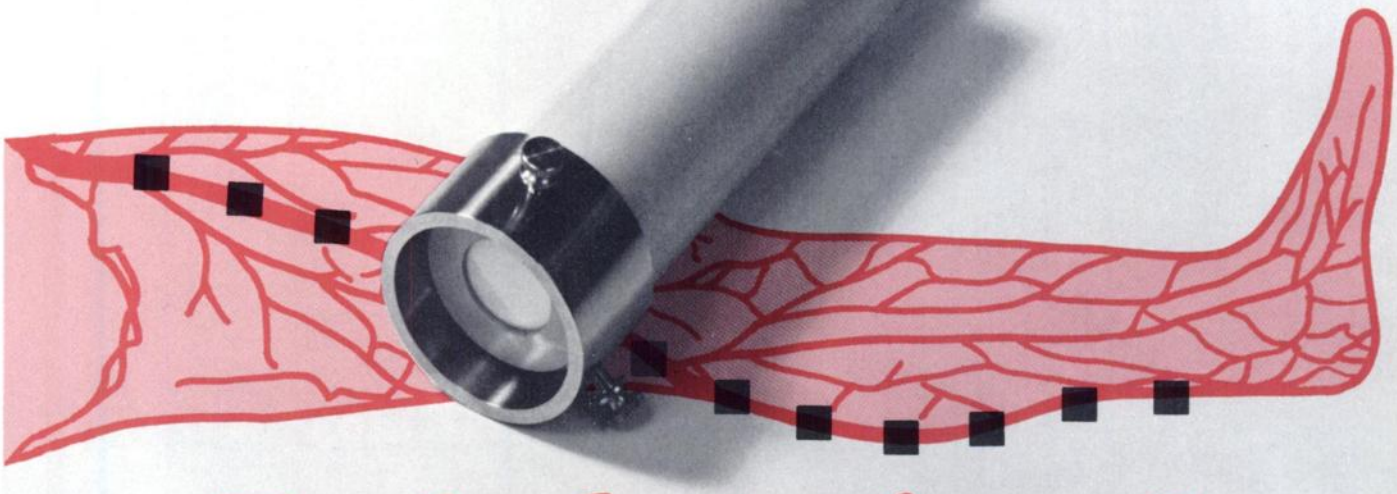

Early detection of Deep Vein Thrombosis

? Lymphoma
? Hodgkin's disease
? Bronchogenic carcinoma

Gallium Ga 67:

Now available for routine use as
a non-invasive adjunct in diagnosis.

Indications and Usage: Gallium Citrate Ga 67 may be useful to demonstrate the presence and extent of certain malignancies such as Hodgkin's disease, lymphomas, and bronchogenic carcinoma. Positive Ga 67 uptake in the absence of prior symptoms warrants follow-up as an indication of a potential disease state.

Contraindications: None known.

Warnings: Gallium Citrate Ga 67 should not be administered to children or to patients who are pregnant or to nursing mothers unless the information to be gained outweighs the potential hazards. Ideally, examinations using radiopharmaceutical drug products, especially those elective in nature of a woman of childbearing capability should be performed during the first few (approximately ten) days following the onset of menses.

Precautions:

General

A thorough knowledge of the normal distribution of intravenously administered Gallium Citrate Ga 67 is essential in order to accurately interpret pathologic studies.

The finding of an abnormal gallium concentration usually implies the existence of underlying pathology, but further diagnostic studies should be done to distinguish benign from malignant lesions. Gallium Citrate Ga 67 is intended for use as an adjunct in the diagnosis of certain neoplasms. Certain pathologic conditions may yield up to 40% false negative gallium studies. Therefore a negative study cannot be definitively interpreted as ruling out the presence of disease.

Lymphocytic lymphoma frequently does not accumulate Gallium Ga 67 sufficiently for unequivocal imaging; and the use of gallium with this histologic type of lymphoma is not recommended at this time.

Gallium Citrate Ga 67, 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. Also, care should be taken to minimize radiation exposure to patients consistent with proper patient management.

Carcinogenesis

No long term animal studies have been performed to evaluate carcinogenic potential.

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 effects on the fetus. Gallium Citrate Ga 67 should be used in pregnant women only when clearly needed.

Nursing Mothers

Gallium Citrate Ga 67 has been found to accumulate in breast milk and should not be used in nursing mothers.

Pediatric Use

Safety and effectiveness in children have not been established.

Adverse Reactions: Severe itching, erythema and rash were observed in one patient of 300 studied.

Dosage and Administration: The recommended adult (70kg) dose of Gallium Citrate Ga 67 is 2-5mCi. Gallium Citrate Ga 67 is intended for intravenous administration only.

Approximately 10% of the administered dose is excreted in the feces during the first week after injection. Daily laxatives and/or enemas are recommended from the day of injection until the final images are obtained in order to cleanse the bowel of radioactive material and minimize the possibility of false positive studies.

Studies indicate the optimal tumor to background concentration of ratios are often obtained about 48 hours post-injection. However, considerable biological variability may occur in individuals, and acceptable images may be obtained as early as 6 hours and as late as 120 hours after injection.

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

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.

How Supplied: Gallium Citrate Ga 67 is supplied sterile and non-pyrogenic for intravenous use. Each ml contains 2mCi of Gallium Ga 67 on the calibration date, as a complex formed from 9ng gallium chloride Ga 67, 2mg of sodium citrate, 6.8mg sodium chloride, and 0.9% benzyl alcohol w/v as preservative. The pH is adjusted to between 4.5-7.5 with hydrochloric acid and/or sodium hydroxide solution.

Vials are available from 3mCi to 18mCi in increments of 3mCi on calibration date.

The contents of the vial are radioactive and adequate shielding and handling precautions must be maintained.

CAUTION: Federal (U.S.A.) law prohibits dispensing without prescription.

NEN **New England Nuclear**
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Los Angeles: 213-321-3311 Miami: 305-592-0702

Canada: NEN Canada Ltd., 2453 46th Avenue, Lachine, Quebec, H7T 3C9, Tel: 514-636-4971, Telex: 05-821808
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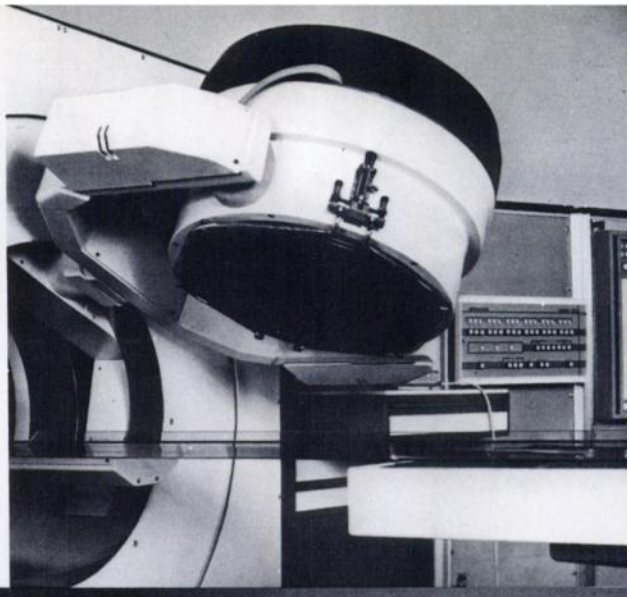
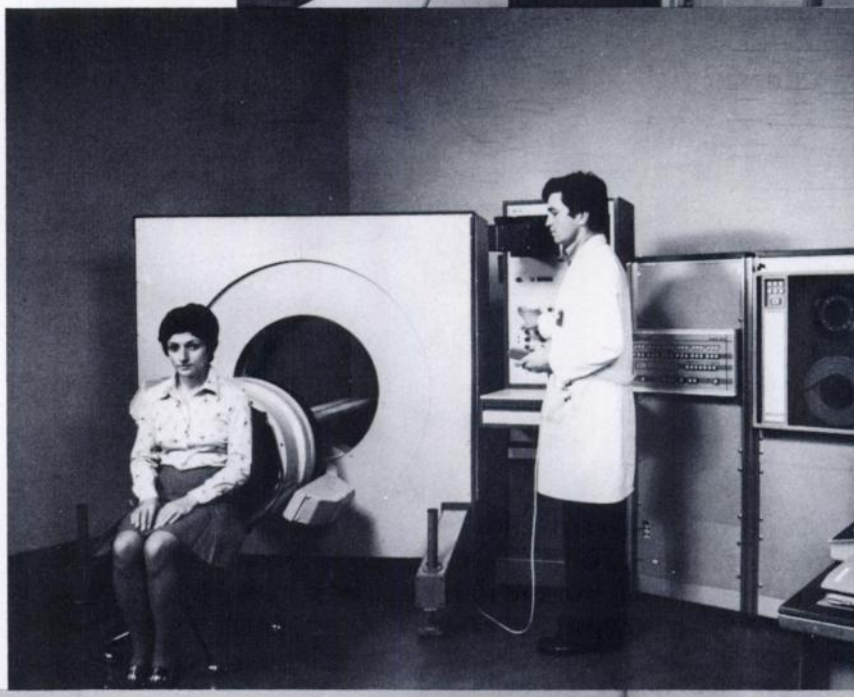
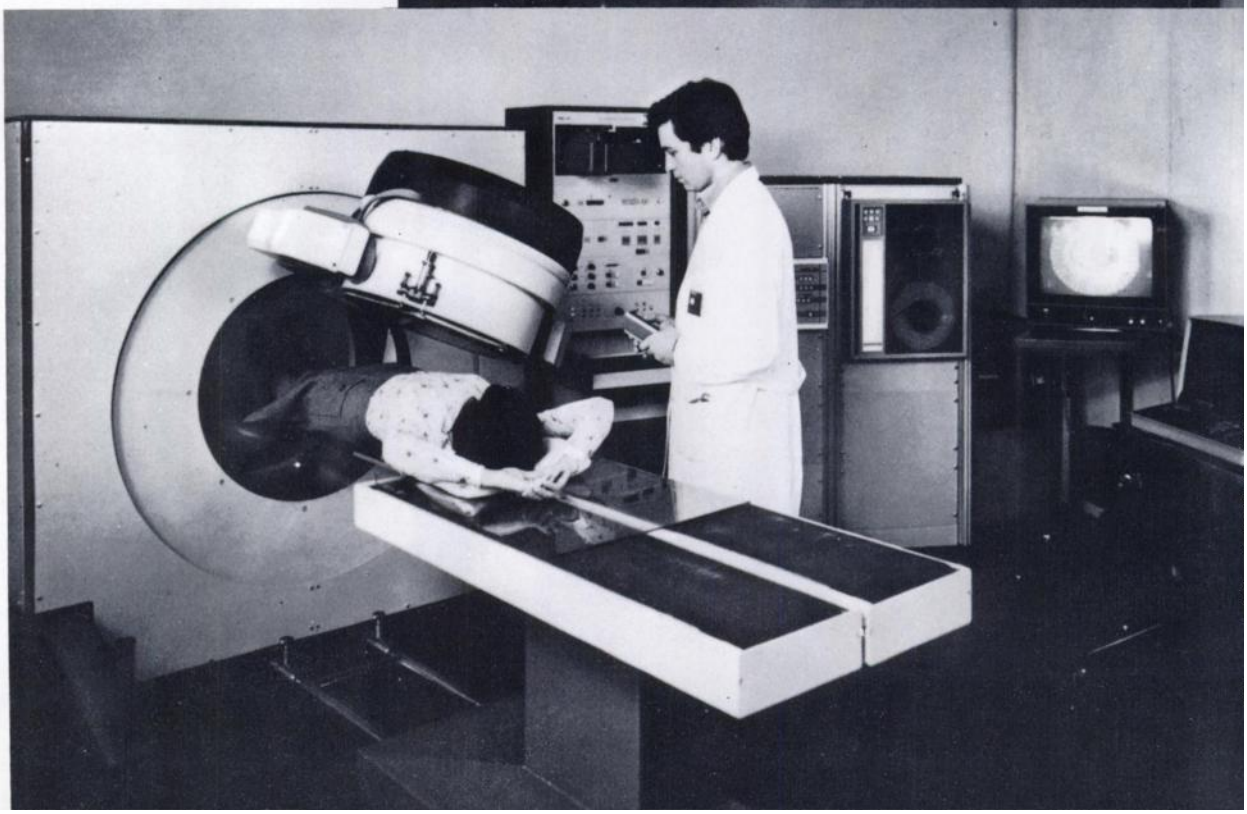


Flexible: computerised tomography is the main goal of the Gamma–CAT.
However, in addition traditional scintigraphy (organs and whole body) and fast dynamic studies can be easily performed with the same system.

Powerful: up to 20 adjacent slices can be investigated at the same time, in the brain as well as the body - a high resolution/large field detector provides for top quality scintigraphic imaging - 32 K/16 bit central processor memory, dual disc and magnetic tape memory plus the best in nuclear medicine dedicated software, allow successful utilisation of the system, especially in fast cardiac studies.



Reliable: traditional SELO ability in mechanical and electronic design plus time proven Gamma Camera detector and processor are the best warranty for long term trouble free operations.



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And most important is the affordable price. Now, most any department can also have our system as a back-up unit to the so-called 'sophisticated' systems. Nearly 400 institutions have understood our adjectives. We will be delighted to mail you our users and price list so you can discover for yourself why it only makes sense to go NISE-FORMAT.™

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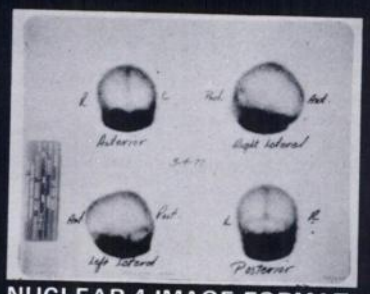

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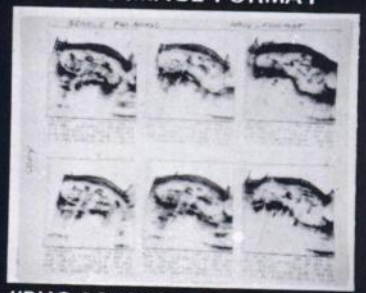

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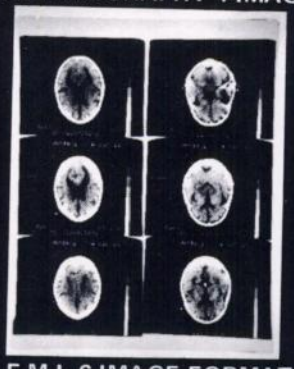

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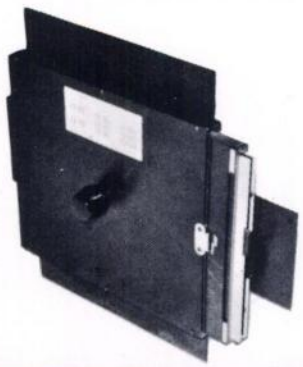

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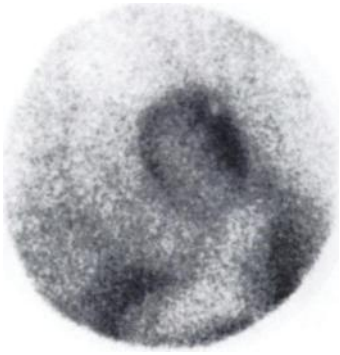
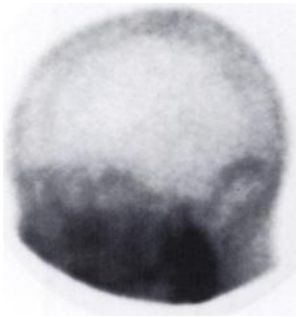
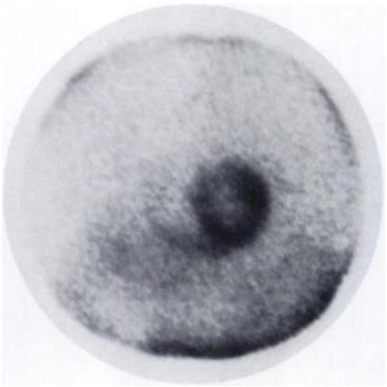


Adult heart LAO view ^{201}Thallium



Adult brain left lateral view ^{99m}Tc DTPA



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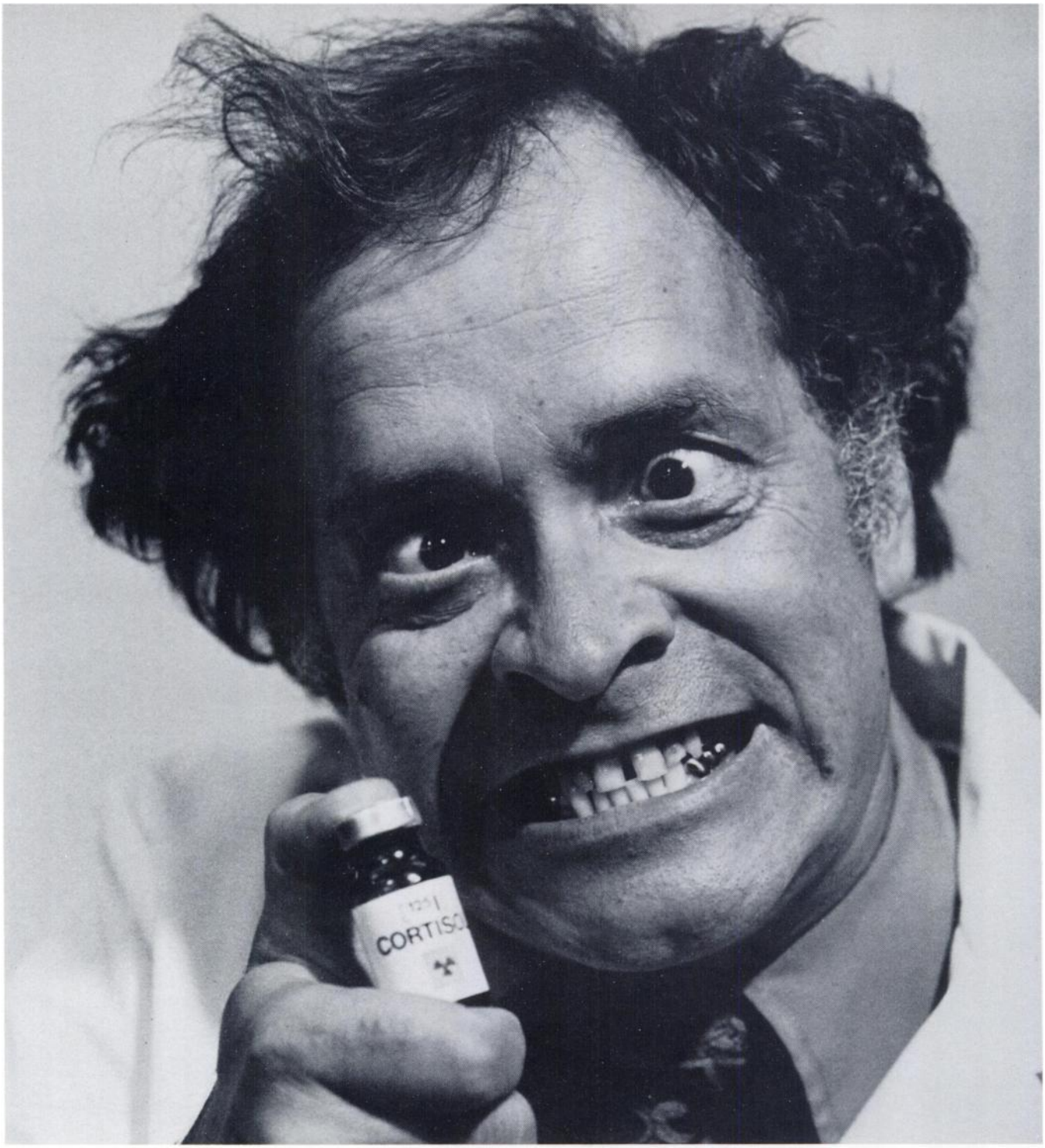

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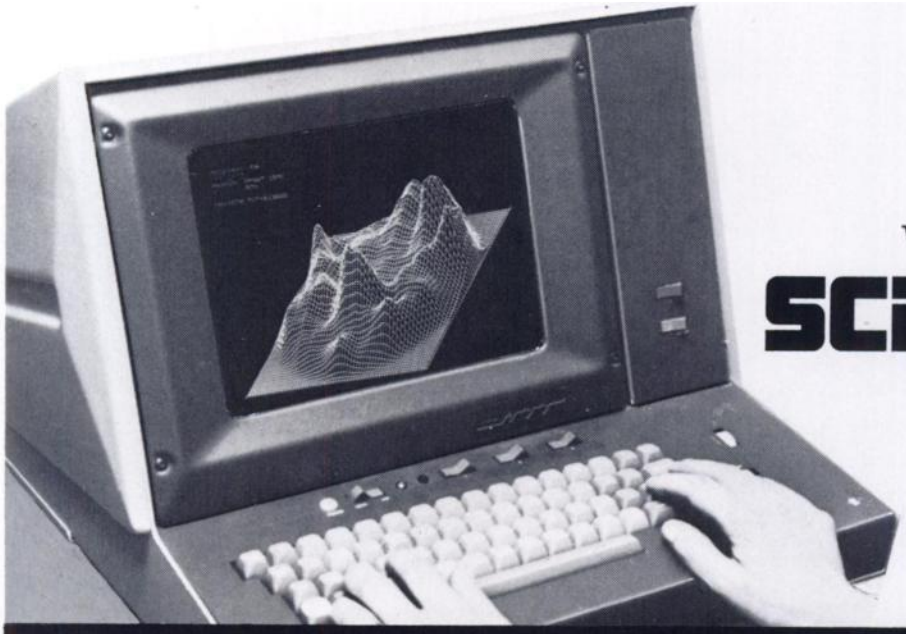

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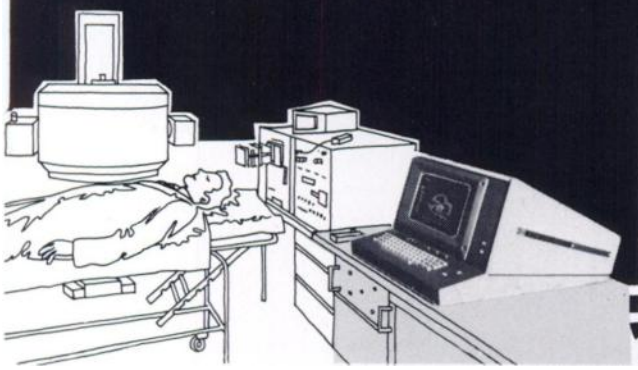

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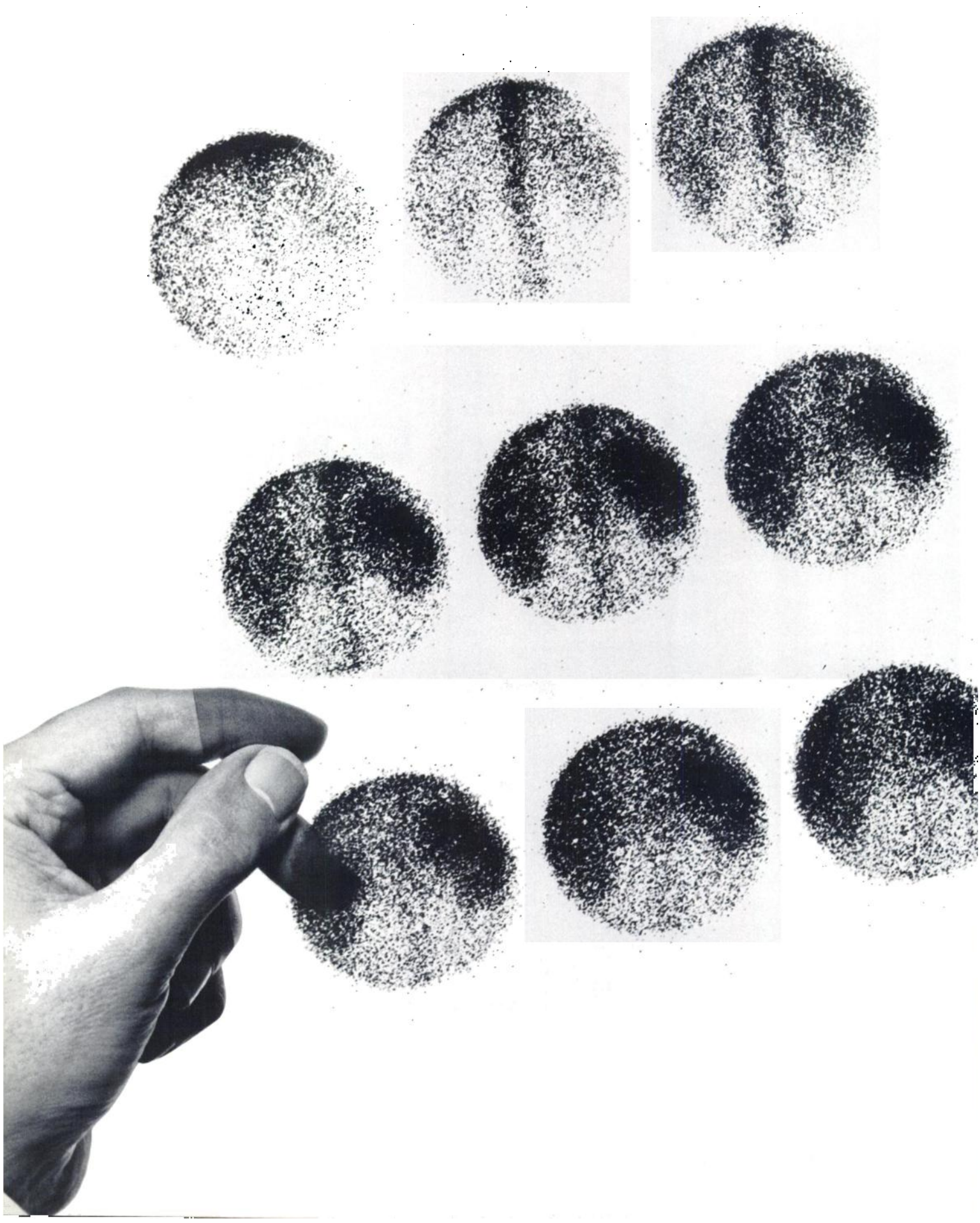

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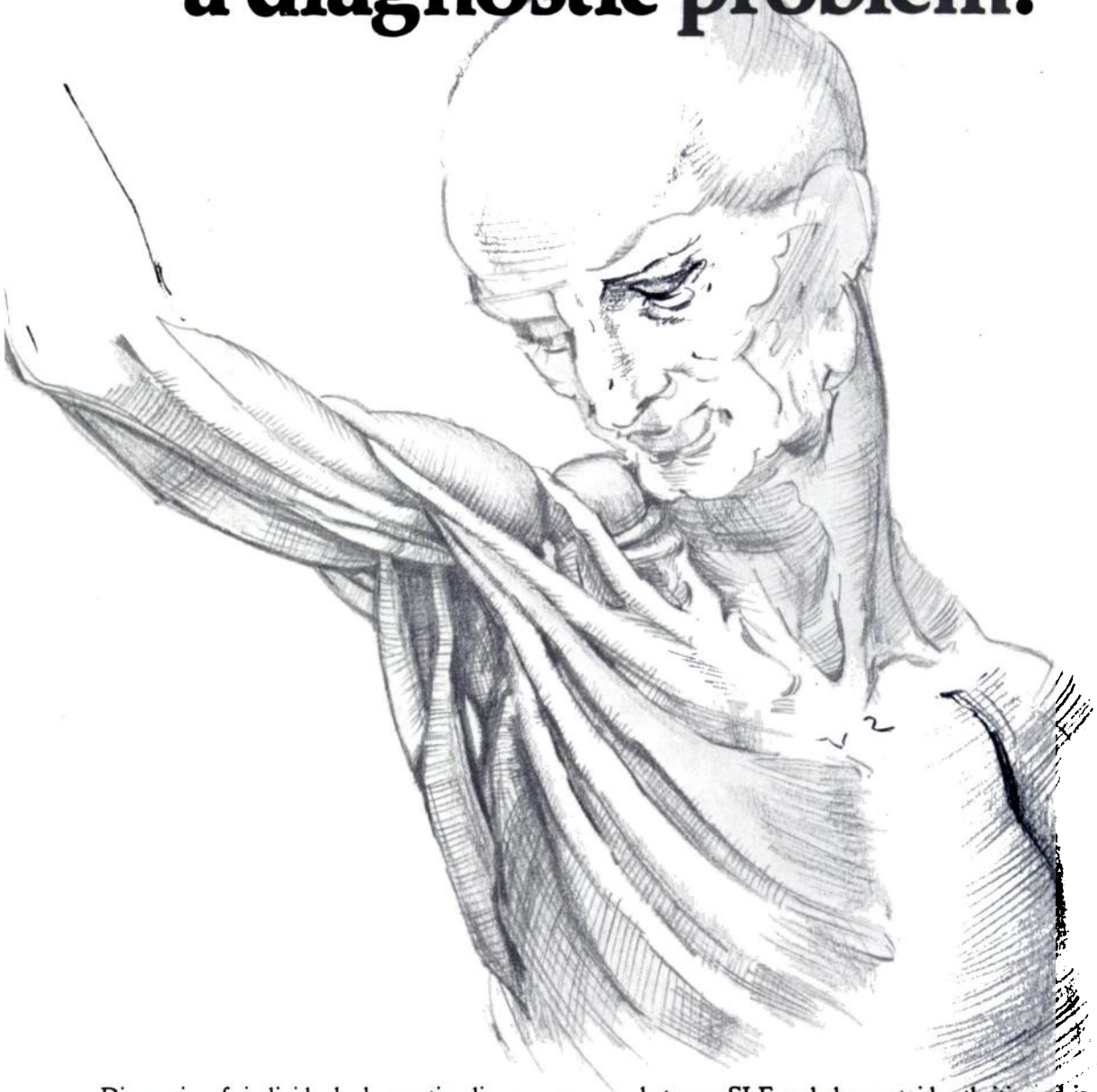

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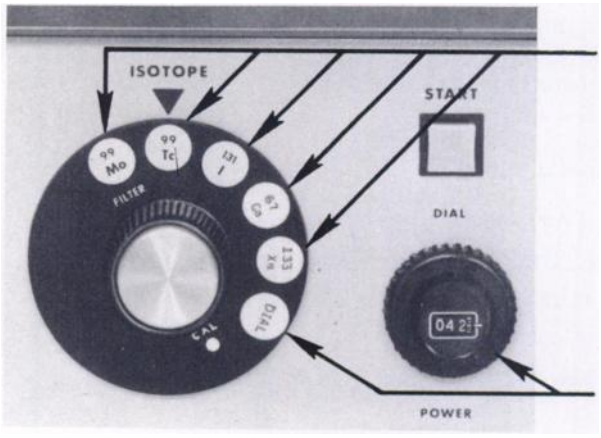

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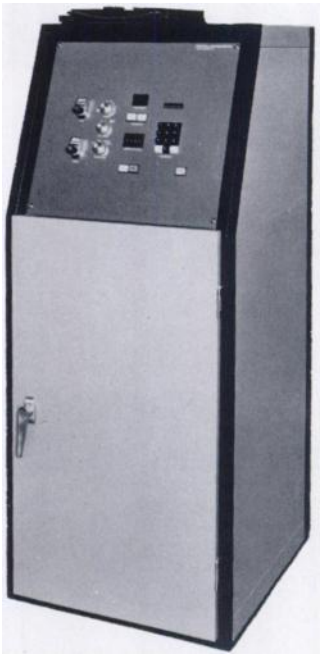

Multi-Imager 1

Multi-Imager 1 employs the CRT of the gamma camera to record static, dynamic, and whole body imaging procedures on transparency format. The highly versatile Multi-Imager 1 offers film size formats of 5x7 and 8x10, yielding superior quality transparency scintiphotos recorded on a wide range of x-ray film processor compatible films. Up to 30 images can be recorded on a single sheet of film in ten different formats. In addition to the usual 1, 4, and 16 image formats, Multi-Imager 1 offers seven further choices to yield the exact diagnostic format required. For example, Multi-Imager 1 offers a 6 image format to allow recording of static studies that require a fifth and sixth view, and a 30 image format for dynamic studies that require more than sixteen frames. For whole body imaging, the 2 image format records side by side AP and PA views on the same sheet of film. Static, dynamic, and different size images can be mixed on the same sheet of film.

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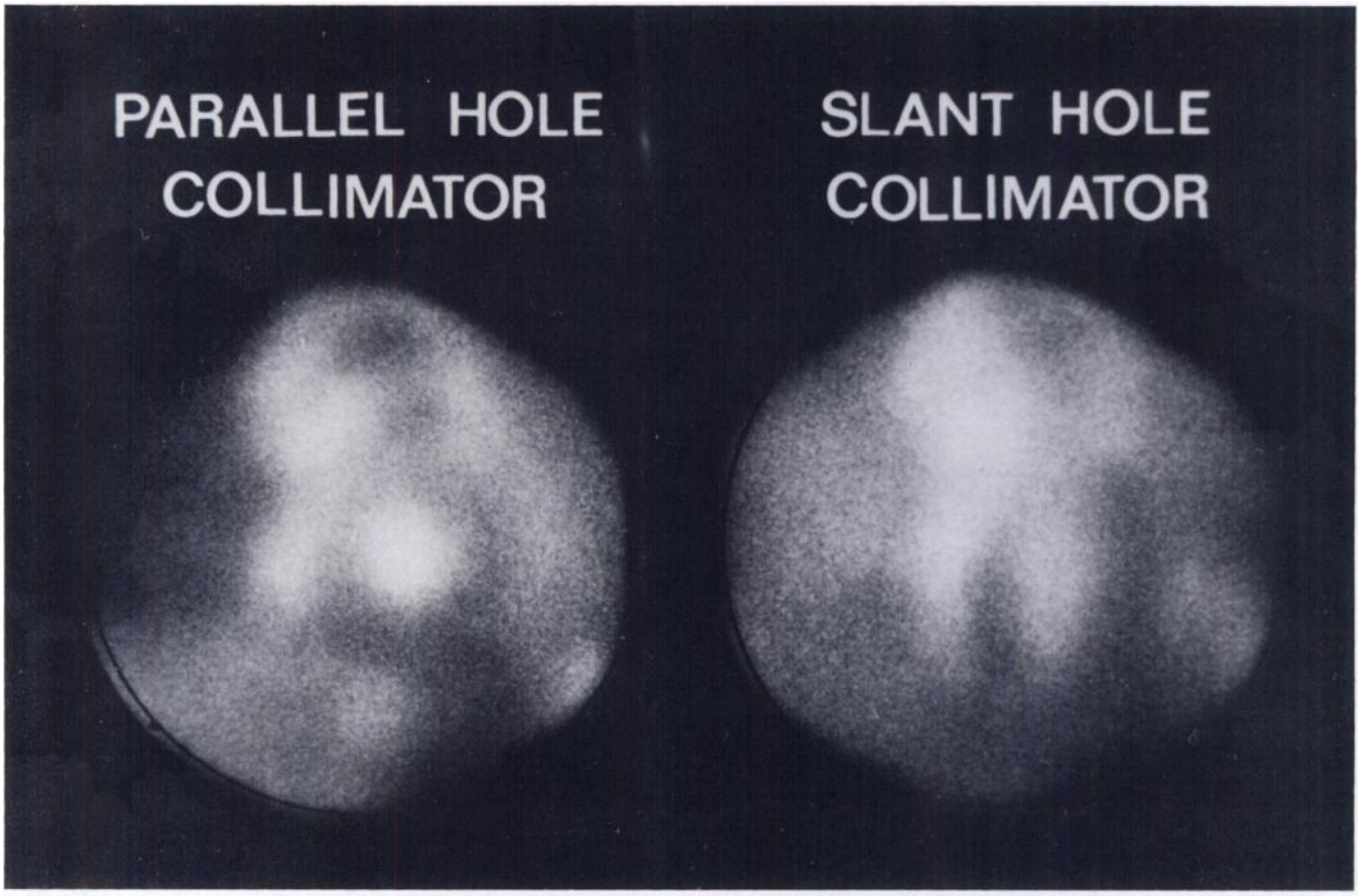

Ungated image of cardiac blood pool in patient with aortic stenosis and left ventricular hypertrophy. Both straight-bore, parallel-hole collimator and straight-bore, 30° slant-hole collimator were positioned in LAO projection. In both images camera head was positioned flat against chest. Due to slope of chest this provided about a 15° caudal angulation.

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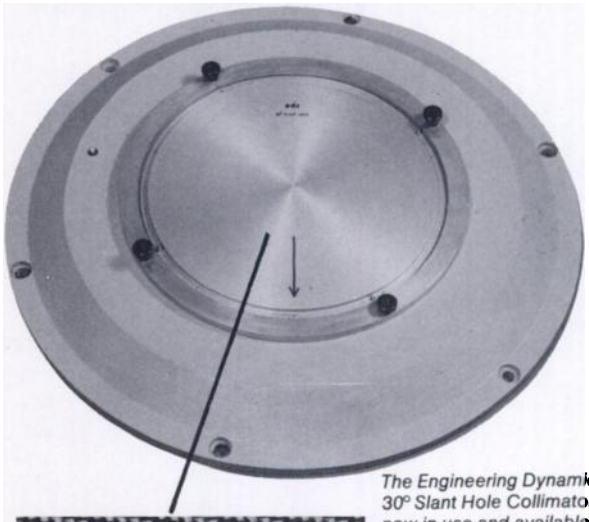
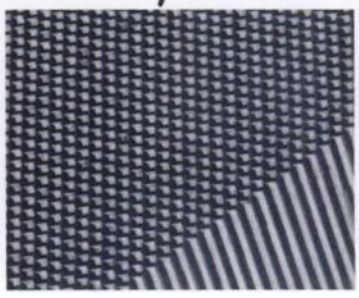


The Engineering Dynamics 30° Slant Hole Collimator—now in use and available for delivery. Other angles are available for special diagnostic procedures.



Cross-section view shows parallel square holes of collimator aligned at a 30° angle to crystal face for closer patient positioning, improved cardiac imaging.

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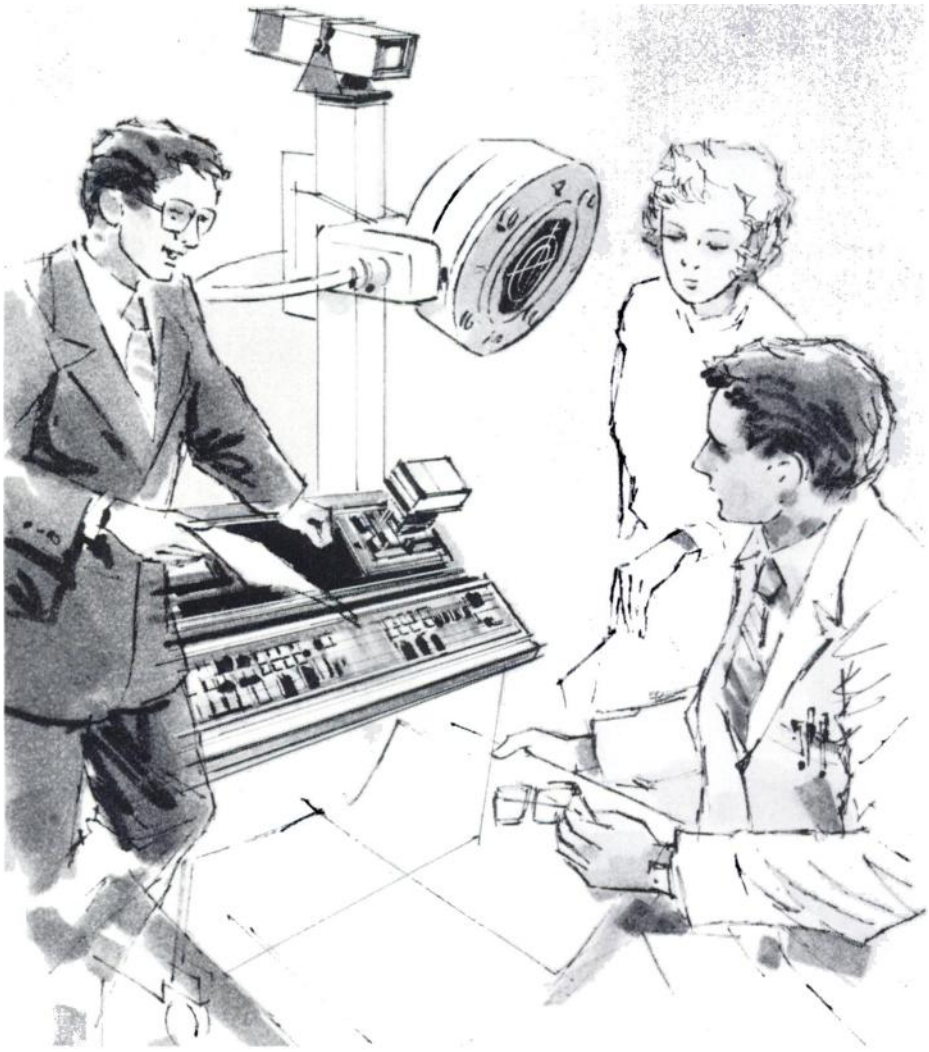

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- Radiotracers receptors
- Molecular properties of radiotracer receptors
- Binding forces in radiotracer-receptor systems
- Characterization of radiotracer-receptor interactions

BIOLOGICAL TRANSPORT OF RADIOTRACERS
- Membranes: composition, structure and function
- Thermodynamics and kinetics in the transport of radiotracers
- Mechanisms and energy involved in the transport of radiotracers

STRATEGY OF RADIOTRACERS DESIGN
- Linear-free, energy related models "novo" model
- Classical design concepts

MECHANISMS OF LOCALIZATION
- Compartmental localizations
- Cell function as a mechanism of localization: muscle, kidneys, hepatocytes, etc.

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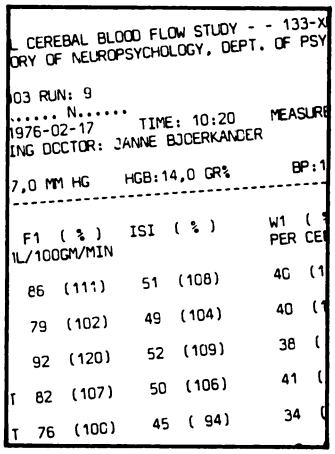
L CEREBAL BLOOD FLOW STUDY - - 133-X
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ING DOCTOR: JANNE BJOERKANDER

7,0 MM HG HGB:14,0 GR% BP:1

F1 (%) 1L/100GM/MIN	ISI (%)	W1 (PER CE
86 (111)	51 (108)	40 (1
79 (102)	49 (104)	40 (1
92 (120)	52 (109)	38 (
T 82 (107)	50 (106)	41 (
T 76 (100)	45 (94)	34 (

The ^{133}Xenon intracarotid injection method (Lassen, Ingvar et al.) provides higher resolution, increases accuracy on white flow matter measurements, and is normally combined with a carotid angiogram.

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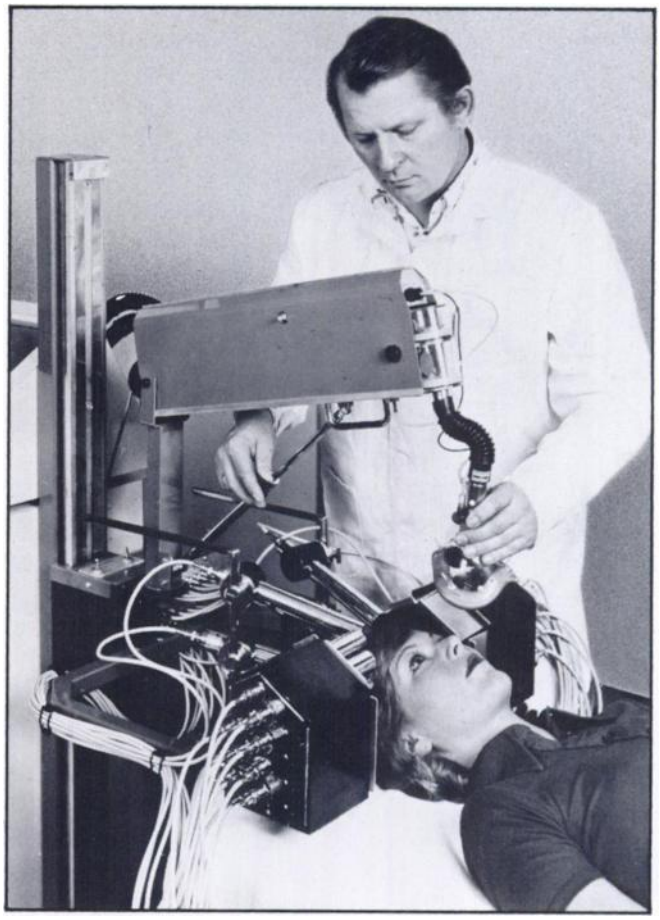

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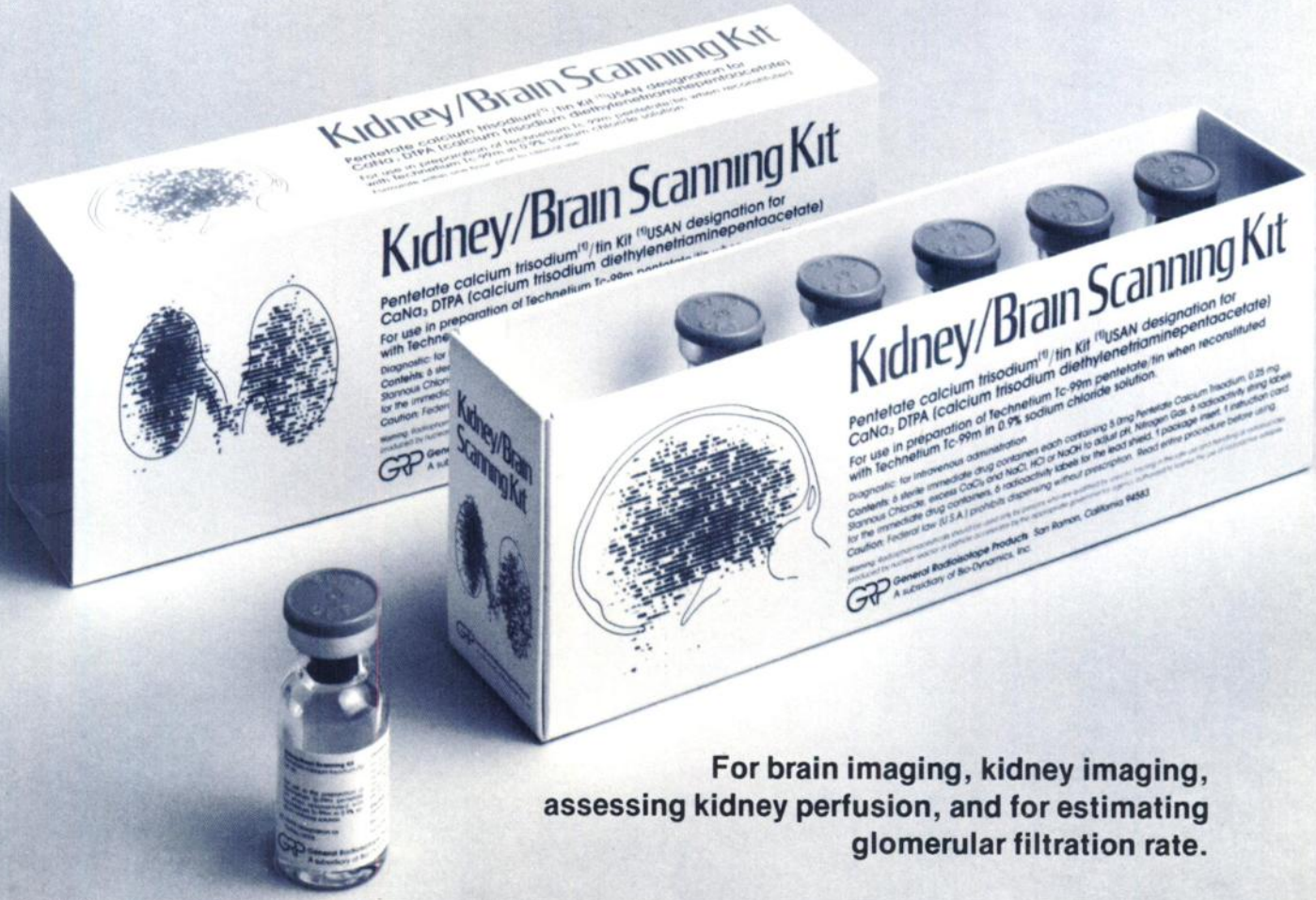

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June
1977

Technetium Tc 99m DTPA Kit [Chelate] Diagnostic

Description

Each vial of the kit contains a lyophilized mixture of 5 mg of sterile, pyrogen-free Pentetate Calcium Trisodium and 0.25 mg Stannous Chloride. Sodium hydroxide and/or hydrochloric acid may have been used to adjust the pH.

When sterile, pyrogen-free Sodium Pertechnetate Tc 99m is added to the vial, a chelate, Technetium Tc 99m Pentetate is formed. The precise structure of the chelate is unknown at this time. Administration is by intravenous injection for diagnostic use.

Physical Characteristics

Technetium Tc 99m decays by isomeric transition with a physical half-life of 6.03 hours. Photons that are useful for detection and imaging studies are listed in Table 1.

Table I. Principal Radiation Emission Data

Radiation	Mean % Disintegration	Mean Energy [keV]
Gamma-2	87.9	140.5

External Radiation

The specific gamma ray constant for Tc 99m is 0.8 R/mCi-hr at 1 cm. The first half value layer is 0.2 mm of Pb. To facilitate control of the radiation exposure from millicurie amounts of this radionuclide, the use of a 2.7 mm thickness of Pb will attenuate the radiation emitted by a factor of 1,000.

Table II. Radiation Attenuation by Lead Shielding

Shield Thickness [Pb] mm	Coefficient of Attenuation
0.2	0.5
0.95	10^{-1}
1.8	10^{-2}
2.7	10^{-3}
3.6	10^{-4}
4.5	10^{-5}

Dillman, L.T., and Von der Lage, F.C. Radionuclide Decay Schemes and Nuclear Parameters for Use in Radiation-Dose Estimation, MIRD pamphlet No. 10, p.62, 1975.

To correct for physical decay of this radionuclide, the fractions that remain at selected intervals after the time of calibration are shown in Table III.

Table III. Physical Decay Chart: Tc 99m, half-life 6.03 hours

Hours	Fraction Remaining	Hours	Fraction Remaining
−5	1.777	5	0.563
−4	1.584	6	0.502
−3	1.412	7	0.447
−2	1.259	8	0.399
−1	1.122	9	0.355
0*	1.000	10	0.317
1	0.891	11	0.282
2	0.795	12	0.252
3	0.708	18	0.126
4	0.631	24	0.063

*Calibration Time

Clinical Pharmacology

Following its intravenous administration Technetium Tc 99m Pentetate rapidly distributes itself throughout the extracellular fluid space from where it is (promptly) cleared from the body by glomerular filtration. There should be little or no binding of the chelate by the renal parenchyma. A variable percentage of the Technetium Tc 99m Pentetate binds to serum proteins; this ranges from 3.7% following the single injection to approximately 10% if the material is continuously infused. Although the chelate gives useful informtion on the glomerular filtration rate, the variable percent which is protein bound leads to a measured glomerular filtration rate which is lower than the glomerular filtration rate as determined by inulin clearances.

Technetium Tc 99m Pentetate tends to accumulate in intracranial lesions with excessive neovascularity or an altered blood-brain barrier. The chelate does not accumulate in the choroid plexus.

Since Technetium Tc 99m Pentetate is excreted by glomerular filtration, the images of the kidneys obtained in the first few minutes after injection represent the vascular pool within the kidney. Subsequent images of the kidneys represent radioactivity which is in the urine of both the collecting system and the renal pelvis.

Indications and Usage

Technetium Tc 99m Pentetate may be used to perform kidney imaging, brain imaging, to assess renal perfusion, and to estimate glomerular filtration rate.

Contraindications

None known.

Warnings

Technetium Tc 99m Pentetate should not be administered to children or to patients who are pregnant, or to nursing mothers, unless the benefits to be gained outweigh the potential hazards.

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

Precautions

Technetium Tc 99m Pentetate 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. Also, care should be taken to minimize radiation exposure to patients 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.

Technetium Tc 99m Pentetate should be formulated within one (1) hour prior to clinical use.

Adequate reproductive 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 effects on the fetus. Technetium Tc 99m Pentetate should be used in pregnant women only when clearly needed.

It is not known whether this drug is excreted in human milk. As a general rule nursing should not be undertaken while a patient is on the drug since many drugs are excreted in human milk.

Safety and effectiveness in children have not been established.

Adverse Reactions

No adverse reactions specifically attributable to the use of Technetium Tc 99m Pentetate have been reported.

Dosage and Administration

The suggested dose range for I.V. administration to be employed in the average patient (70 kg) is:

Kidney imaging and glomerular filtration rate estimation 3 to 5 mCi.

Brain imaging or renal perfusion: 10 to 20 mCi.

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

Radiopharmaceuticals should be used only by physicians who are qualified by training and experienced 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.

The components of the Technetium Tc 99m Pentetate Kit (Chelate) 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 Pentetate is prepared by simply adding 1 to 10 ml of Sodium Pertechnetate Tc 99m solution to the vial and swirling for about one minute. Shielding should be utilized when preparing the Tc 99m Pentetate.

Radiation Dosimetry

The estimated absorbed radiation doses[1] to an average patient (70 kg) from an intravenous injection of a maximum dose of 20 millicuries of Tc 99m Pentetate are shown in Table IV.

Table IV. Radiation Doses

Tissue	Absorbed Radiation Dose	[rads/20 mCi]
Kidneys		1.8
Whole Body		0.12
Bladder Wall	2-hr. void	2.3
	4.8-hr. void	5.4
Testes	2-hr. void	0.15
	4.8-hr. void	0.21
Ovaries	2-hr. void	0.22
	4.8-hr. void	0.31

[1]Method of Calculation: A Schema for Absorbed-Dose Calculations for Biologically Distributed Radionuclides, Supplement No. 1, MIRD Pamphlet No. 1, p. 7, 1968.

How Supplied

A. 6 sterile immediate drug containers each containing: (Lyophilized)
- —5.0 mg $CaNa_3DTPA$
- —0.25 mg stannous chloride
- —Excess $CaCl_2$ and NaCl
- —NaOH and/or HCl to adjust pH
- —Nitrogen gas

B. 6 radioactivity string labels for the immediate drug container.

C. 6 radioactivity labels for the lead shield.

D. 1 package insert.

E. 1 instruction card.

Preparation

DO NOT USE IF THERE IS A VACUUM IN THE IMMEDIATE DRUG CONTAINER OR IF AIR IS INJECTED INTO THE CONTAINER WHEN THE DOSE IS WITHDRAWN. FORMULATE WITHIN ONE HOUR PRIOR TO CLINICAL USE.

1. Fix the string radioactivity label to the neck of the immediate drug container.
2. Remove the flip-cap from the container and place the container in the lead shield.
3. Use a germicide to swab the septum of the sterile reaction container.
4. Aseptically inject into the immediate drug container 1 to 10 ml of sterile non-pyrogenic 0.9% Sodium Chloride solution containing radioactive Sodium Pertechnetate Tc-99m and withdraw an equal volume of nitrogen gas. Do not allow air to enter container. Do not use Technetium Tc-99m solution if it contains foreign matter.
5. Dissolve and mix well by gently shaking the container in the shield for 30 seconds to one minute.
6. Measure and record the Tc-99m radioactivity and calibration data on the string radioactivity label and on the large radioactivity label. Enter the time of expiration in the space provided and fix the label to the shield.
7. Maintain adequate shielding at all times.

This reagent kit is approved by the California Department of Health for distribution to persons licensed pursuant to Sections 35.14 and 35.100, Group III of 10 CFR 35, or under equivalent licenses of Agreement States.

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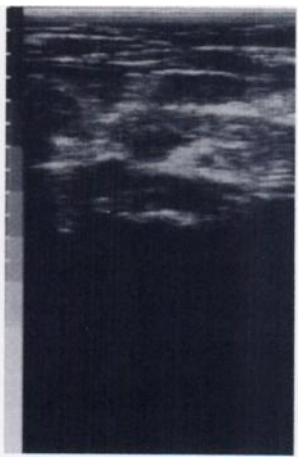

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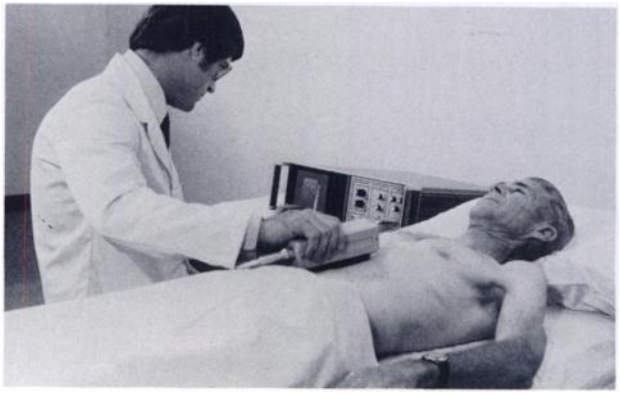

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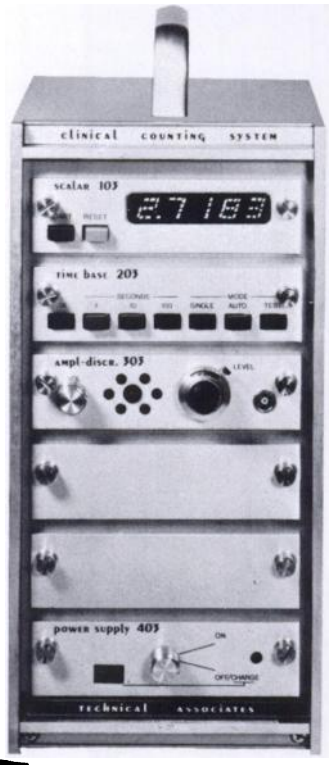

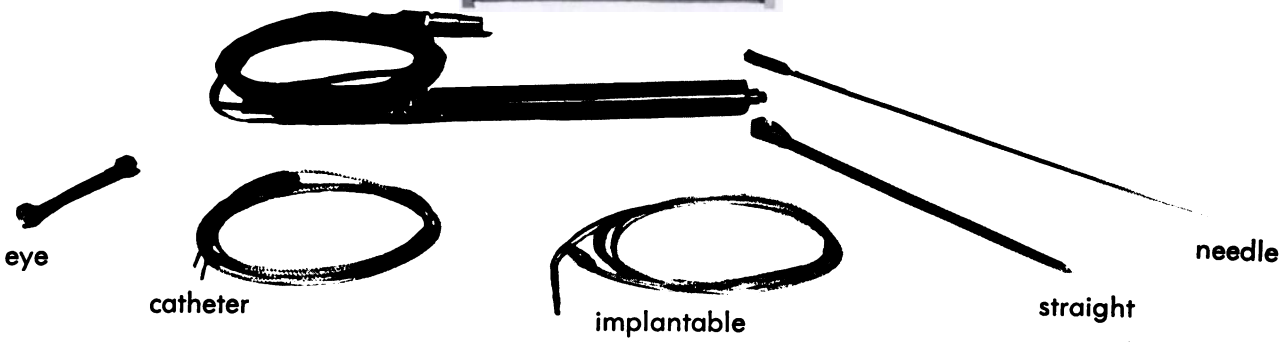

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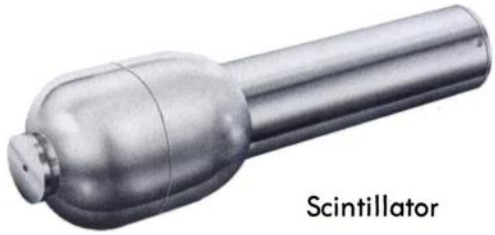

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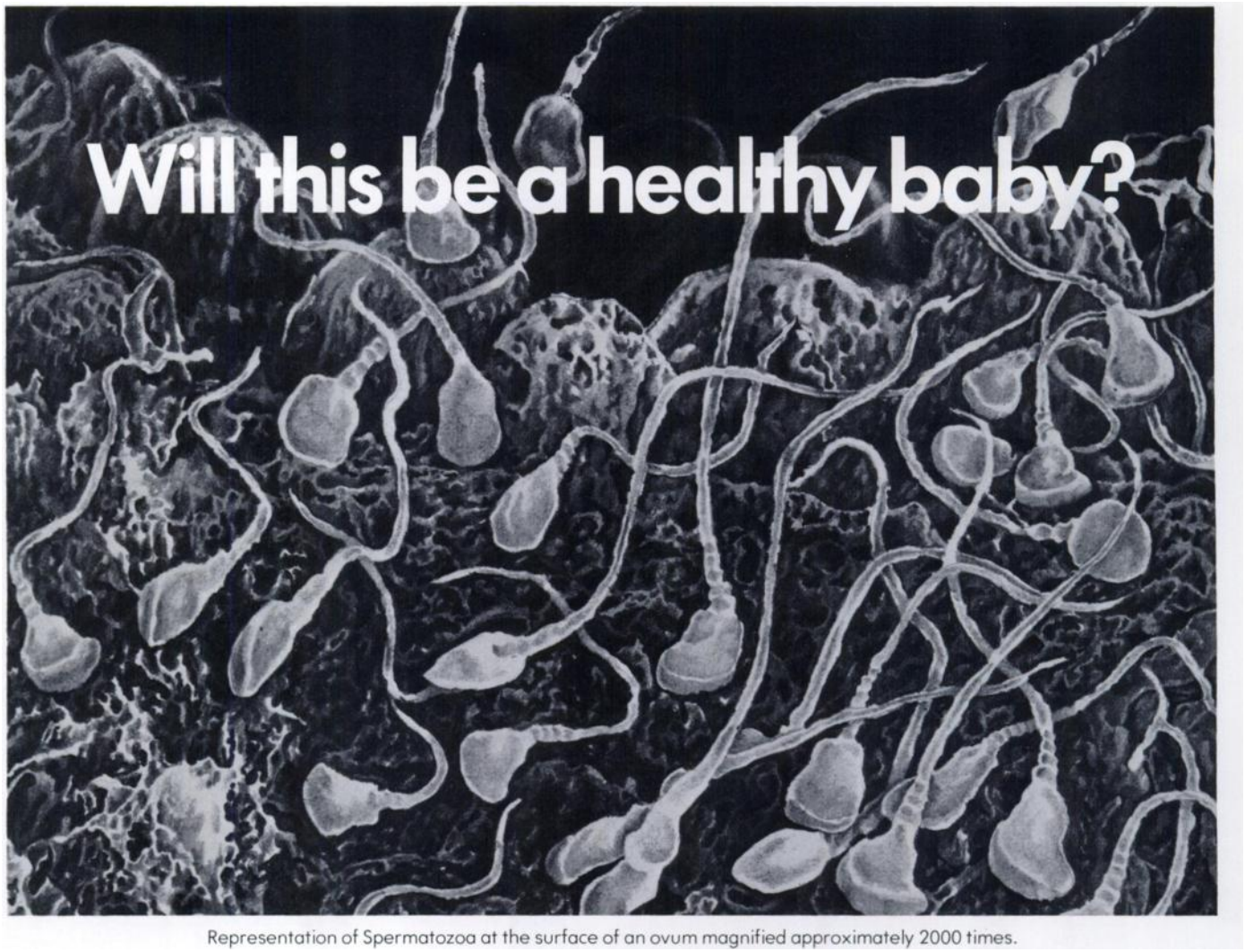

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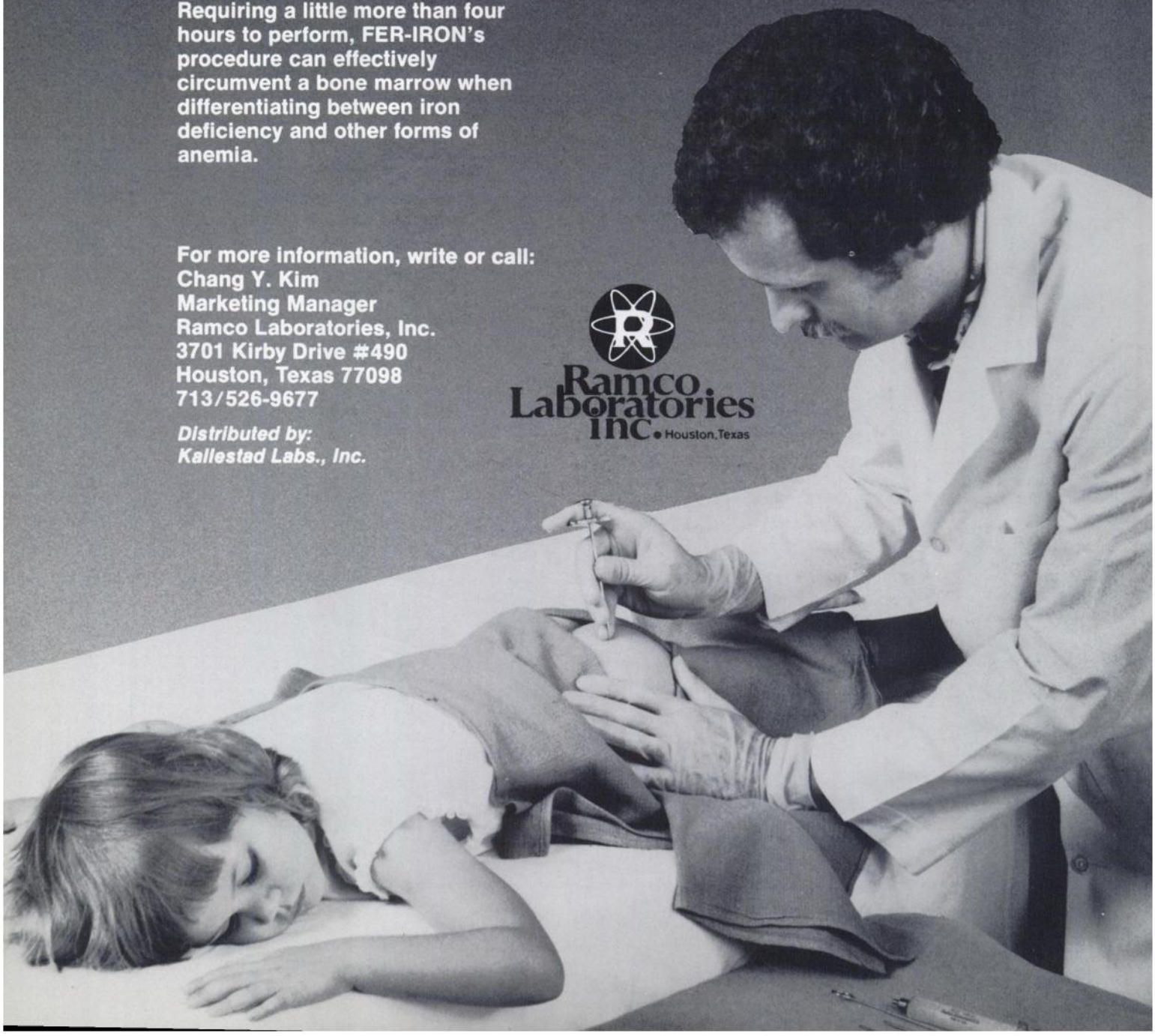

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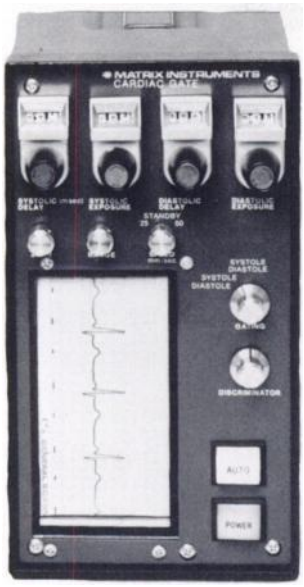

Cardiac Gate is designed to synchronize the cardiac image exposure with predetermined phases of the cardiac cycle.

The Cardiac Gate has two modes of operation: manual and automatic. In the manual mode, delay and exposure time parameters are set manually, using the R wave of the electrocardiogram as a reference. In the automatic mode, microprocessor circuitry automatically tracks the cardiac cycle and computes the position of end-systole and end-diastole. In the automatic mode, end-systole and end-diastole exposures are made without any calibration settings.

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The Cardiac Gate includes a complete electrocardiograph module. The built in heated stylus strip chart recorder records both the ECG trace and the gating intervals.

The Cardiac Gate provides both ECG and gating outputs for computer interface.

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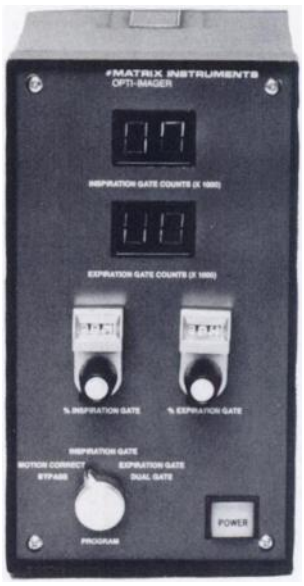

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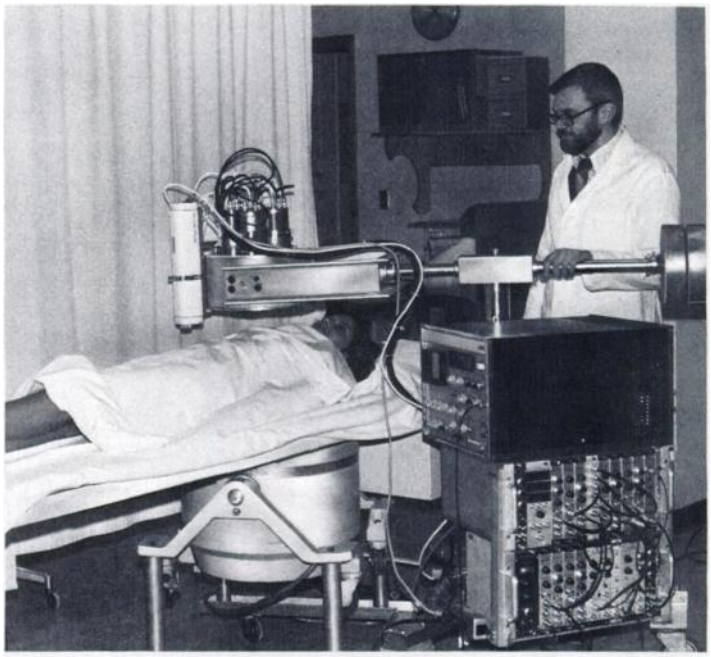

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The Ventil-Con controlled gas delivery system is used for patient administration of ^{133}Xe. You may administer the ^{133}Xe as a bolus or homogenous mixture with air and oxygen to perform the single breath, equilibrium and washout phases of lung ventilation studies.

The FINISH Xenon Trap

The Radx Xenon Trap is the only activated charcoal trap with a built-in ^{133}Xe saturation detector/alarm. When the charcoal reaches its saturation point, an audio/visual alarm is activated indicating it's time to replace the 6-cylinder cartridge pack. Other features are a large desiccant jar for moisture removal, a "flame isolated" pumping system and an optional expandable interface (pictured).

Call Radx, let us analyze and compare your current cost with our cost.

RADX P. O. Box 19164, Houston, Texas 77024 • (713) 468-9628

WHERE WOULD THE COMPUTER HAVE BEEN, WITHOUT A COLLEGE EDUCATION?

Still an abacus. Probably.

After all, man's first computer was good enough for several thousand years. Till a bunch of college men started experimenting with a new concept called cybernetics.

And suddenly, you have a computer. A billion-dollar business and still counting.

Radio. Television. Plastics. Petrochemicals. The new rice and the new wheat. Hunger-fighters that may save the world from famine.

All products of colleges and college-trained minds.

You don't want the flow of college-bred new ideas, improvements, inventions to stop. Ever. Not if you're a *good* businessman.

So perhaps you'd better take a good hard look at how much *your* company is giving to higher education. Because inflation has hit colleges and universities even harder than most.

Freedom to experiment is the first casualty of tight budgets.

For the sake of the future, "Give to the college of your choice. Now." Who knows what new billion-dollar business of tomorrow is germinating on some college campus today.

CFAE Council for Financial Aid to Education, Inc.
680 Fifth Avenue, New York, N.Y. 10019

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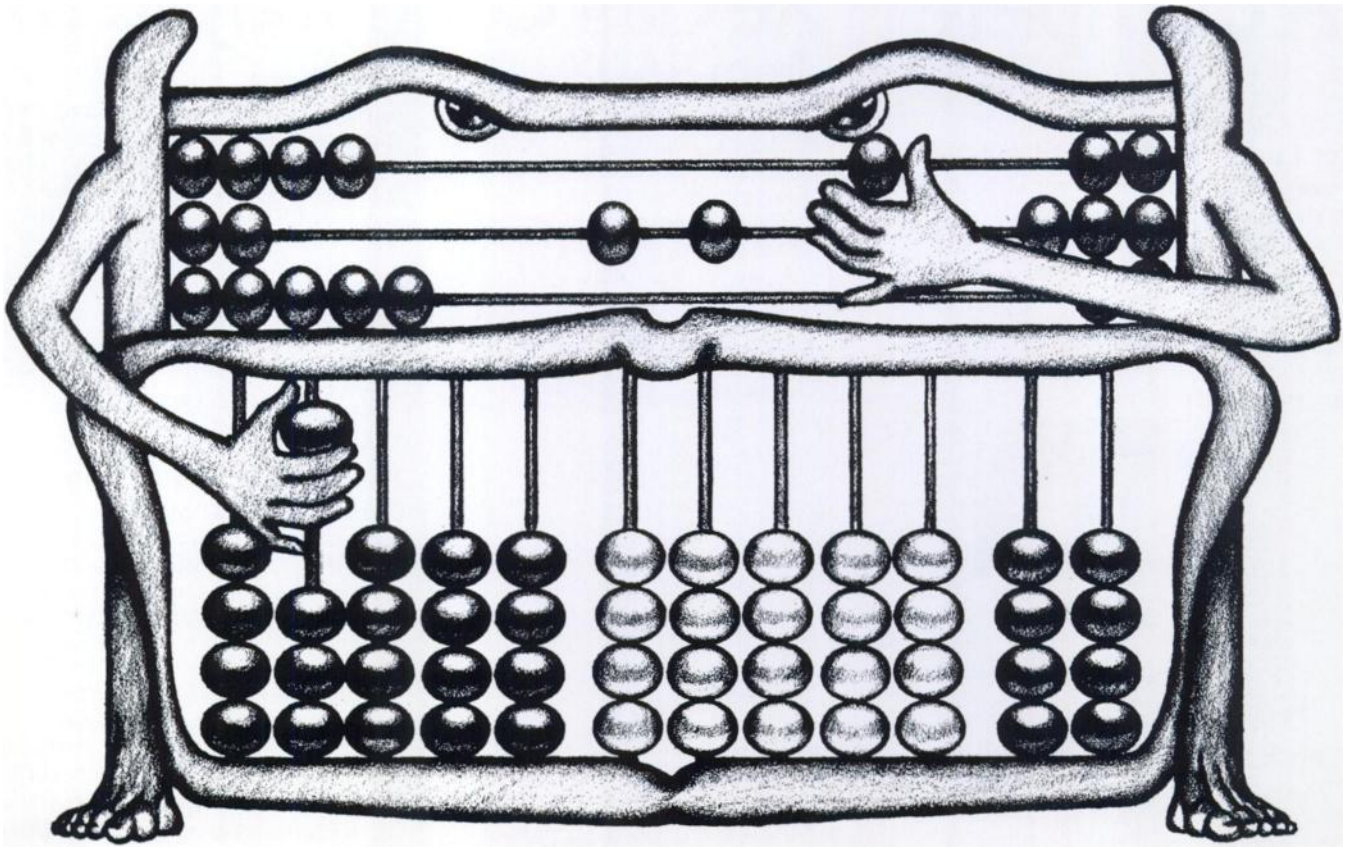
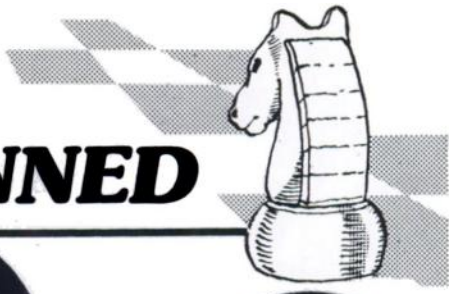
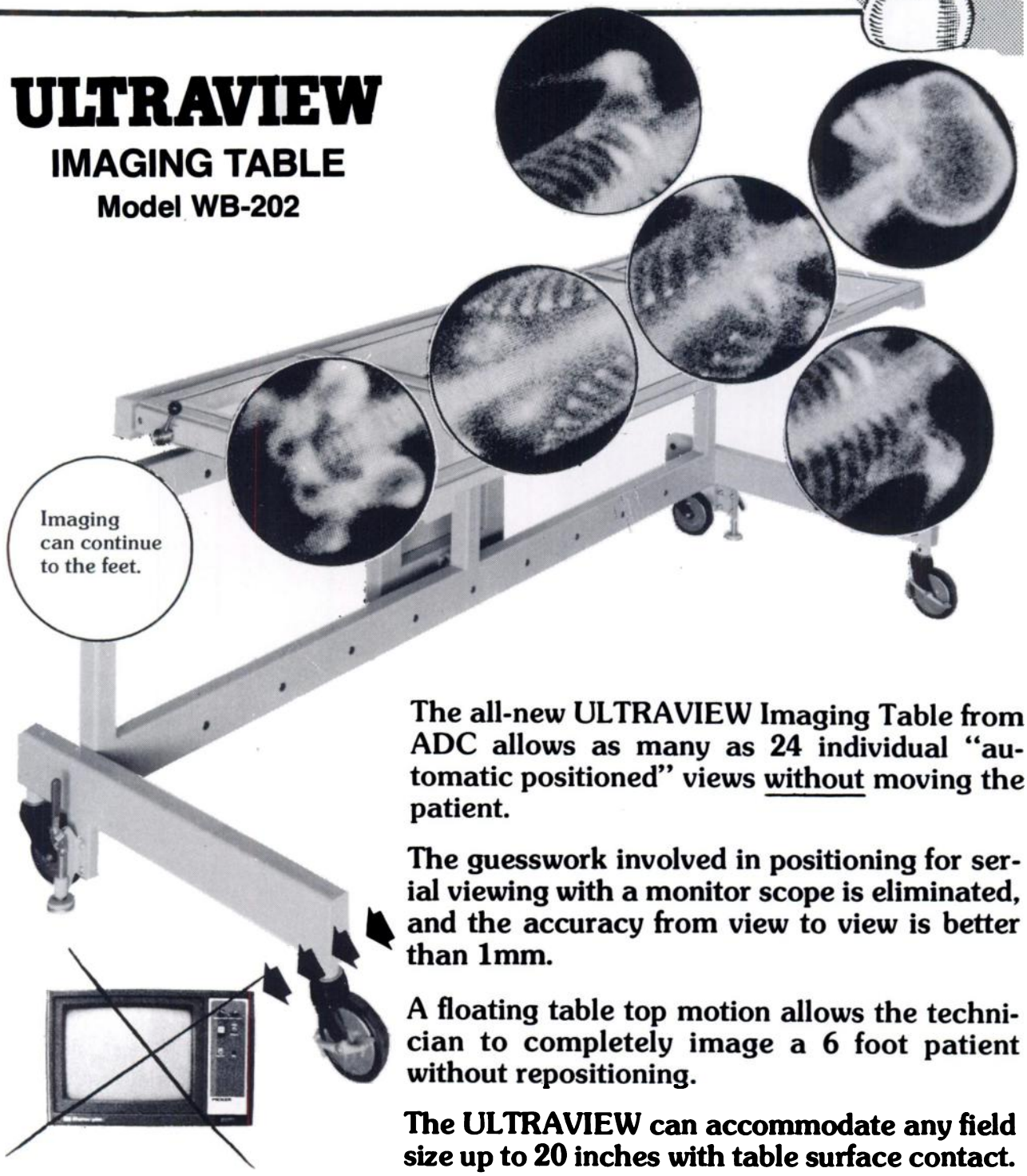


Like playing chess!
EVERY MOVE IS PLANNED



ULTRAVIEW
IMAGING TABLE
Model WB-202



The all-new ULTRAVIEW Imaging Table from ADC allows as many as 24 individual "automatic positioned" views without moving the patient.

The guesswork involved in positioning for serial viewing with a monitor scope is eliminated, and the accuracy from view to view is better than 1mm.

A floating table top motion allows the technician to completely image a 6 foot patient without repositioning.

The ULTRAVIEW can accommodate any field size up to 20 inches with table surface contact.

For complete information, write or call ADC

ATOMIC DEVELOPMENT CORP. •
7 FAIRCHILD COURT, PLAINVIEW, N.Y. 11803
(516) 433-8010

NEW... automatic

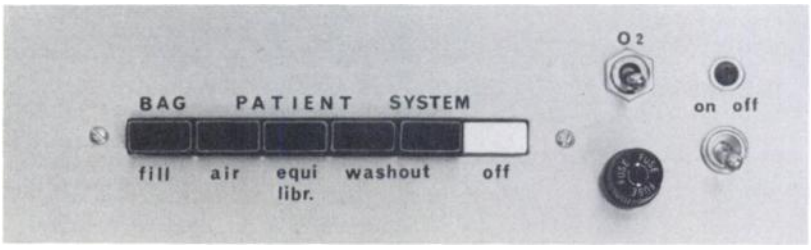
XDS (Xenon Delivery System)

For the busy department that demands operating ease, speed and efficiency in ventilation and perfusion studies using any radioactive xenon

- Push-button control.
- All functions facilitated by two internal blowers.
- Resistance-free patient breathing.
- Uses 20-liter breathing bags in fully-shielded chamber.
- Accepts any radioactive xenon... ^{133}Xe, ^{127}Xe, ^{125}Xe.

XDS makes lung function studies easier for both the patient and the technologist. With "up-front" push-button controls and two internal blowers doing the work, the patient enjoys resistance-free breathing; the technologist has full control of each programmed function at his fingertips. Studies are fast, efficient and effortless.

XDS— the system with the versatility and performance features of more-expensive systems.

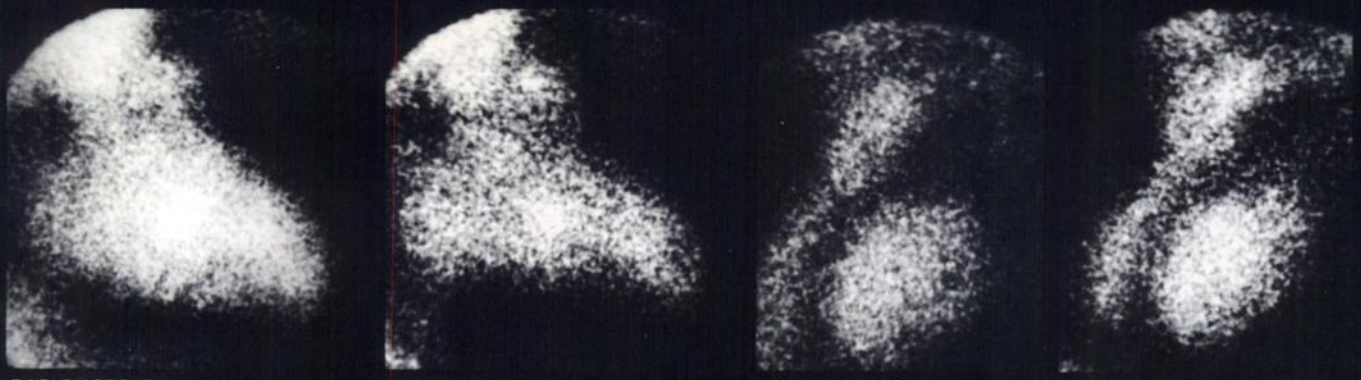


Control Panel
Each programmed function is controlled by two in-system blowers which are independent of the patient's breathing efforts. From "Fill" to "System Washout" the blowers automatically balance the breathing circuits, providing resistance-free patient breathing and complete system clearance.

For full details,
write for Bulletin 217-H

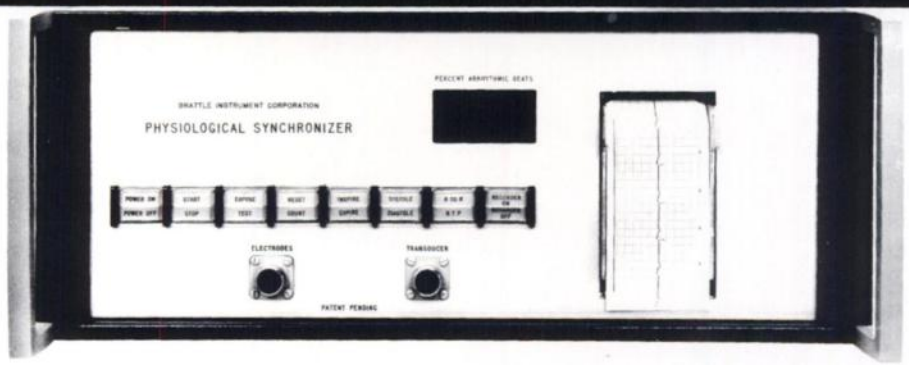
NUCLEAR ASSOCIATES, INC.
Subsidiary of
RADIATION-MEDICAL PRODUCTS CORP.
100 VOICE ROAD • CARLE PLACE, N.Y. 11514 • (516) 741-6360

Help your cardiologist study heart kinetics non-invasively with Brattle-gated scintiphotos.



RAO, DIASTOLE | RAO, SYSTOLE | LAO, DIASTOLE | LAO, SYSTOLE

The RAO view shows akinesis of the lower antero-lateral wall and apex; and contraction of the inferior wall and high up the antero-lateral wall. The LAO view shows good contraction posteriorly and akinesis of the septal aspect of the chamber. Patient was injected IV with 20mCi of ^{99m}Tc-labelled Human Serum Albumin. The agent was prepared using the New England Nuclear Electrolysis Kit for labelling HSA. Write or call for a portfolio of Brattle-gated lung, liver and heart studies.



No knobs, no meters, no errors
The spartan panel above tells the second-best part of our story. If you want to photograph peak systole, press the SYSTOLE button. If, say, you want systole only at full expiration, press the EXPIRATION button as well. If only breathing is relevant, don't press the heart button.

The Brattle is connected to the patient and to your gamma (or x-ray or ultrasonic) camera. Whenever the patient is in the selected phase, both the scope and the scaler on your gamma camera are gated ON, and film is exposed. Otherwise, they are OFF.

Brattles lock onto patients—and stay locked on
It doesn't matter if the patient's heart rate and breathing depth change while he's under the collimator because we stay right with him. Brattles contain an ECG to track heart, a plethysmograph to track respiration, and a tiny computer to deduce systole and diastole times from the heart signal. And because it's all built in, your operator need not be a physiologist.

We don't cover our tracks—we print them
The panel lights flash whenever the patient reaches the selected phases; and pushing the RECORDER-ON button gets you an ECG tracing marked with breathing and camera-on times. You can verify function before, during and after exposure.

A single pair of axillary electrodes captures both heart and breath
It's easy. And we supply disposable, pre-filled electrodes.

Some Brattles have been in clinical use for over three years—in community and major hospitals
More than half of our instruments are in community hospitals and the list is growing rapidly. Upon request, we'll supply names of happy users in your area.

What's the next step? Get in touch
Ask your NEN man about Brattles and HSA Kits. He can show you a portfolio of clinical pictures and arrange to have one of our people give you a demo. Or write or call us direct. We'll send you brochures on this and other models, and will give you your own set of clinical pictures and a bibliography on gated scintigraphy. If you wish, we'll even make you a Brattle owner. (This is the best part of our story.)

Brattle Instrument Corporation

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SPEED READ

NUCLEAR CARDIOLOGY DATA WITH SCINTISTORE™

Time-compression data storage/retrieval system

THE WAY TO INCREASE CLINICAL UTILITY OF THE PHO/GAMMA® LEM CAMERA

The diagnostic capabilities of the LEM (Low Energy Mobile Scintillation Camera) can now be further extended by the addition of a Scintistore data acquisition system—a portable, computer-compatible, disc-based data acquisition system which includes a cardiac gate. Together, the Scintistore and LEM camera give you the most advanced mobile unit available anywhere today.

"A new dimension in nuclear imaging"

Clinical utility is provided by these features:

- **High Data Rate**—80,000 events per second allow accurate quantification of cardiac function
- **High Data Capacity**—2.5 million events stored on each of two discs to make wall motion studies of the myocardium possible
- **Portability**—Docks compactly with LEM for transport as a single unit, accompanies LEM to patient's bedside
- **Time-Compressed Replay**—Retrieves information at rate of 50,000 events per second, irrespective of recording rate, saves physician time

Cardiac Gating

The cardiac gate is digitally implemented through an eight-bit microprocessor. It performs gated imaging for wall motion studies of the myocardium.

SEARLE

Searle Radiographics
Division of Searle Diagnostics Inc.
2000 Nuclear Drive
Des Plaines, Illinois 60018 U.S.A.
Telephone 312/298-6600