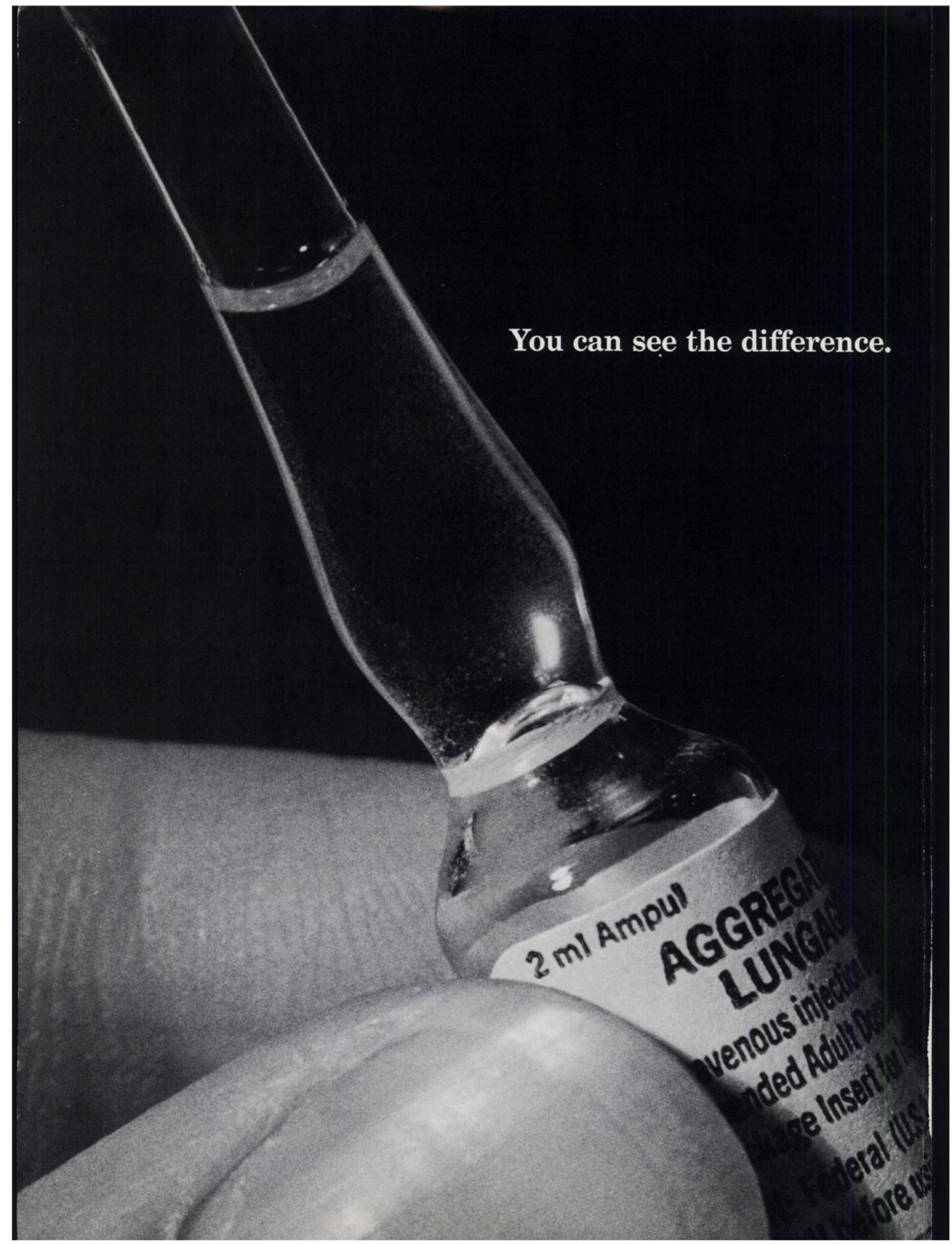

You can see the difference.
2 ml Ampul

Lungaggregate™ Reagent [Aggregated Albumin (Human)] has eight important advantages for pulmonary scintigraphy.

The first one is obvious:

1. Particles Presuspended in Solution.
Lungaggregate Reagent is the only Tc 99m-labeled MAA agent containing albumin aggregate particles that are already suspended in an aqueous solution. There is less chance for radiation exposure to the user since no visual inspection is required after radioactive labeling.

2. Soft Particles for Rapid Lung Clearance.
The uniform-size particles in Lungaggregate Reagent have a biological half-time of 4.77 hours.

3. Quick, Easy Preparation.
No thawing, reconstitution of lyophilized particles, or ultrasonic agitation are required.

4. Conveniently Stable.
Lungaggregate Reagent, labeled with Tc 99m, may be used up to 24 hours after preparation when stored as directed. A supply of Tc 99m-Lungaggregate Reagent is therefore available when emergency studies are required.

5. Multi-Dose Economy.
Each vial can be used to give several patient doses since Lungaggregate Reagent contains a preservative.

6. Imaging Excellence.
Tc 99m is the radionuclide of choice for scintigraphy. With a 4 mCi dose of Tc 99m-Lungaggregate Reagent, up to 500,000 counts can be obtained in two to three minutes on a gamma camera.

7. High Lung/Liver Activity Ratio.
The ratio of lung to liver-and-spleen activity is over 10/1.

8. Patient Safety.
No adverse reactions have been reported. See the brief summary section below.

For a monograph summarizing clinical experience with Lungaggregate Reagent, or for additional information, call Medi-Physics toll free: (800) 772-2446 in California or (800) 227-0483 outside California.

Brief Summary
(For full product information including method of preparation and administration procedure, see package insert.)

Description: Lungaggregate™ Reagent is a sterile, apyrogenic, buffered, preserved, aqueous preparation of aggregated albumin from human plasma.

Indications: For imaging regional pulmonary perfusion in the presence of clinically suspected regional ischemia.

Contraindications: This agent is contraindicated (1) in the presence of large right-to-left cardiovascular shunts which could allow direct entry of macroaggregates into systemic circulation; (2) in patients with cyanosis or evidence of severely restricted pulmonary blood flow, as in pulmonary hypertension; (3) in pregnant or lactating women and in patients under 18 years, unless expected benefits outweigh risks involved.

Warnings: Whenever protein-containing materials such as Tc 99m-labeled Lungaggregate Reagent are used in man, hypersensitivity reactions are possible. Have epinephrine, antihistamines, and corticosteroid agents available.

Precautions: Note—Follow aseptic techniques in preparing this agent to minimize the possibility of contamination with microorganisms. Take steps to minimize exposure to patient and attending personnel, including use of minimum dosage to achieve useful diagnostic data. Make injection slowly. Use an 18-21 gauge needle. After withdrawal from the vial the material should be administered promptly; also avoid aspirating blood and tissue fluids into the syringe.

Adverse reactions: None reported in over 4,000 patient studies.

™

medi+physics

HOECHST

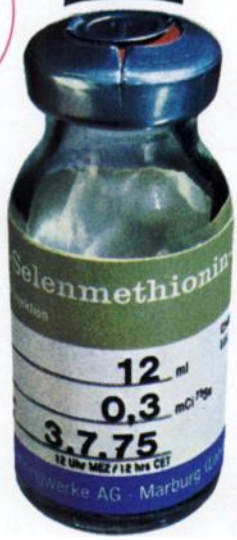
BEHRING INSTITUTE

E. Behring

According to our own new method

L-Seleno-methionine (Se-75)

For pancreas scintigraphy as a simple detection method for space occupying lesions like tumors or cysts and alterations of parenchyme.



Already after 10 min maximum count rate
At least 75 % of the initial activity after 60 min

Low radiation dose for 100 µCe in liver, pancreas and kidneys
Whole body dose: 0.8 rd
High radiochemical purity (98 %) at calibration date
Recommended dose: 300 µCi

Specification

L-Selenomethionine-(Se-75)
Less than 5 % D-Seleno-methionine.
Concentration of activity:
0.2 mCi Se-75/ml
Specific activity:
5-10 mCi Se-75/mg Selenomethionine

Pack

L-Selenomethionine-(Se-75) in physiological saline for injection (12 ml beaded rim vial)

Order No.: SE-515

Calibration day:
1st of the month

Dispatch:
daily from the 1st of the previous month on

Shelf life:
3 months from the day of first dispatch

Contraindications

Radioactive material should be handled with special care to insure minimum radiation exposure to personnel and patients.
Unless strictly indicated, radiopharmaceuticals should not be administered to pregnant or nursing women or to juvenile patients.

Lh 71185

HOECHST AG · 6230 Frankfurt (Main) 80 · Behring Department

Film Star.

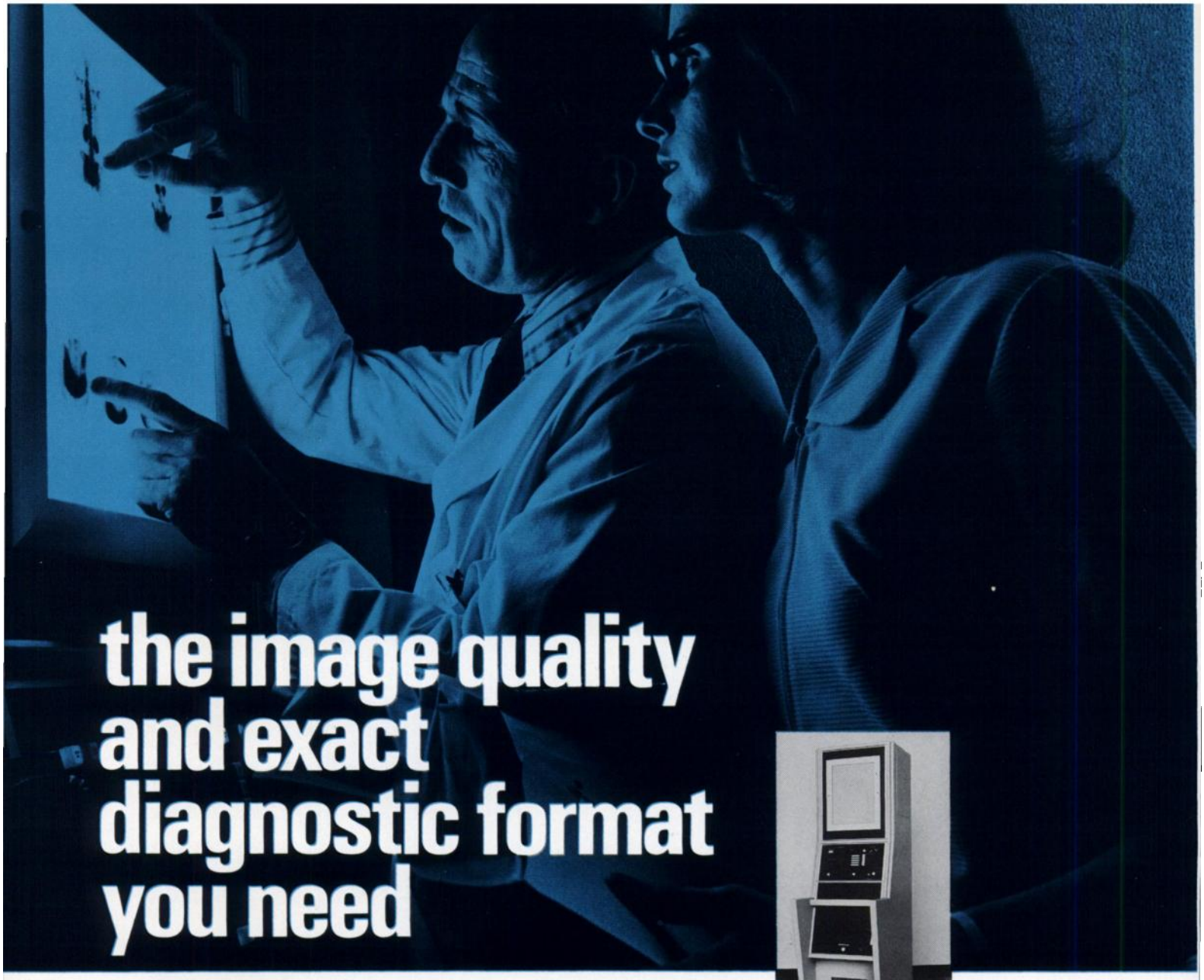
With Cameray II, the new 37-tube scintillation camera from Raytheon, you get what you'd expect from a star: Performance. Total System Performance. TSP.

Any scintillation camera that's a top performer has to put a lot of good operating characteristics together. System and energy resolution. Uniformity. Linearity. Count rate. Price. Consider all these together and you'll find Cameray II at the top. There are other reasons too. Choice of 8 x 10 or 14 x 17 film size. Whole body capability. Full range of accessories. Together they add up to TSP. And TSP is what makes Cameray II a film star.

See for yourself how Cameray II measures up. Let your Raytheon representative show you a TSP comparison chart. Then, if you choose the star, we'll give you a director's chair. For more information contact Jay Cone, Marketing Manager, Raytheon Company, Medical Electronics Operation, Fourth Avenue, Burlington, Massachusetts 01803. Telephone (617) 272-7270.

RAYTHEON

Call (617) 667-9531 for technical consultation or product information.



the image quality and exact diagnostic format you need

Searle Micro Dot Imager

Static, dynamic & whole body imaging . . . 15 formats, 3 film sizes

The Searle Micro Dot Imager offers Pho/Gamma users a versatile display system for single-organ or whole body imaging using economical X-ray film. Three film sizes and 15 image formats let you choose the exact format best suited for any study. State-of-the-art optics and electronics put as many as 80 images on one film with single-image fidelity. You can even mix static, dynamic and different size images on the same sheet of film. An exclusive, lightweight cassette design speeds and simplifies loading and unloading of film.

The Micro Dot provides distinct, well-focused scintidots in all image sizes; it gives you superior imaging clarity, constant focus and freedom from astigmatism regardless of dot intensity and location. Absolute exposure control—with pushbutton settings for routine studies—assures correct, repeatable exposures from day to day and month to month in all image sizes.

Designed for clinical utility and operational simplicity, the Micro Dot Imager is the most complete display system available for the Pho/Gamma Scintillation Camera. For more information—including complete specifications—just write or phone your Searle representative. He'll be glad to show you how it can add unmatched versatility, convenience and economy to your laboratory's gamma imaging capabilities.

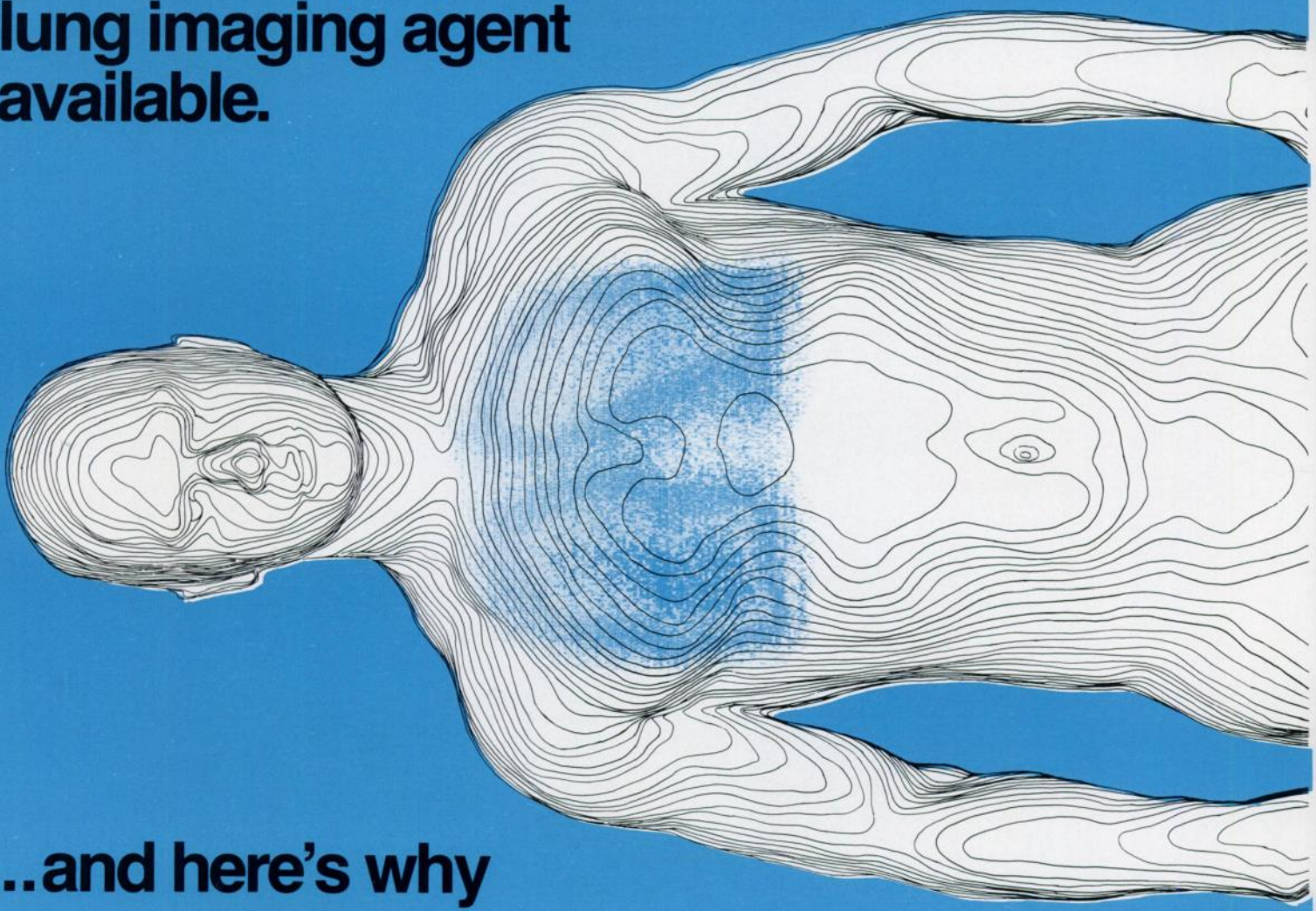
SEARLE **Searle Radiographics Inc.**
Subsidiary of G. D. Searle & Co.
2000 Nuclear Drive, Des Plaines, Illinois 60018
Phone 312-298-6600

CM-356

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 prepararion 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).

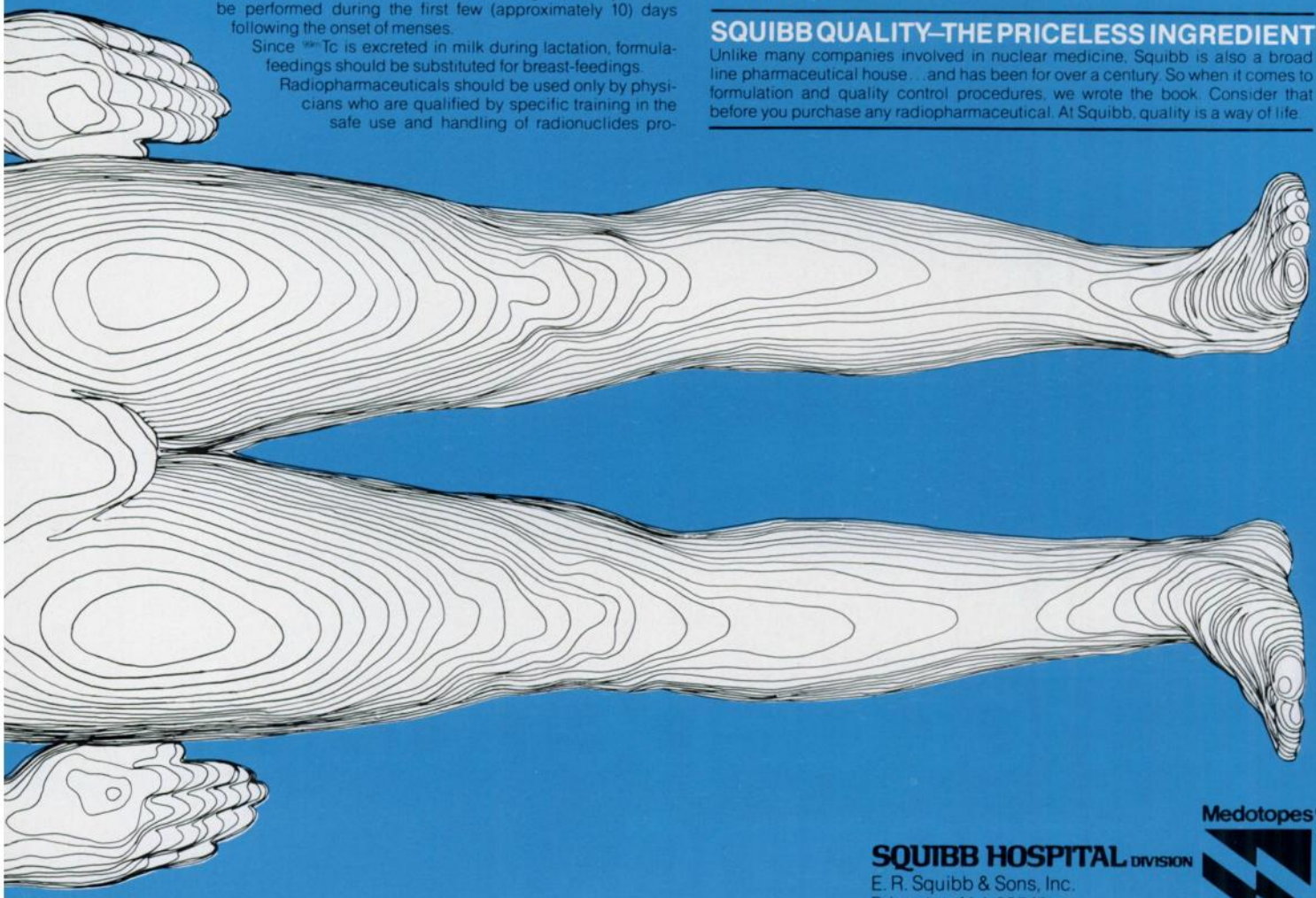
ADVERSE REACTIONS: At present, adverse reactions have not been reported following the administration of this product.

For full prescribing information, consult package insert.

HOW SUPPLIED: In boxes of 5 vials.

SQUIBB QUALITY–THE PRICELESS INGREDIENT

Unlike many companies involved in nuclear medicine, Squibb is also a broad line pharmaceutical house...and has been for over a century. So when it comes to formulation and quality control procedures, we wrote the book. Consider that before you purchase any radiopharmaceutical. At Squibb, quality is a way of life.



Medotopes®

SQUIBB HOSPITAL DIVISION
E. R. Squibb & Sons, Inc.
Princeton, N.J. 08540

H605-507

99m-LABELED LUNG IMAGING AGENTS*

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.*

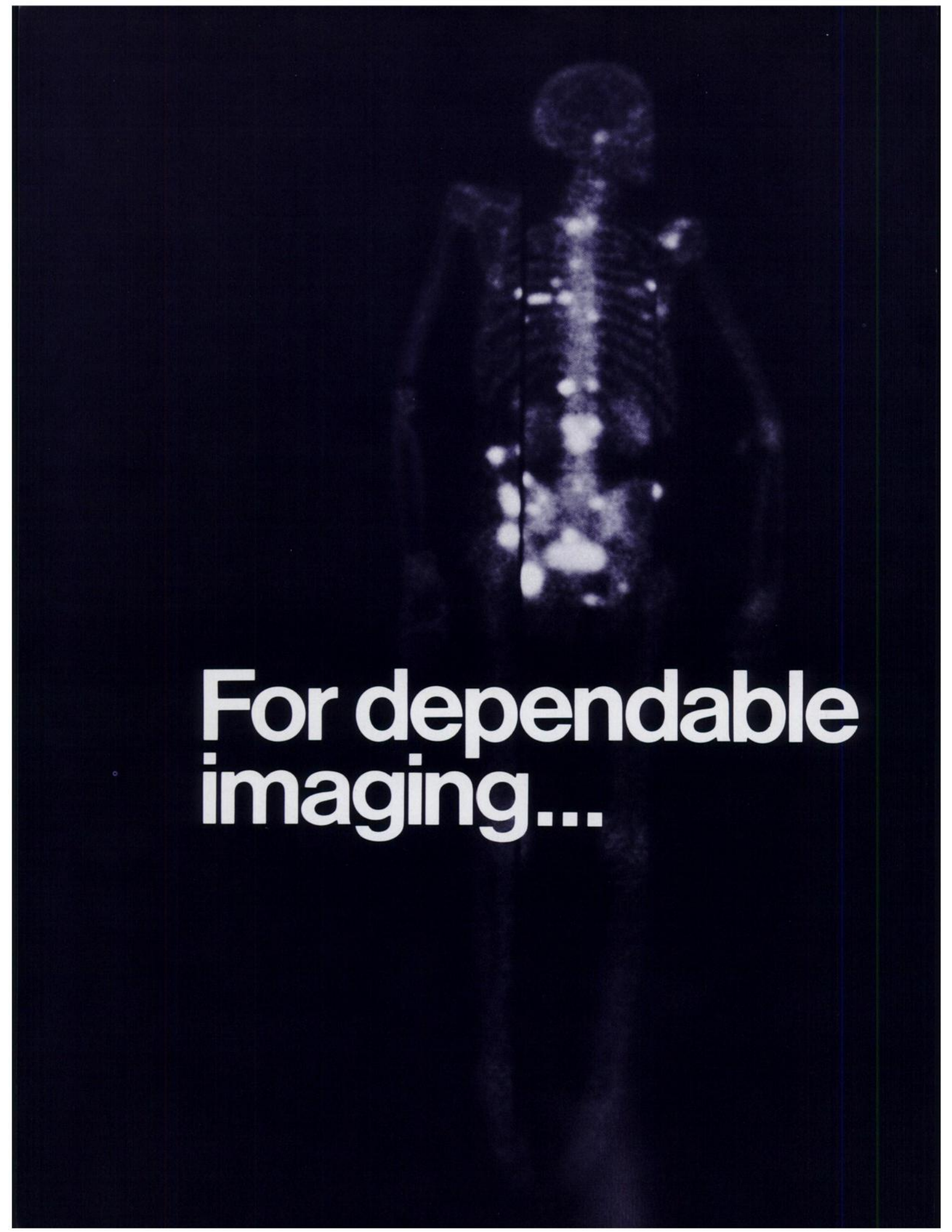
**Recommended maximum activity: 30 mCi.

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 30 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.**


For dependable
imaging...

Dependable imaging of skeletal lesions —that's what bone scanning is all about. And that's what the unique, dry-mix formulation and stable PCP bond of Osteoscan assure. Osteoscan's diphosphonate formulation, when labeled with ^{99m}Tc, provides:

- ☐ dependably high tagging efficiency
- ☐ rapid blood and soft tissue clearance to assure high target-to-nontarget ratio
- ☐ excellent in vivo stability
- ☐ low tin level—to minimize the potential for liver uptake and interference with subsequent brain scans

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

the dependable diphosphonate

PROCTER & GAMBLE

OSTEOSCAN®

(5.9 MG DISODIUM ETIDRONATE, 0.16 MG STANNOUS CHLORIDE)

SKELETAL IMAGING AGENT

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

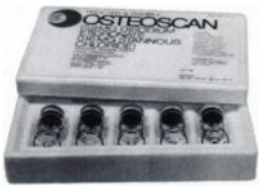
See following page for a brief summary of package insert.

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 three (3) 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.

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 blood flow, 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

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.

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

Although no anaphylactoid reactions have been reported in patients following the administration of Albumin Microspheres, the possibility should be considered that hypersensitivity reactions may occur rarely in patients who, after the initial administration, receive additional doses a number of weeks after the initial dose.

3M COMPANY

3M Brand Instant Microspheres

THE PARTICLE OF DIFFERENCE!

Accurate diagnosis requires consistency, and there is no particle more consistent than microspheres.

The particles in each vial of 3M Brand Instant Microspheres are controlled in size (15-35μ), number (925,000), and shape. This consistency is reproducible from lot to lot and offers you imaging excellence available from no other lung agent at any price.

High efficiency labeling (>99%) and the albumin microspheres provide superior images with no liver shadow and no hot spots—in short—diagnostic excellence from patient to patient.

3M COMPANY MAKES THE DIFFERENCE

For information, phone Nuclear Products for Medicine 1-800-328-1671

3M COMPANY

varicam.....

PICTURES OF PEOPLE

Monochrome display: of multicycle grey scale with matrix blocks interpolated out.
Real labelled contours.
Line drawn isometrics with multiple perspective and far-side blanking.
Curves displayed as continuous lines with labelled axes positive and negative, linear or log scale.
Paper hardcopy: life size (or other scaling) of all except isometric display. Formatted reports, including billing if required, may be generated cheaply.

Color display: for viewing of successive dynamic frames, etc.

PICTURES BY PEOPLE

Easy use: full plain text dialogue separated from display enables sophisticated use under *people* control without the usual secret code of computers.

Protocols: routine procedures may be chained into a protocol, with comment, for full automatic *machine* control.

Identification: it is impossible to have unidentified displays or to mix patient records in these systems.

PICTURES FOR PEOPLE

Dynamic: flexible visualization and quantification of physiological processes promotes positive diagnoses.

Static: finally available, static images significantly better than the raw camera output promote earlier more effective clinical diagnoses.

PICTURES FOR MORE PEOPLE

Dual Cameras: systems for two cameras with simultaneous dynamic capability without interference or record confusion.

Multi-tasking: the BETA executive automates the computer functions for clinical use, or permits the computer-orientated to access FORTRAN or ASSEMBLER and to multi-task up to 7 functions (memory size option permitting) simultaneously.

Multi-accessing: background tasks may be run such as radio immunoassay, E.K.G., radiotherapy planning, etc., simultaneously with gamma camera use (which has, of course, priority).

System Growth: a start may be made with a low-cost budget system. Large comprehensive systems may be built from standard modules.

VOTE VARICAM

For clinical utility, ease of use, and computing power for your people.

People Pictures for Clinical Clarity

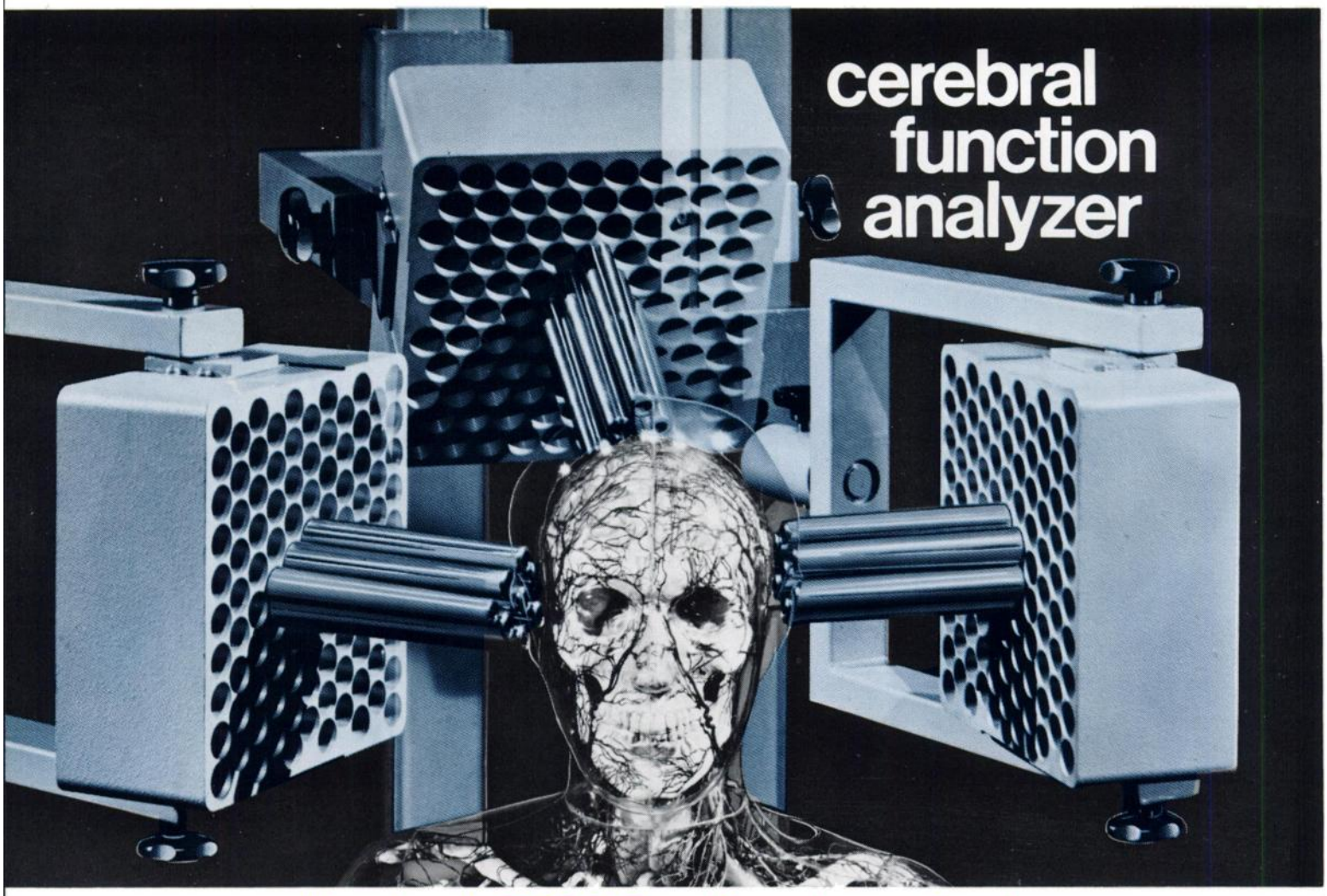
Reproduction of hardcopy on statos (Canterbury filter lateral brain showing 2 lesions).

At last! varicam, a sophisticated gamma camera computing system which not only provides a dynamic capability but more significant static images without requiring computer expertise.

varian associates

611 Hansen Way, Palo Alto, California 94303, USA. Telephone: (415) 493-4000

Molesey Rd, Walton-on-Thames, England. Telephone: (093 22) 28971 Telex: 261351



Harshaw's TASC-5 multi-probe system is a new clinical research instrument for the acquisition of quantitative data on regional alterations of cerebral blood flow utilizing Xenon-133.

TASC-5 offers the clinical investigator these advantages—

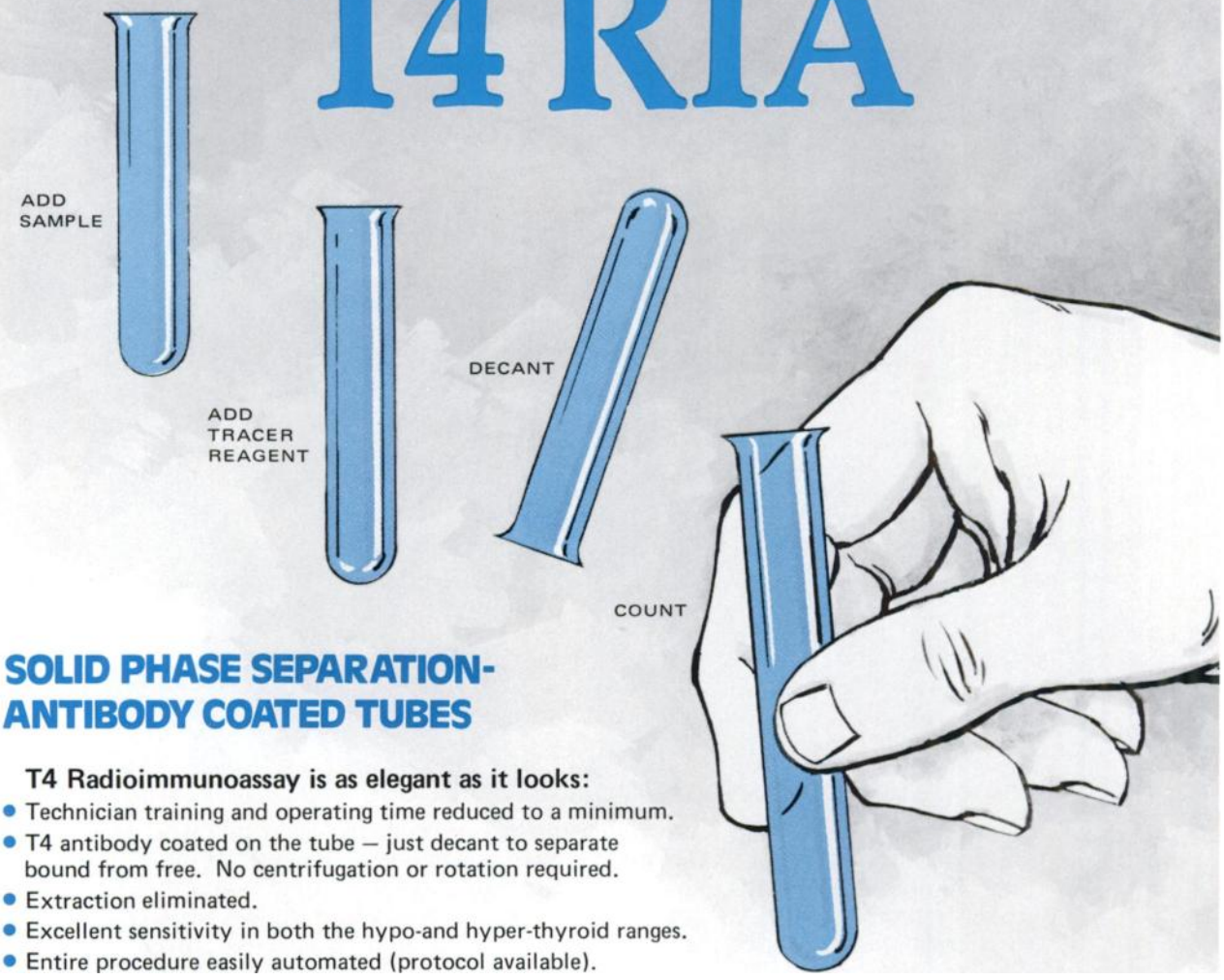
- True modular design allows system expansion at any time and at minimum cost.
- Adaptable to all isotopes.
- Probes easily positioned —Collimators readily interchanged.
- Minimum probe diameter allows maximum number of probes over area of interest.
- Stabilization circuitry maintains probe sensitivity.
- Provisions for both analog and/or digital data handling.

Our new 8-page brochure discusses TASC-5 in detail. Write or call us for a fast reply.

HARSHAW

THE HARSHAW CHEMICAL COMPANY
Division of Kewanee Oil Company
Crystal & Electronic Products Department
6801 Cochran Road • Solon, Ohio 44139
(216) 248-7400

Clinical Assays GammaCoat™ T4 RIA



SOLID PHASE SEPARATION-ANTIBODY COATED TUBES

T4 Radioimmunoassay is as elegant as it looks:

- Technician training and operating time reduced to a minimum.
- T4 antibody coated on the tube – just decant to separate bound from free. No centrifugation or rotation required.
- Extraction eliminated.
- Excellent sensitivity in both the hypo-and hyper-thyroid ranges.
- Entire procedure easily automated (protocol available).

Protocol:

- Add sample directly into GammaCoat tube.
- Add Tracer-Buffer Reagent.
- Incubate – for 45 minutes at room temperature.
- Decant or Aspirate.
- Count – the tube is counted for as little as 30 seconds.

For further information call toll free at 1-800-225-1241 (in Massachusetts call collect 617-492-2526) or TWX (710-320-6460) or write:

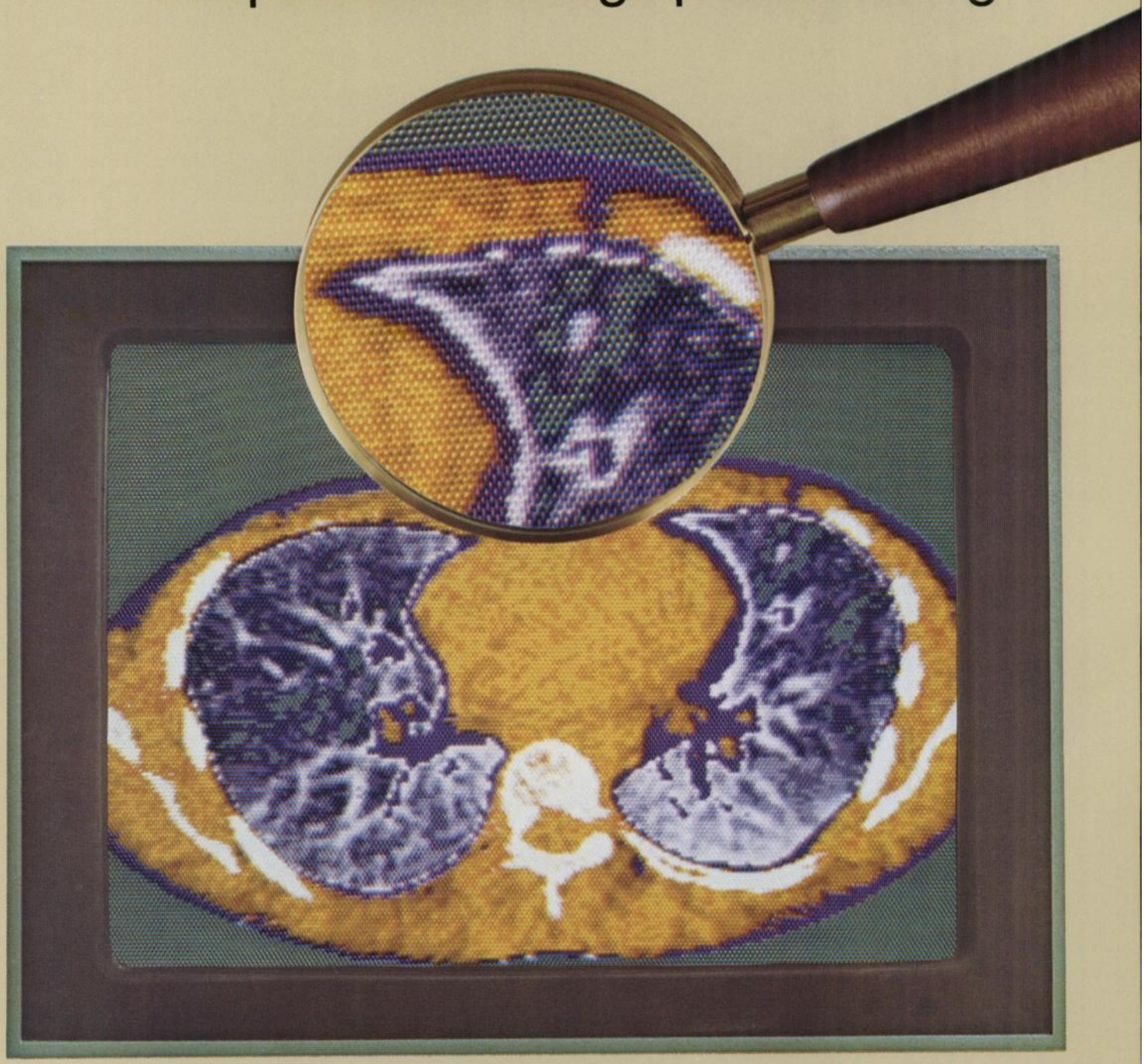
Clinical Assays, Inc.

237 BINNEY STREET
CAMBRIDGE, MASS. 02142
(617) 492-2526

Pfizer Medical Systems, Inc. announces
57,600 reasons why the

ACTA-SCANNER®

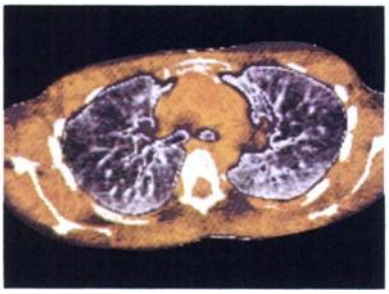
provides superior resolution and
image clarity in whole body
computerized tomographic scanning



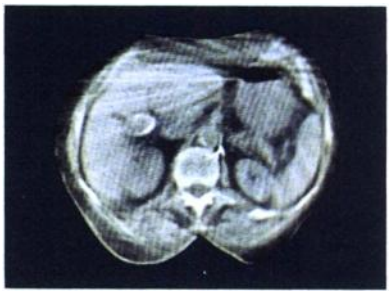
The new matrix improves image quality

Up to 57,600 absorption values are now actually measured for translation into the finished ACTA-scan with the recently developed 320 matrix.

This means a large, high-resolution display (1.5 mm) with greater clarity and true detail—important in extracranial scanning.



Thoracic 320 Scan. (Normal Chest)

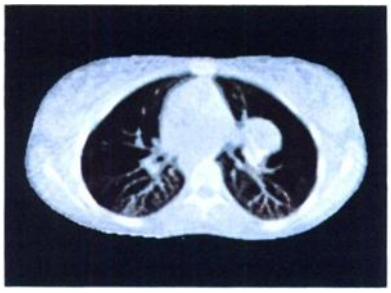


Abdominal 320 Scan. "Porcelain" Gallbladder

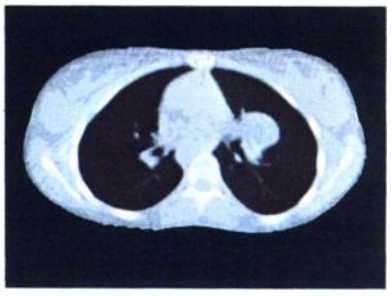
Multiple windows let you see more

With the Pfizer ACTA-Scanner, multiple windows can be imposed upon the image, allowing tissues with great density differences to be viewed at the same time in a single ACTA-scan.

This capability greatly facilitates interpretation of scans in the thoracic and abdominal areas.



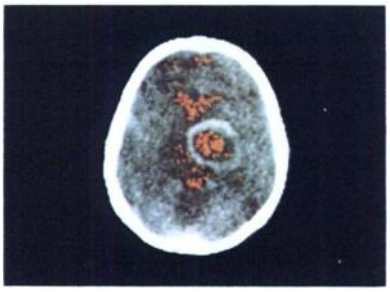
Thoracic scan with multiple windows. Mass in right lung.



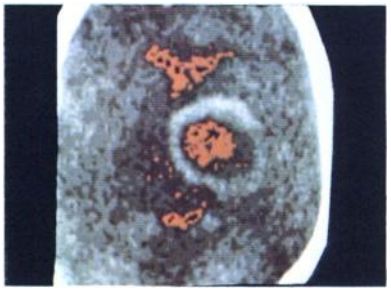
Same area as scanned at left, without imposition of the multiple window capability.

And you can enlarge selected areas

A special cursor—or movable dot—allows the operator of the ACTA-Scanner to enlarge selected areas of interest by a factor of 2 in diameter (4 in area).

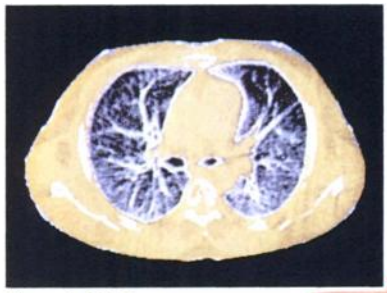


Pituitary Adenoma

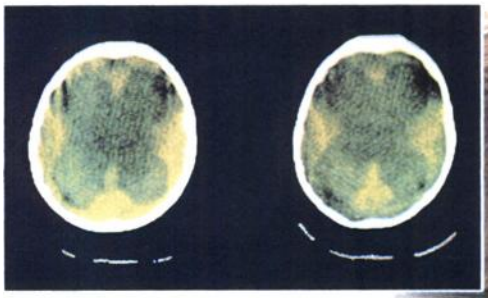


Pituitary Adenoma. Instantaneous enlargement of pathologic area.

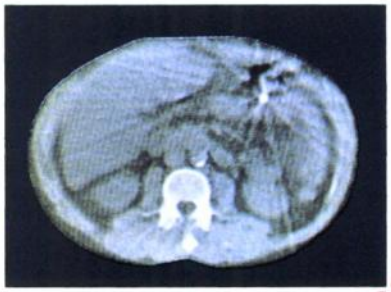
Pathology in virtually any part of the body can be visualized and evaluated.



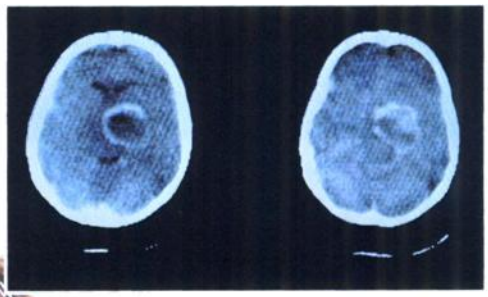
Thoracic 320 Scan.
(Normal Chest)



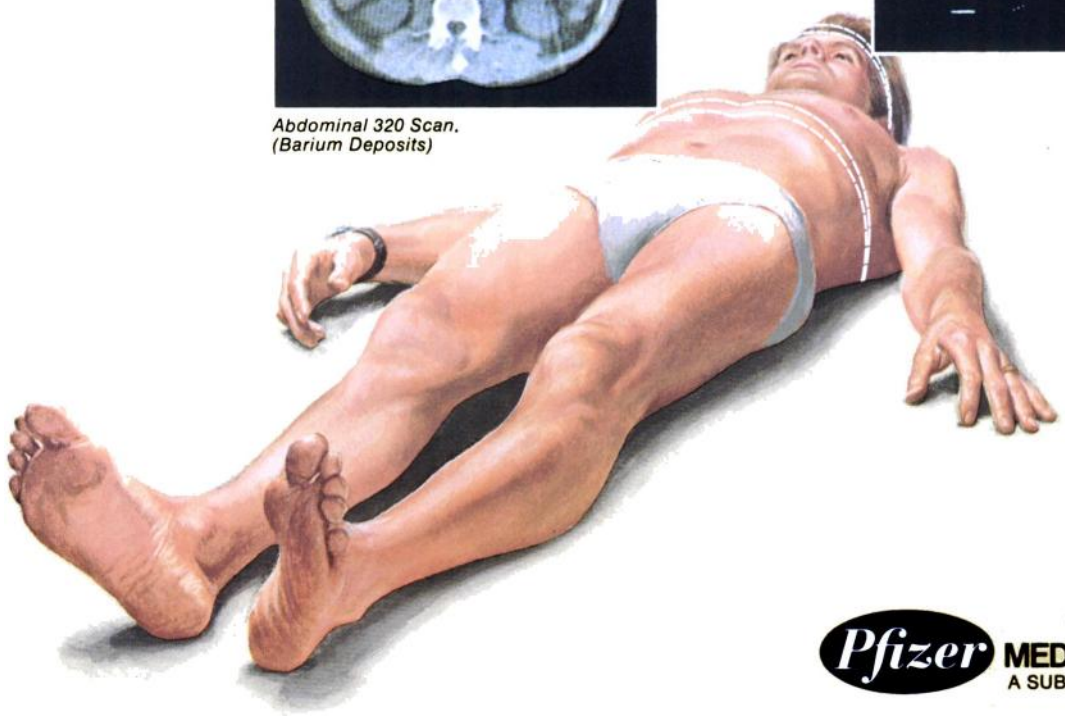
Marked Hydrocephalus



Abdominal 320 Scan.
(Barium Deposits)



Pituitary Adenoma



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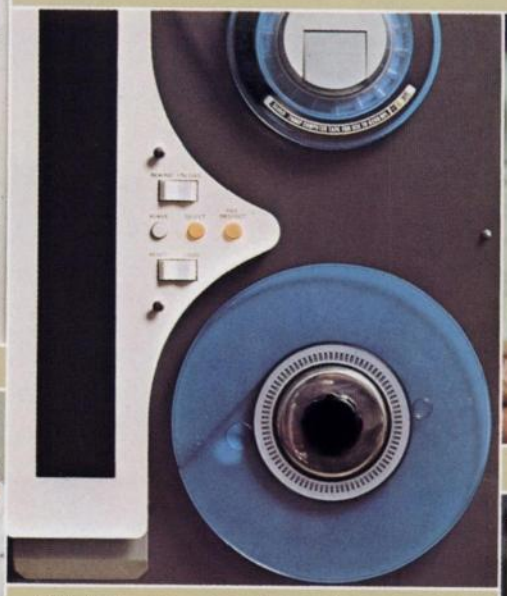
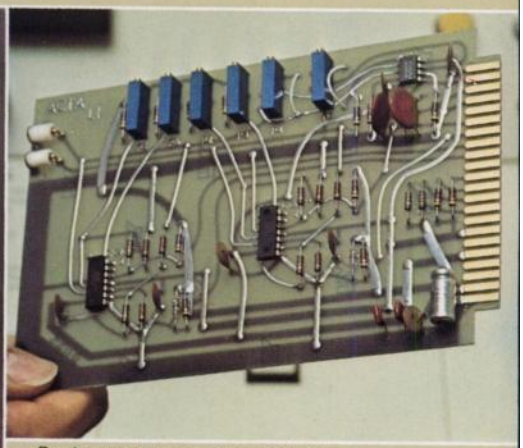
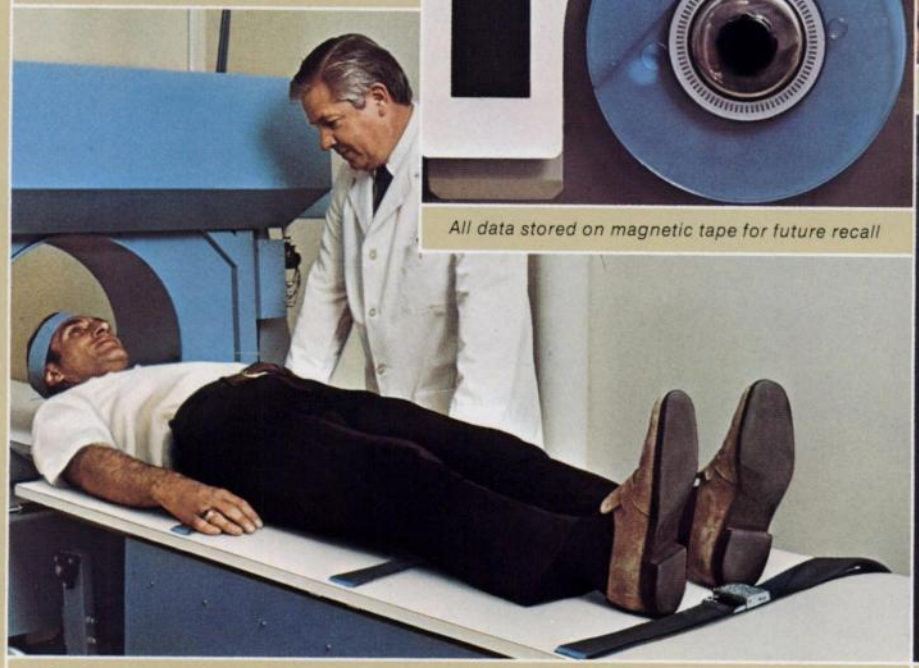


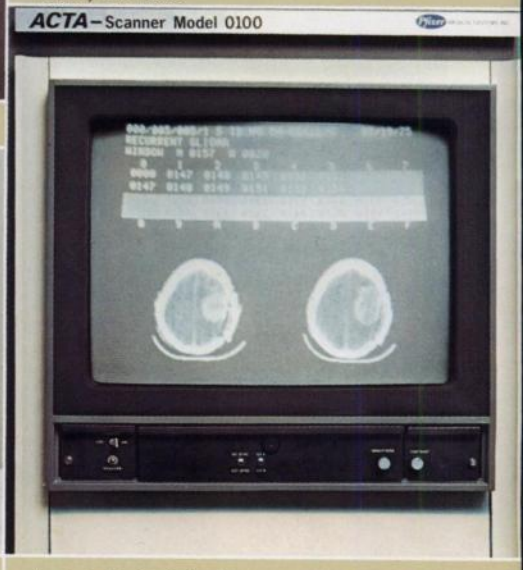
All data stored on magnetic tape for future recall



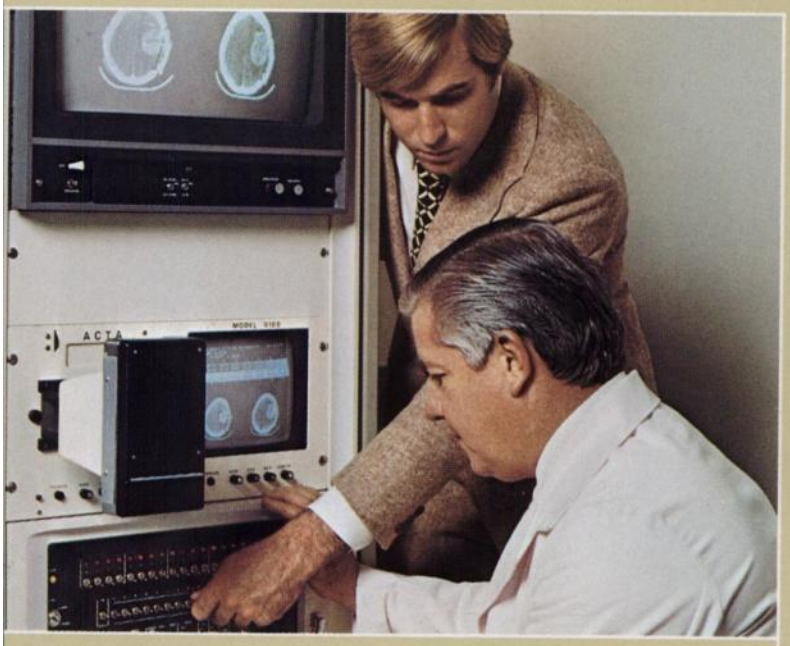
Replacement parts, if needed, are readily available



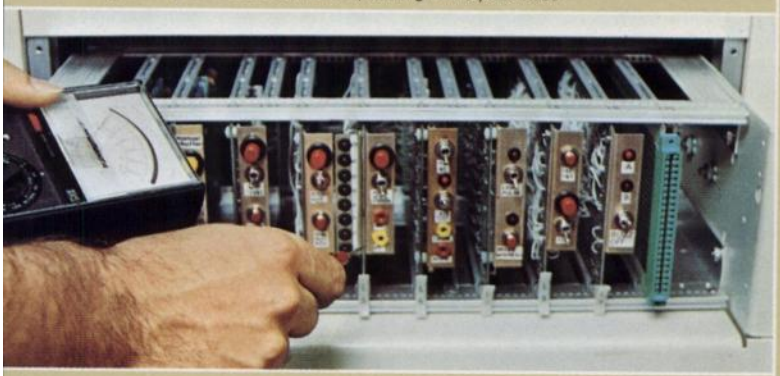
Minimal patient preparation before scan



Instant display following completion of scan



Field engineer provides continued updating on capabilities



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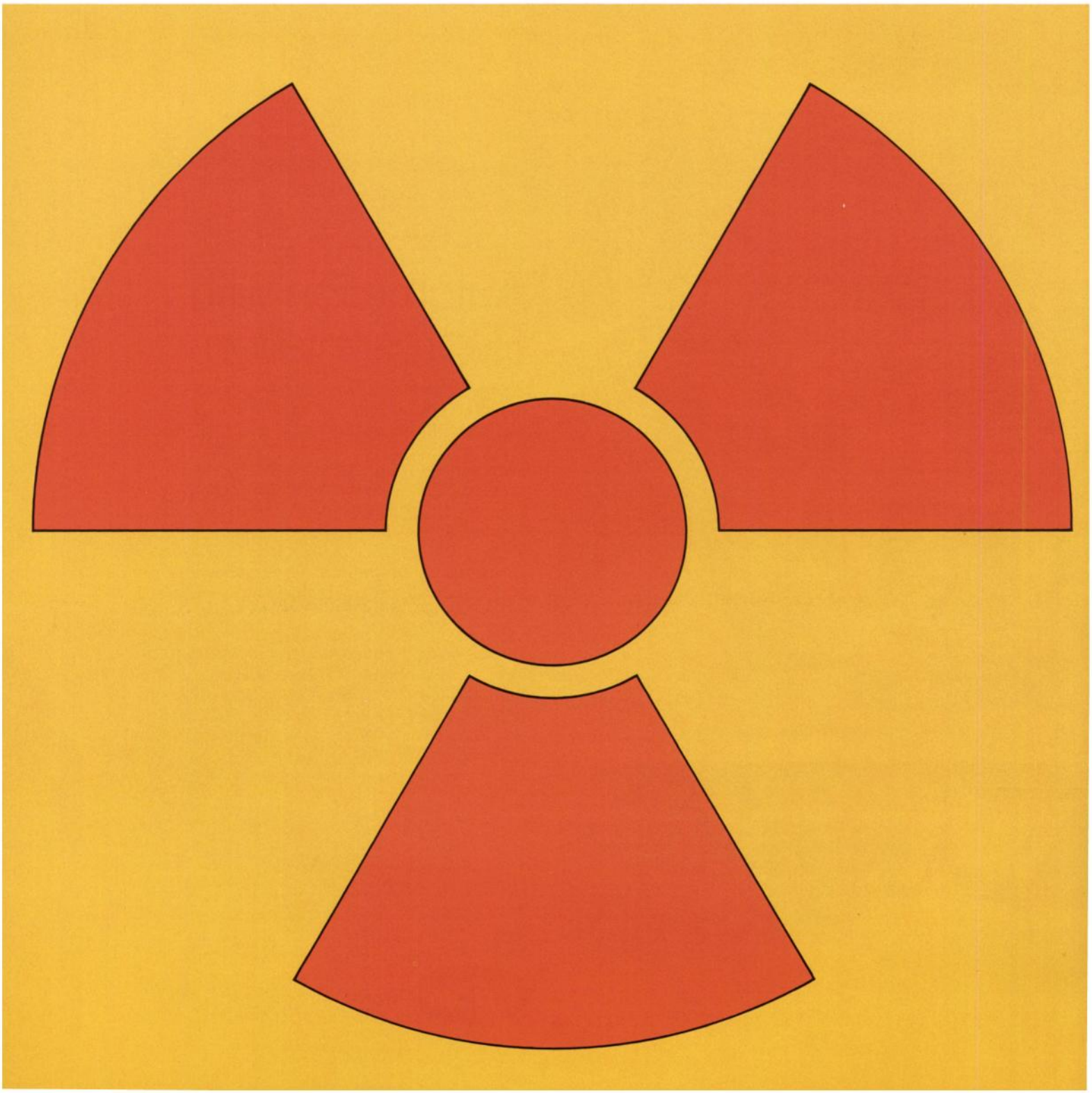

constituent	RIA I range		RIA II range
Digoxin	therapeutic		toxic
Thyroxine (T_4)	normal		elevated
Triiodothyronine (T_3)	normal		elevated
Cortisol	normal		elevated
Vitamin B_{12}	normal		low normal to low abnormal
Folic Acid	normal		low normal to low abnormal
Insulin	normal		elevated
Human Growth Hormone (HGH)	normal		elevated
Thyroid Stimulating Hormone (TSH)	normal		elevated

constituent	RIA III range		RIA IV range
Digitoxin	therapeutic		toxic
Estradiol	normal		elevated
Estriol	normal		elevated
Estrone	normal		elevated
Gentamicin	therapeutic		toxic
Human Chorionic Gonadotropin (HCG)	normal		elevated
Human Placental Lactogen (HPL)	normal		elevated
Progesterone	normal		elevated
Testosterone	normal		elevated

All constituents in RIA Control Serums I, II, III and IV are assayed by radioimmunoassay procedures. Serums are prepared from human serum with human and nonhuman constituents added; then processed by advanced freeze-dry techniques under rigid quality control. Serums are supplied in packages of 10 x 5 ml vials; color-coded and clearly identified with lot number and expiration date.

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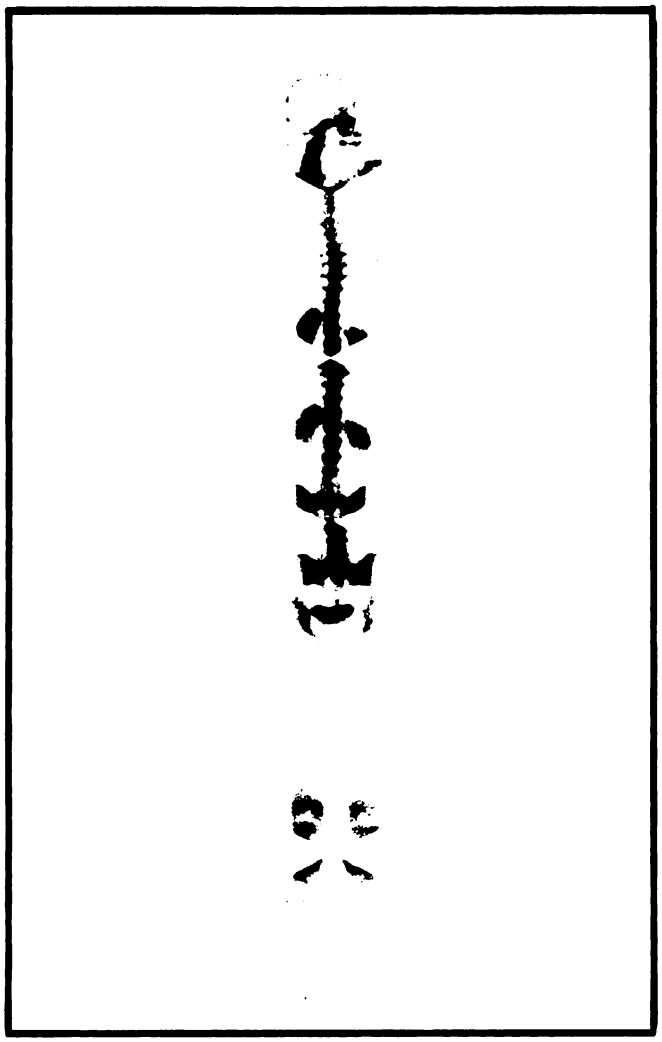
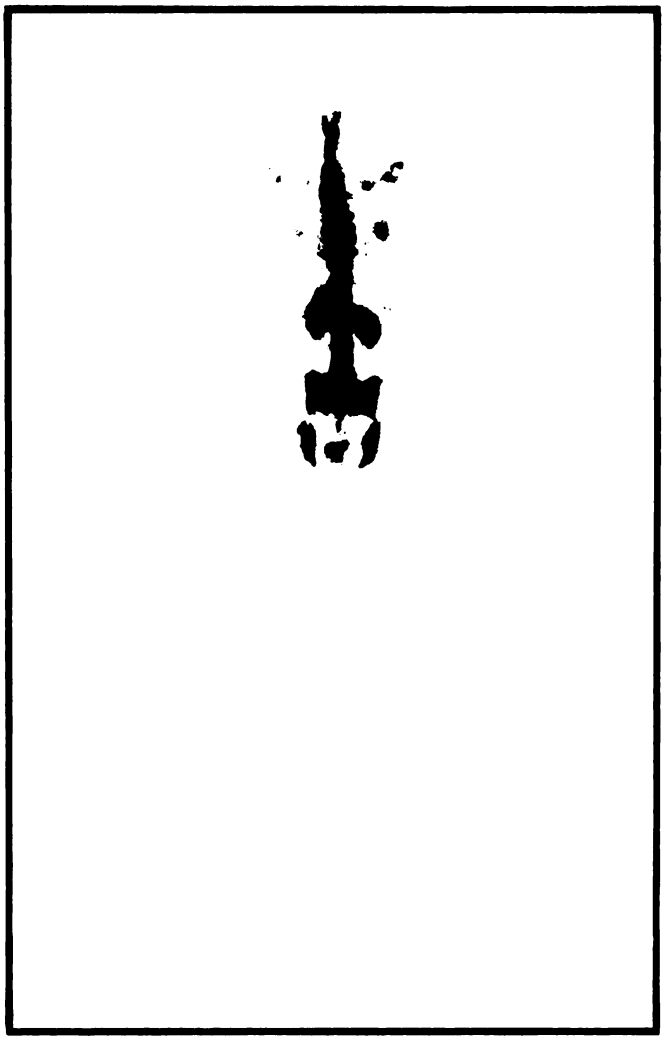
1. Brucer, Marshall, M.D., Thyroid Radioiodine Clinical Testing, 2nd Edition. St. Louis, Mo., Mallinckrodt, Inc. 1973, p. 38.

An Unbiased Comparison



Our Wide Field

Study performed with Ohio-Nuclear Series 110 Wide Field Radioisotope Camera.



Our Wide Field

Study performed with Ohio-Nuclear Series 110 Wide Field Radioisotope Camera equipped with Series 110-8 AreaScan.

35 year old female: normal scan
Study was performed in supine position with posterior view taken from beneath the table
Collimator: medium resolution (Model 14W11013)
Centerline: 140 keV
Window: 20%
Isotope: 20mCi ^{99m}Tc Pyrophosphate
Time Begun: 4 hours post dose

Composite View
700,000 counts per view except legs were 100,000 counts per view
Total Scan Time: 30 minutes (included positioning)

AreaScan

Total Scan Time: 12.2 minutes

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■ **A High-Speed Reversible Sample Changer System** which accepts intermixed sample size containers without requiring any special carriers, caps or cups... and can handle over 1,000 samples per day;

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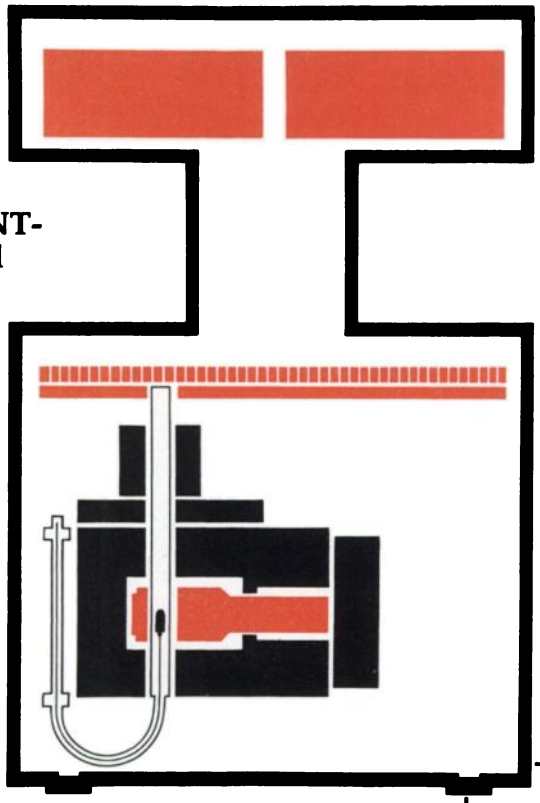
*Packard designation



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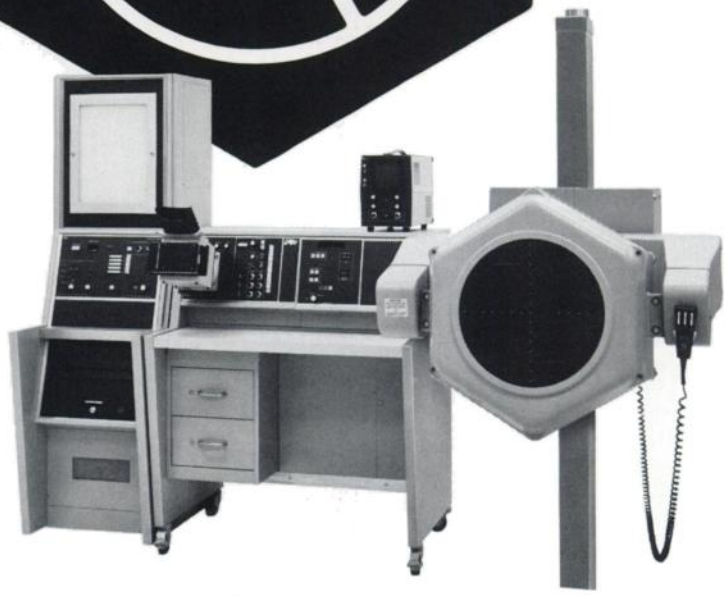

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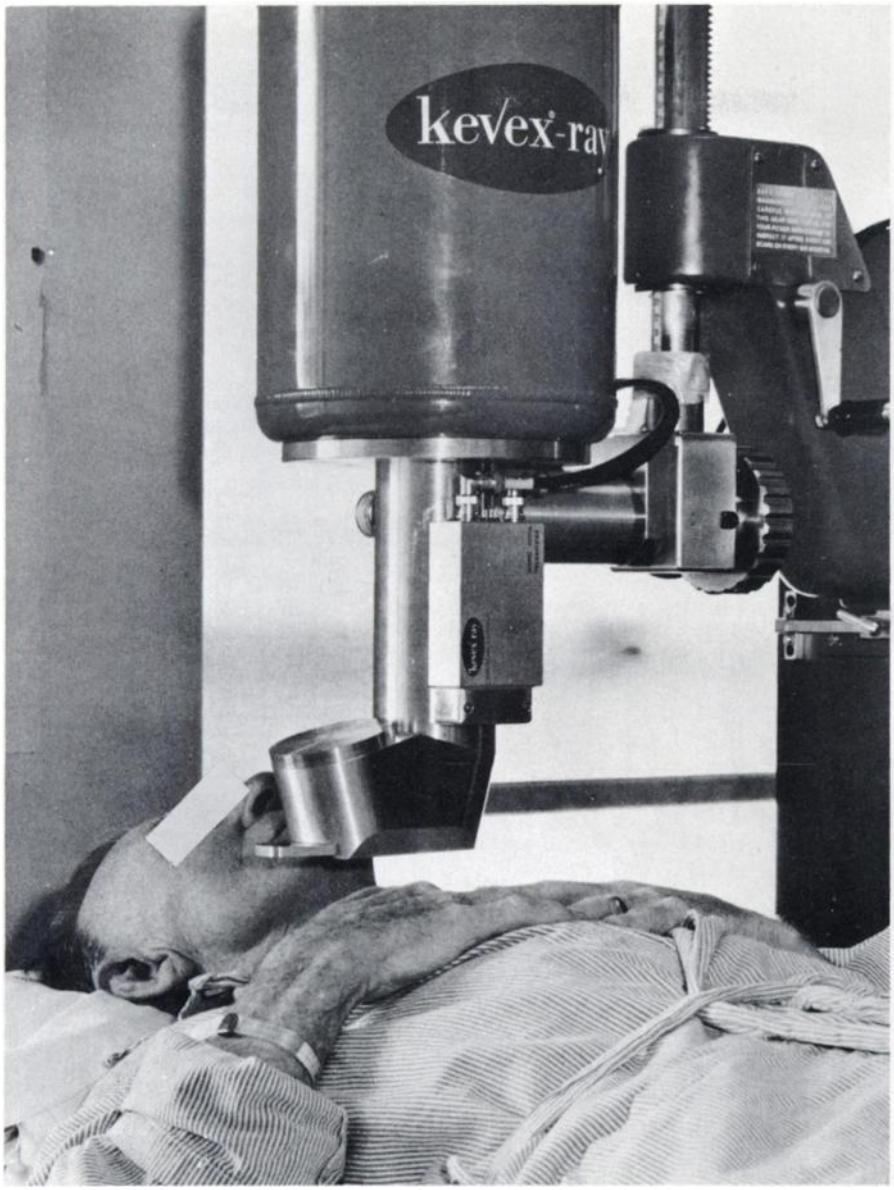
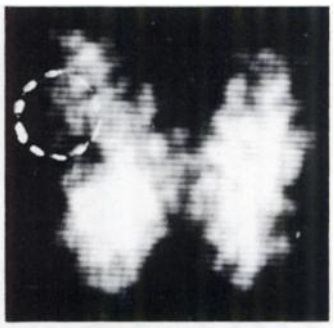


Thyroid scanning without injection.



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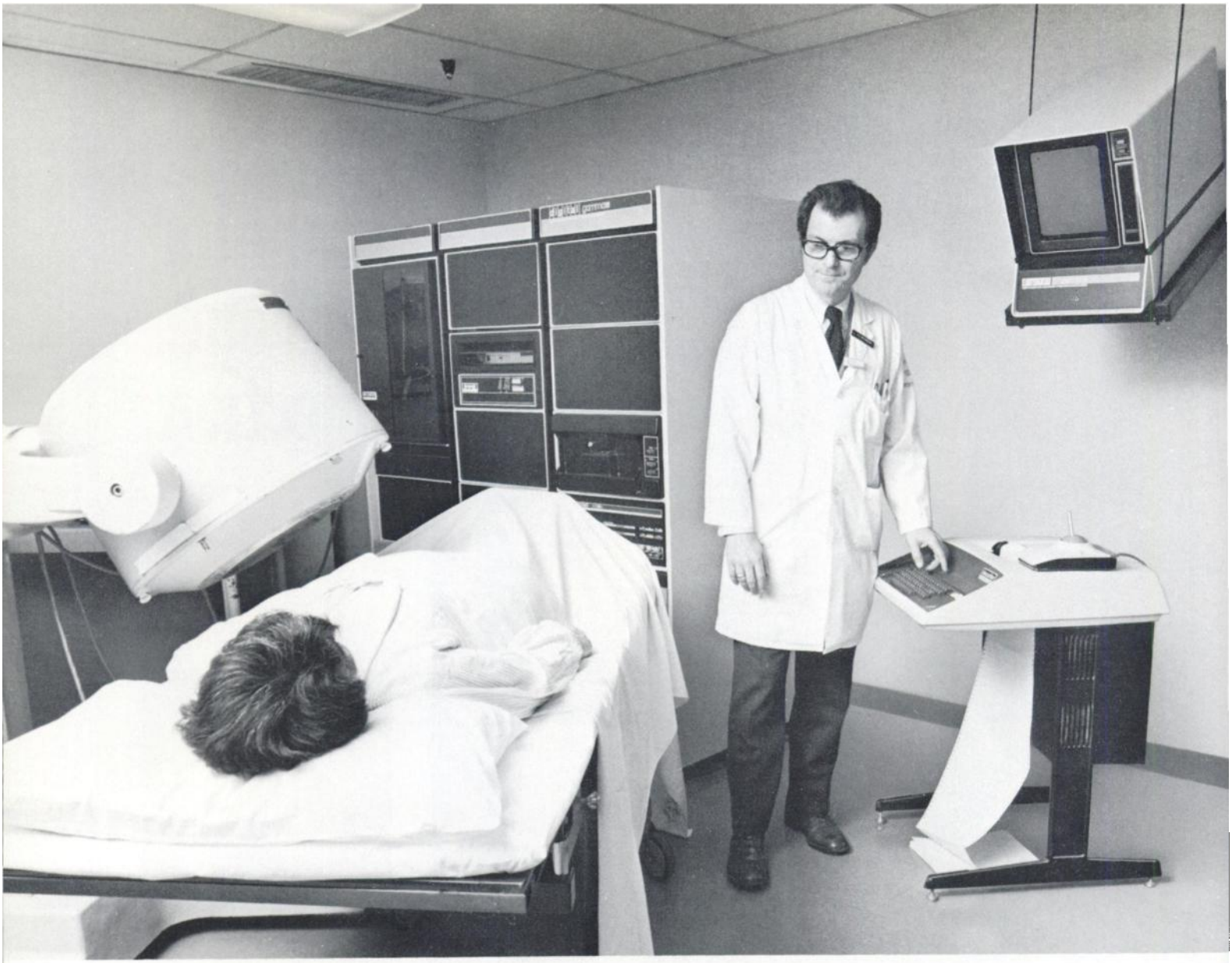

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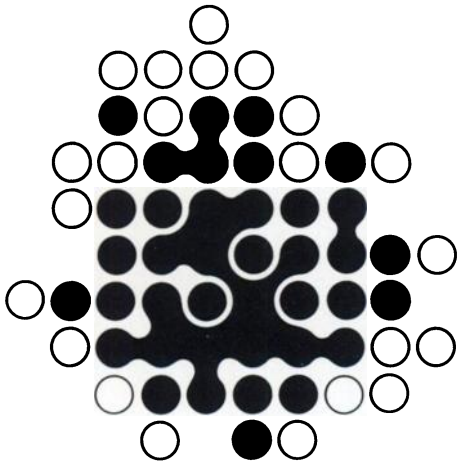


CEA-ROCHE
Carcinoembryonic Antigen assay
a valuable adjunct during the various phases of cancer management

CEA-ROCHE has been the subject of numerous clinical studies over the past four years to assess its value in cancer management. Most investigators have found this assay to be a useful biological marker for following the clinical course of patients with many types of internal carcinoma.* These studies have reported CEA-ROCHE to be a valuable adjunct in the overall evaluation of the patient's clinical progress and prognosis by indicating...

- lack of response to or escape from therapy
- need for a change or reevaluation of therapy
- development of metastases and/or local recurrence
- the need for more intensive patient examination and observation since a rise in CEA titer has been reported to precede other evidence of recurrence by periods averaging 2 months and up to as much as 29 months.*

CEA-ROCHE may also be used...

- as an adjunct to other diagnostic tests or procedures in the patient suspected of having cancer

*Literature available upon request from Professional Services Department, Roche Laboratories, 340 Kingsland Street, Nutley, N.J. 07110.

Tear out here.

CEA-ROCHE
Carcinoembryonic Antigen assay

Suggested Guidelines for the Use of CEA-ROCHE as an Aid in the Management of the Cancer Patient*

Type of Therapy	When to order CEA-ROCHE	Why order CEA-ROCHE
	During Periods of Active Therapy	
Surgery	As part of the presurgical workup and approximately 3 weeks after surgery	To monitor the effects of surgery[1,4]
Radiotherapy	Prior to initiating radiotherapy, once at midpoint and/or upon completion of radiation	To monitor the effects of radiation[1,2,5,6]
Chemotherapy	Prior to initiating chemotherapy, once at midpoint if therapy extends over a 6-week period and upon completion of chemotherapy	To monitor the effects of chemotherapy[1,2,5,7]
	During Short-term Follow-up After Therapy	
All types	Every 1 to 2 months during the first 6 months following therapy	To provide a basis for the reevaluation of therapy and/or an early indication of recurrence or progression of disease[1,2,8]
	During Long-term Follow-up	
All types	Every 6 to 12 months	To provide an early indication of recurrence or progression of disease[1,4,9,10]
	During Active Change in Clinical Condition	
All types	Every two weeks until trend is established	To aid in determining the probable presence of metastases or local recurrence[1,2,4,10]

When using this assay remember CEA-ROCHE is...

- *not* specific for any one type of cancer
- best used *periodically* to establish a trend, usually identifiable within 30 to 90 days
- *not* an absolute test for malignancy and should not be used as the sole criteria for diagnosis (use with other diagnostic tests and procedures)
- *not* recommended as a screen to detect cancer

*These are general guidelines for the use of CEA-ROCHE only and may vary widely depending on such factors as patient status, clinical symptoms, type of malignancy, results of other tests and procedures.

References

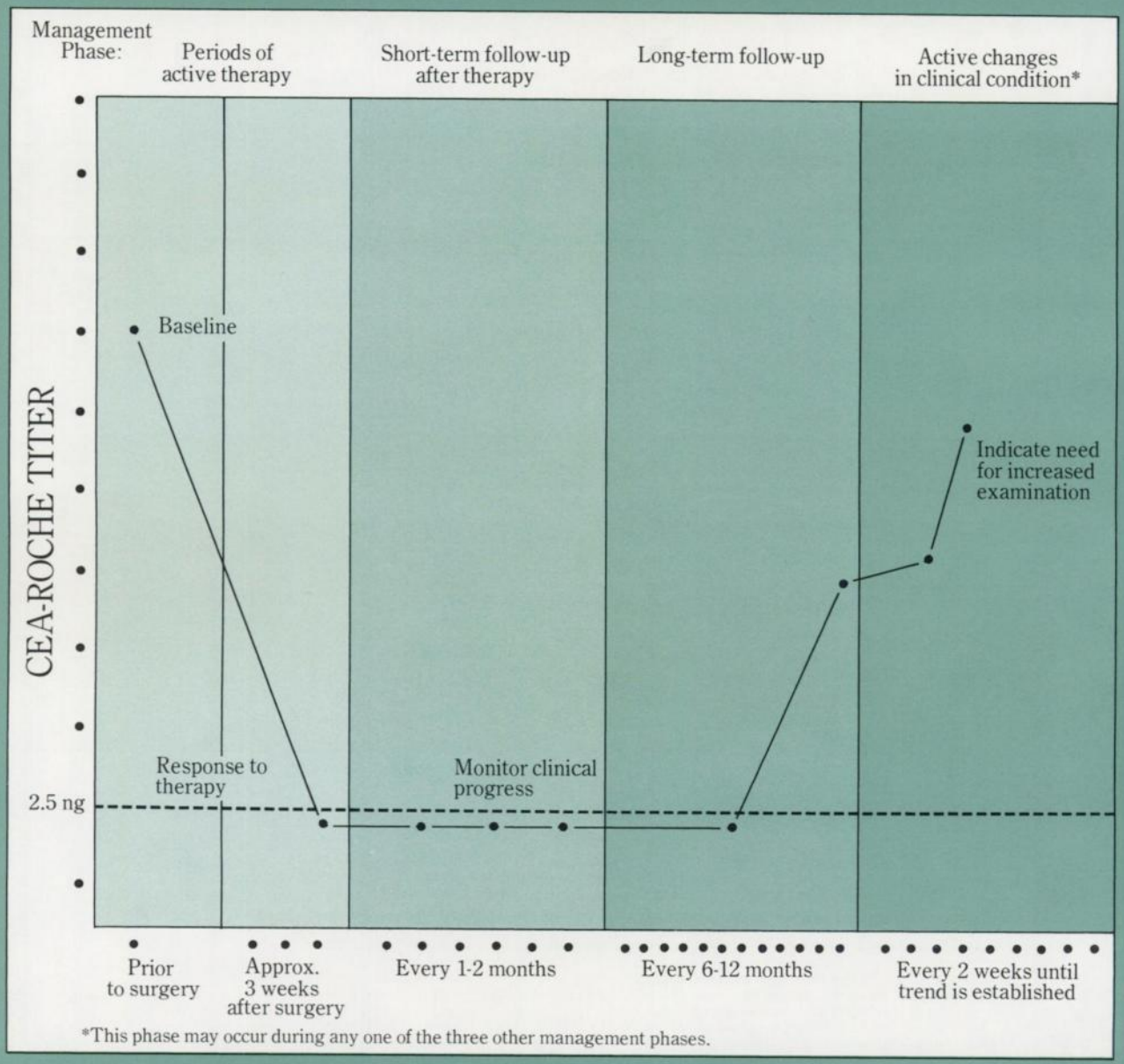
1. *CEA-ROCHE: A Clinical Monograph*, Hoffmann-La Roche Inc., Nutley NJ
2. Holyoke ED, *et al: Cancer 35*:830-836, Mar 1975
3. Mavligit GM, *et al: Am J Dig Dis 19* (11):1047-1053, Nov 1974
4. Mach J-P, *et al: Lancet 2*:535-540, Sep 7, 1974
5. Barrelet V, Mach J-P: *Am J Obstet Gynecol 121*:164-168, Jan 15, 1975
6. Khoo SK, Mackay EV: *Aust NZ J Obstet Gynaecol 13* (1): 1-7, Feb 1973
7. Skarin AT, *et al: Cancer 33*:1239-1245, May 1974
8. Dhar P, *et al: JAMA 221* (1):31-35, Jul 3, 1972
9. Steward AM, *et al: Cancer 33*:1246-1252, May 1974
10. Holyoke ED, Chu TM: *Med Opinion 4*:51-54, Apr 1975

ROCHE

ROCHE

When to use CEA-ROCHE as an aid in the postsurgical management of a cancer patient

A simulation of a representative patient showing graphically when to perform CEA-ROCHE assays using the suggested guidelines appearing on the reverse side.



CEA-ROCHE may be ordered from

- Roche Clinical Laboratories, Inc., Five Johnson Drive, Raritan, New Jersey 08869 (201) 526-2400
- Major hospital and private laboratories

Additional information may be obtained from

- your Roche Representative
- the Professional Services Department, Roche Laboratories, 340 Kingsland Street, Nutley, New Jersey 07110 (201) 235-4873

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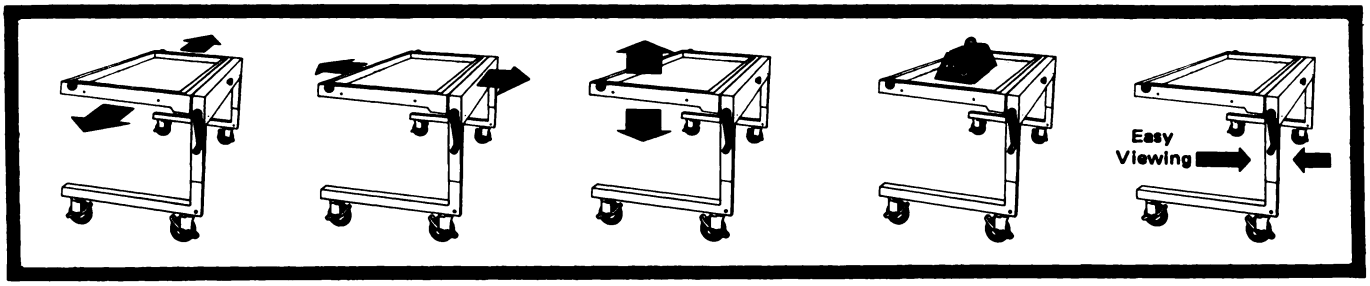

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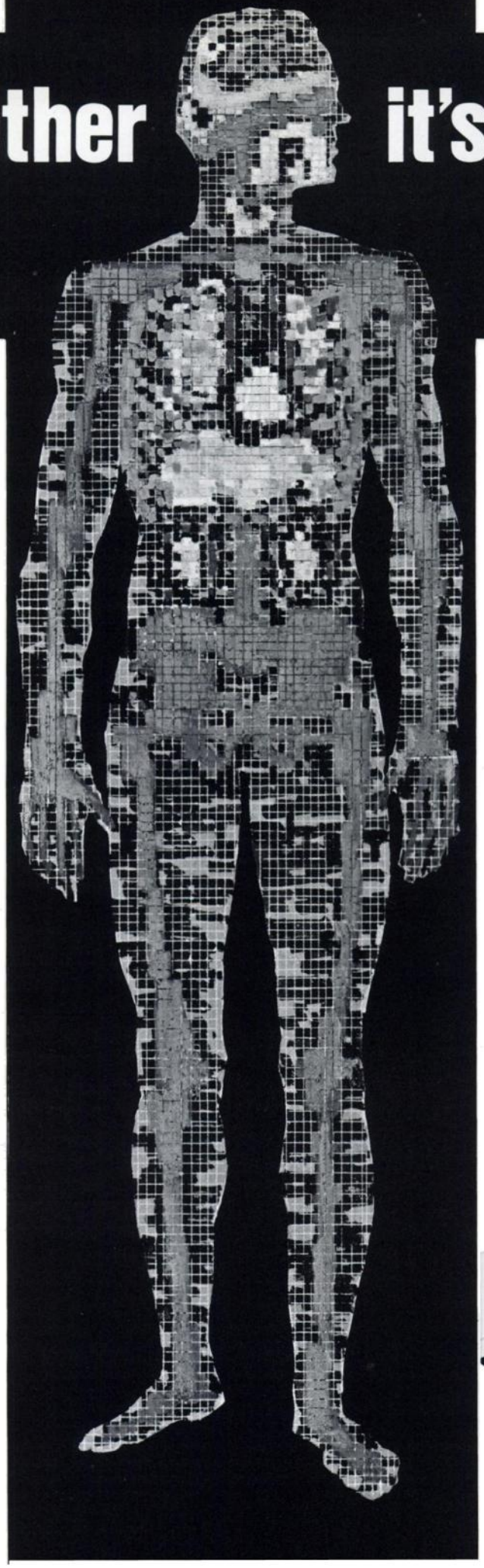

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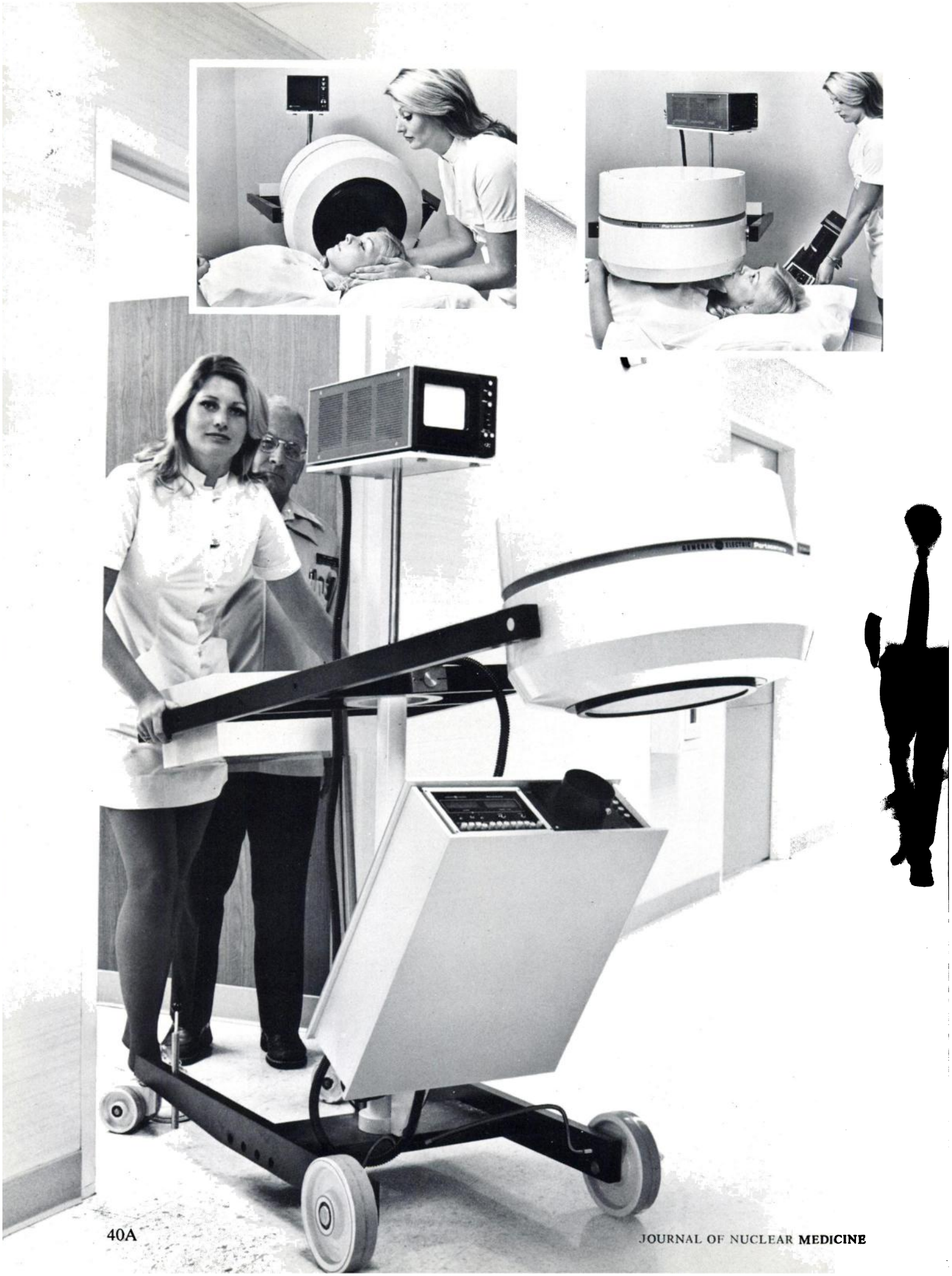

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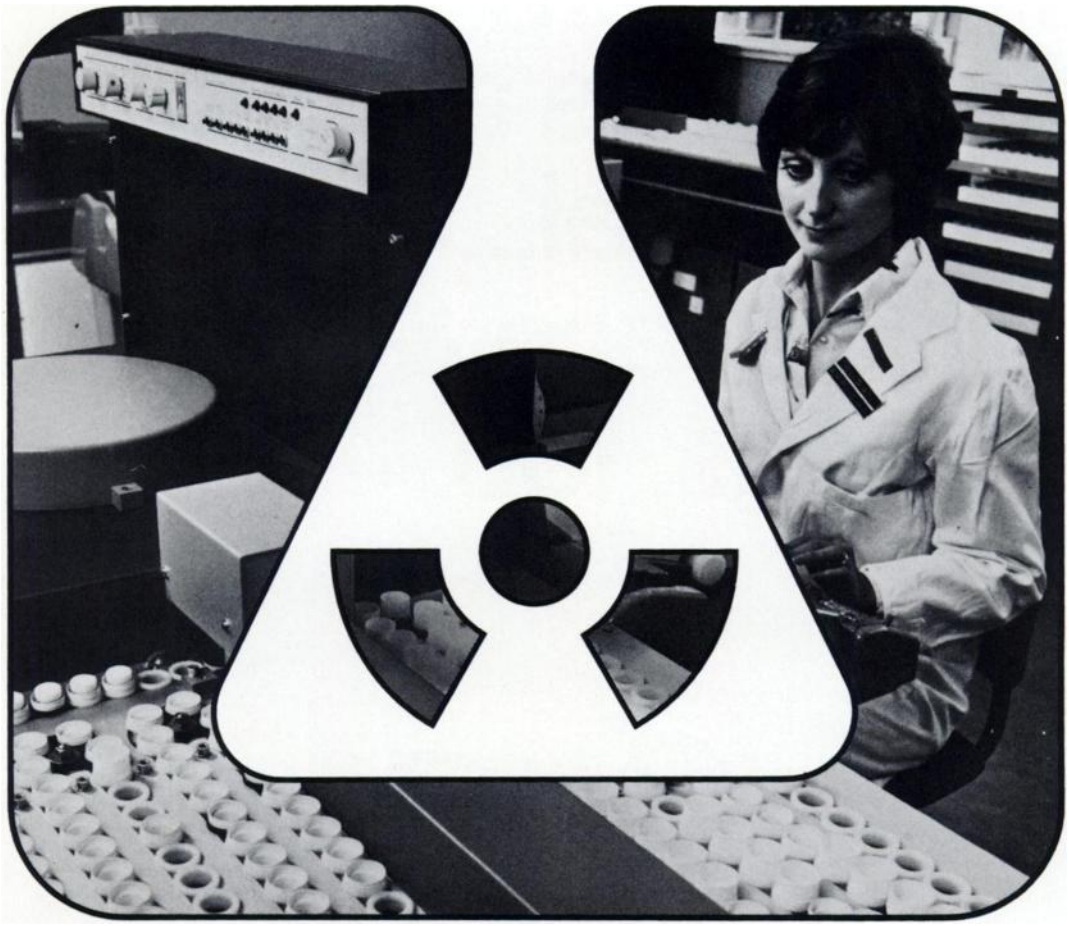

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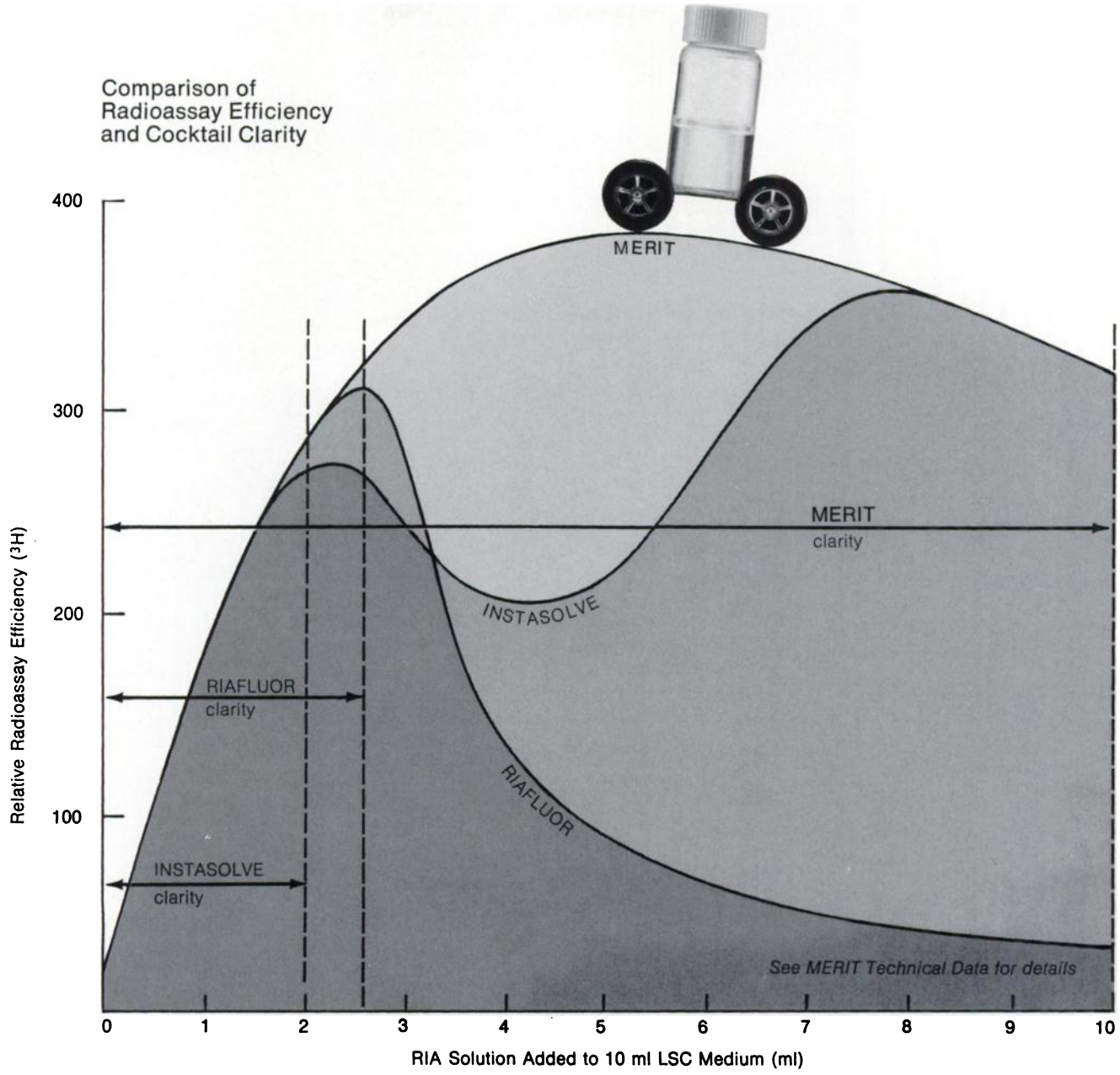

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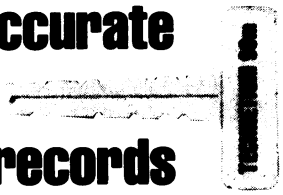

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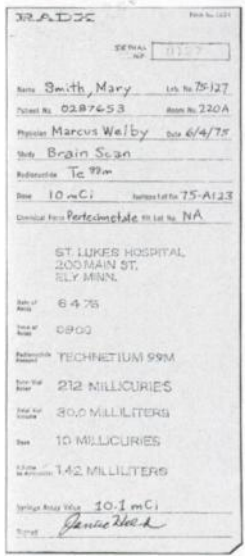

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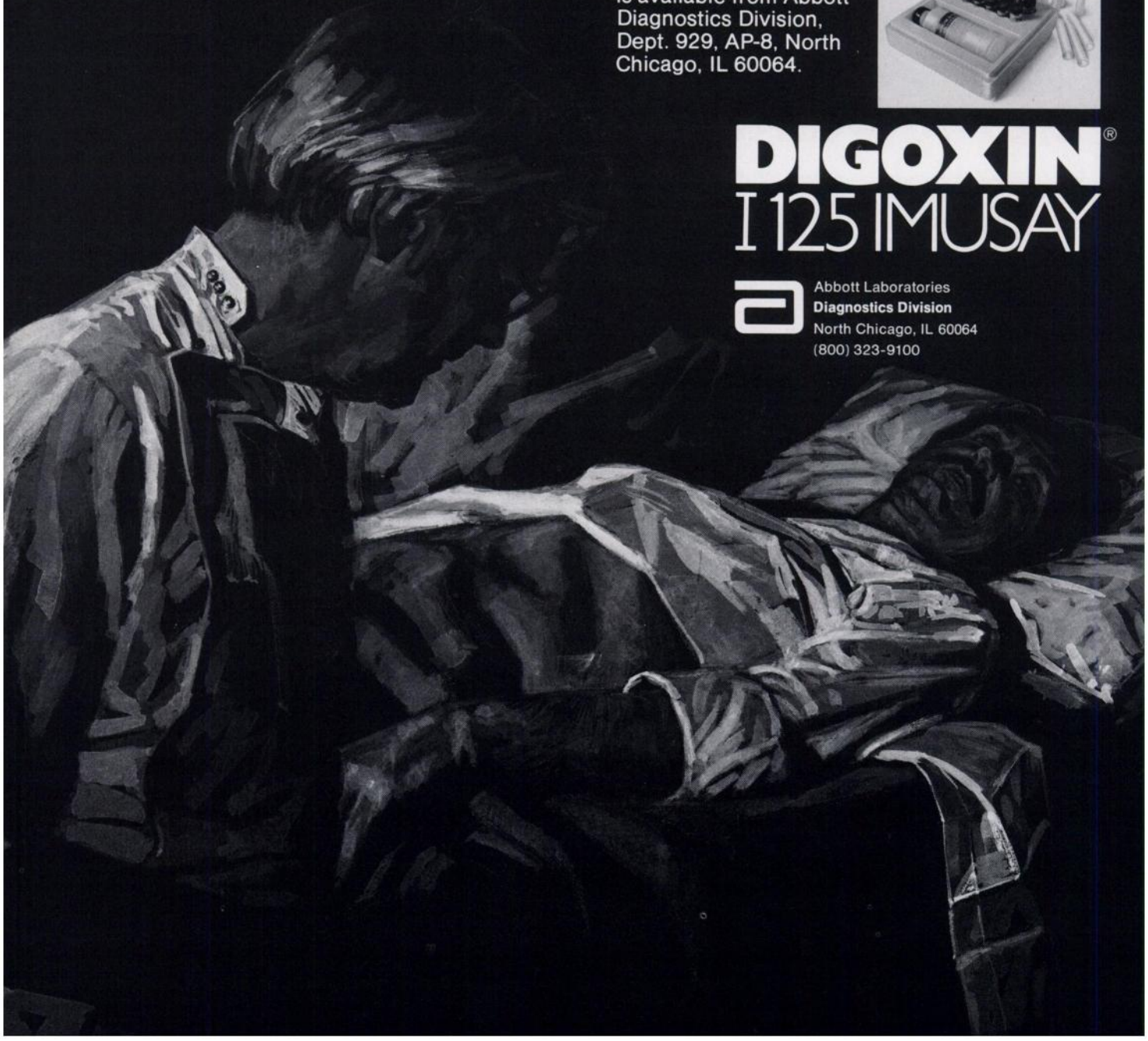
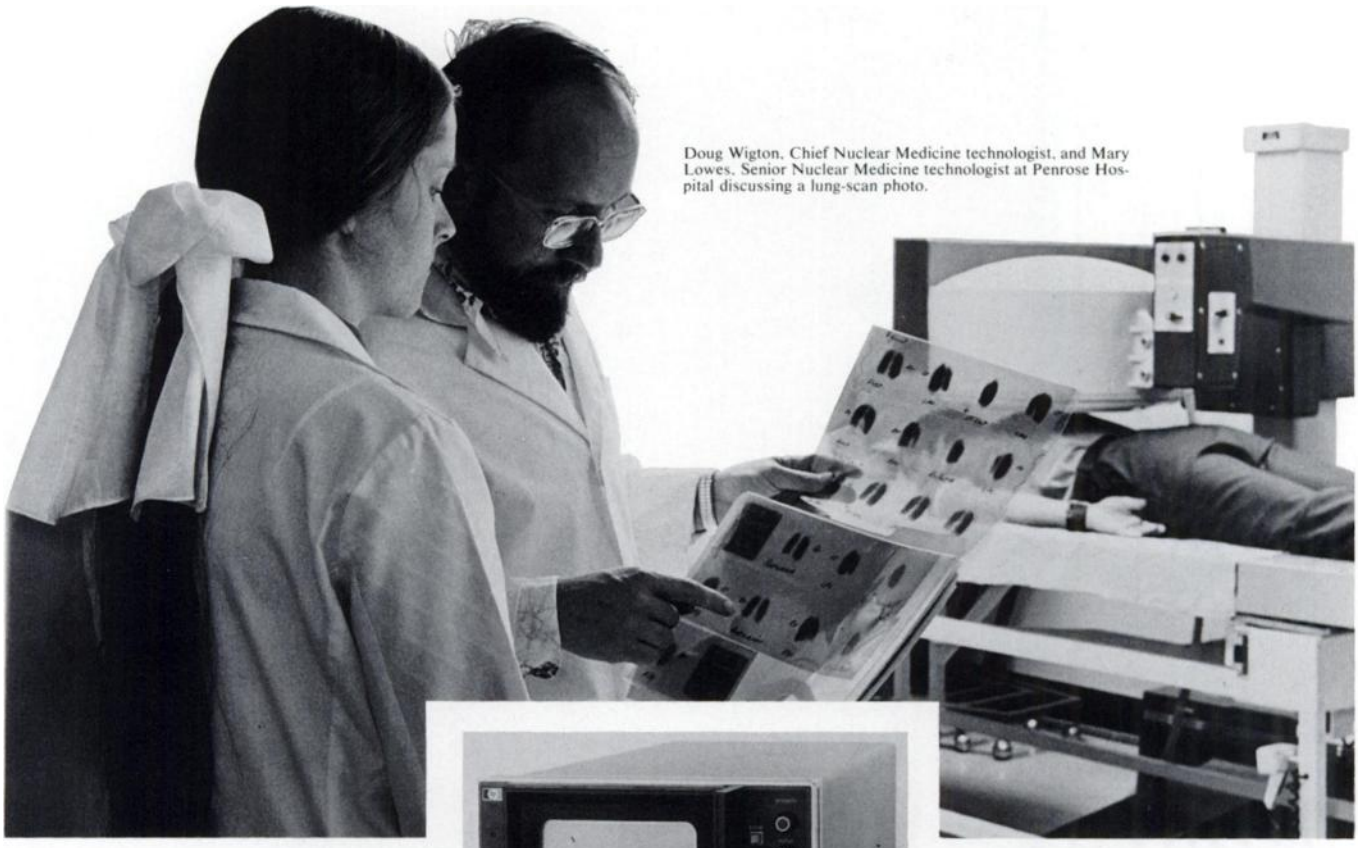


For diagnostic imaging, picture quality is crucial.



Doug Wigton, Chief Nuclear Medicine technologist, and Mary Lowes, Senior Nuclear Medicine technologist at Penrose Hospital discussing a lung-scan photo.

Nuclear physicians making diagnostic images want displays that show every detail, for accurate diagnosis of the patient's condition. That means displays that provide exceptionally sharp images with excellent contrast and uniform light output. The kind of picture quality that's necessary to spot even the smallest item of medical significance.

To get resolution and picture quality like that, a growing number of hospitals rely on HP displays. Fred Gydesen, MD/BS in Physics, Chief of Nuclear Medicine at Penrose and Memorial Hospitals in Colorado Springs, Colorado, finds that good diagnostic images are easier to achieve with HP displays. He and his colleagues use the variable persistence and storage capabilities of the HP 1335A, to dynamically position the patient before the scan. Then they use the exceptionally bright and uniform light output of the 1332A non-storage display to take photographs.

The 1335A gives them excellent detailing as each area of the body is scanned. The display's very small spot size focuses uniformly over the entire 8 x 10 division screen regardless of writing speed or intensity level. This eliminates the need to refocus at each intensity setting and assures crisp images, even around the outer edges of the screen.

For photographing selected areas, the 1332A display gives them a large viewing area (9.6 x 11.9 cm), a bright, uniform image at fast scan rates, and extremely good resolution—an ideal combination for producing quality photographs.

If you need bright, high-resolution displays for your medical and instrumentation systems, ask your local HP field engineer to tell you more about the 1332A and 1335A. These displays offer a variety of operating features that can speed and simplify your work. And they're designed to integrate easily into a variety of racks, cabinets or systems. But judge for yourself. Call or write for complete details.

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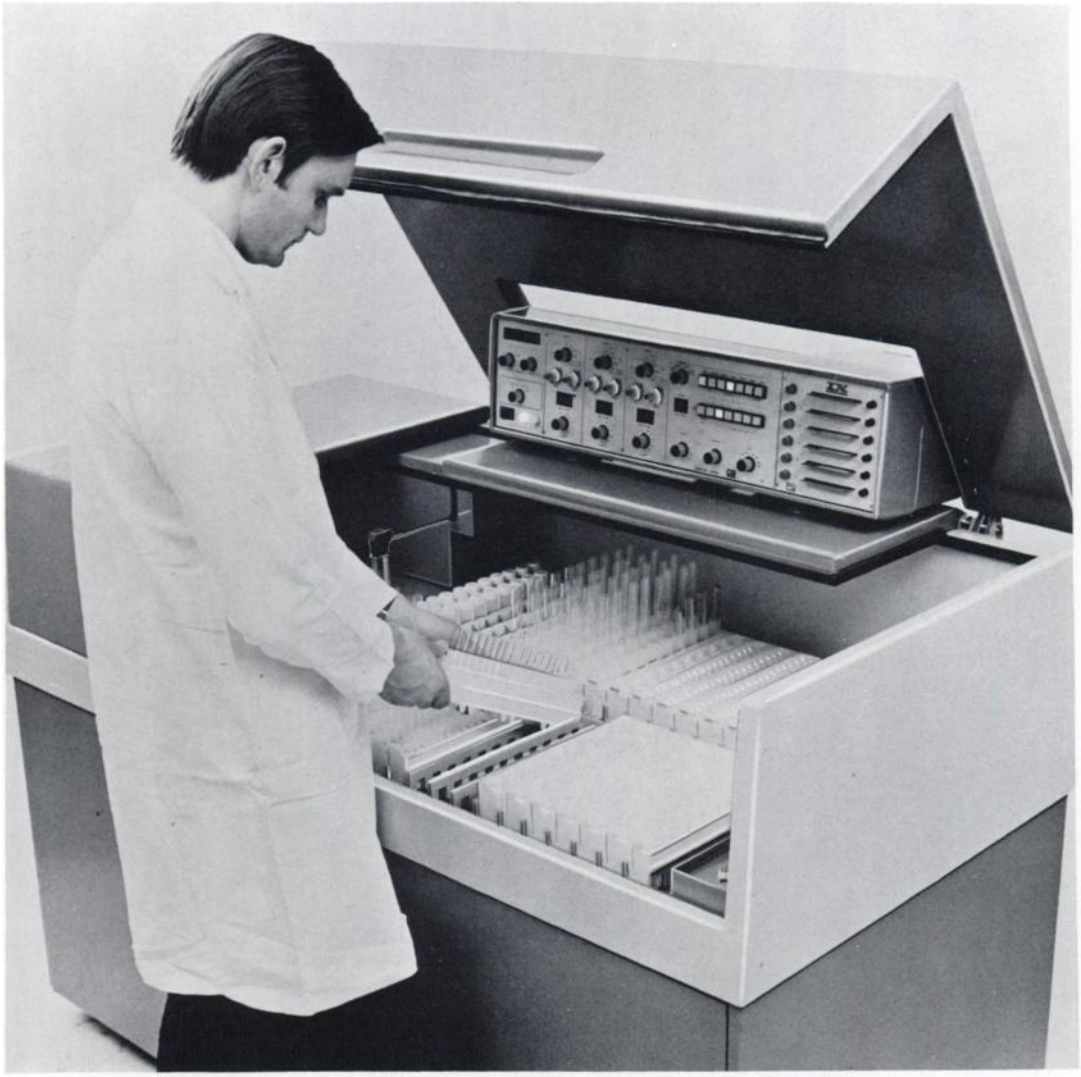

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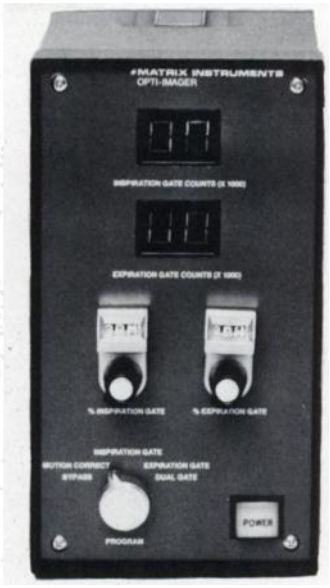
The dual gating operation mode allows recording of both end-systole and end-diastole simultaneously in a split screen two image format.

The cardiac cycle can even be divided into nine equal time segments and the image corresponding to each displayed simultaneously in a nine image format.

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.

Opti Imager



Opti-Imager is designed to provide an organ image with effects due to respiratory motion minimized. Opti-Imager has two distinct modes of operation: continuous motion correction and respiratory gating. In the continuous motion correction mode, the motion of the organ is tracked and corrected electronically without the need to attach any sensors to the patient. The distribution of counts within the organ image is monitored and corrections are applied to continuously shift the image before it is displayed to compensate for organ motion. Correction is made for motion in both the X and Y direction. Thus, the gamma camera is not gated and all the counts provided by the detector are recorded. The time required to attain a statistically satisfactory image is the same for both a motion corrected and an uncorrected image. In the gating mode, inspiration plateau and expiration plateau images are recorded. The dual gating operation mode allows recording of both inspiration and expiration plateau images simultaneously in a split screen two frame format. Dual scalers record the number of counts in each image.

The Cardiac Gate and Opti-Imager can be synchronized to yield a combination of both cardiac and respiratory gating. Mail coupon to receive detailed information and sample clinical studies.

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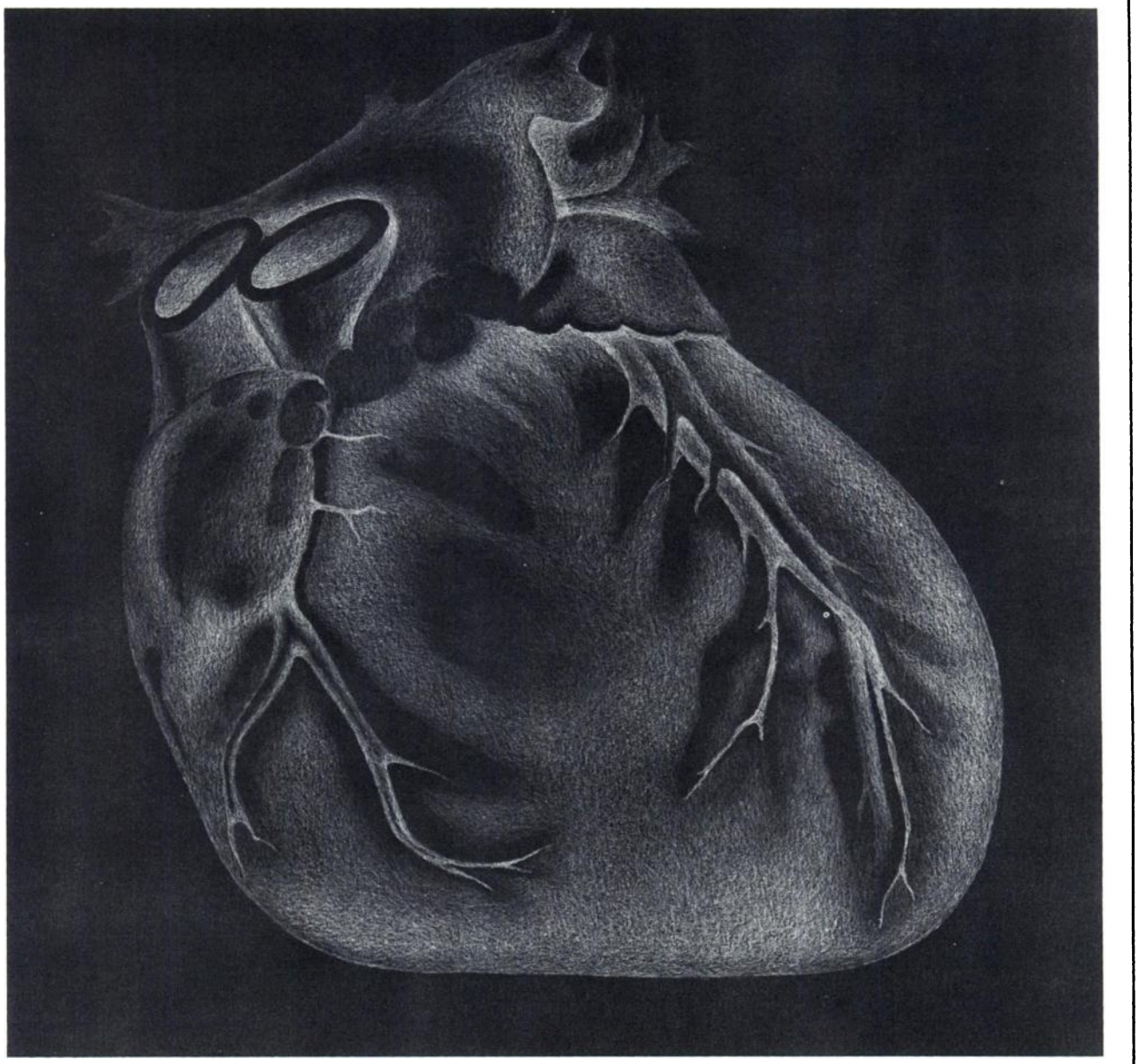

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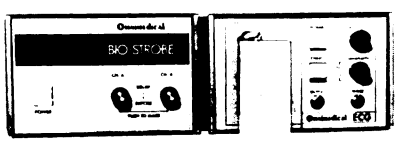

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NUCLEAR MEDICINE TECHNOLOgist—We are a 410-bed acute care hospital located 30 miles SE of the Chicago Loop. Our Department of Diagnostic Nuclear Medicine has an immediate opening for a registered Nuclear Medicine Technologist (A.S.C.P. and/or A.R.R.T.). Candidate must have experience in both imaging and radioimmunoassay procedures. Employee benefits include paid vacation, paid sick leave, retirement, paid life and hospital insurance. Excellent salary. Please send resume to: Personnel Department, St. Catherine Hospital, 4321 Fir St., East Chicago, Ind., 46312. Equal Opportunity Employer m/f.

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NUCLEAR MEDICINE PHYSICIAN wanted as an assistant certified or eligible for Boards, oriented toward clinical medicine and teaching. Fulltime position with salary negotiable. 400-bed hospital in Pennsylvania with university affiliation and active teaching program, adequately specialized staff of physicians with wide referral area. Nuclear Medicine Department organized 1958 and responsible for imaging and in vitro work. Write to Box 201, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

RADIOPHARMACEUTICAL FIRM, BOSton area, seeks Quality Assurance Director with experience and expertise in Quality Control, GMP and federal regulations. Preferably also experienced in manufacturing with concern for cost. Reply to Box 202, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

POSITION WANTED

CHIEF NUCLEAR MEDICINE TECHnologist, ARRT registered. Eight years experience. Capabilities include in vivo and in vitro applications. Expert with most equipment and procedures. Interested in planning, organizing and managing established or new facilities. Prefer to relocate north west or north east U.S. Reply to Box 203, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

NUCLEAR MEDICINE PHYSICIAN, ABNM board certified, completed two-year residency from a university, desires full-time position in nuclear medicine. Reply to Box 204, Society of Nuclear Medicine, 475 Park Ave. South. New York, N.Y. 10016.

PHYSICIAN, CERTIFIED ABNM, trained at leading university, diverse experience in all aspects of Nuclear Medicine, i.e., clinical, administrative, teaching, research, radiology background, desires full-time position, available summer 1976, respond with job description, please reply to Box 205, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

M.D., NUCLEAR MEDICINE BOARD certified, experienced in university teaching, desires full-time position in clinical and academic nuclear medicine. Box 206, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

NUCLEAR MEDICINE PHYSICIAN (Internal Medicine background). Will be ABNM eligible on completion of two-year university Nuclear Medicine residency 7-1-76. Desire position in clinical Nuclear Medicine. Prefer South, Western, or Southeastern U.S. Reply to Box 207, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

DIAGNOSTIC RADIOLOGIST COMpleting two-years University Hospital training in Nuclear Medicine desires position in July '76 in Nuclear Medicine and/or Radiology. Reply Box 208, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

TEACHER, B.S., M.Ed., WITH FIVE years, Math/Physics, teaching experience. Veteran, Army Medical Corps, with five years experience in all phases of basic medical lab technology. Recently completed A.M.A. approved Nuclear Medicine Program, have passed registry exam. Strong interest in teaching oriented position at the community college or university hospital level. Please reply to Box 209, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

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☐ Technetium DTPA(Sn) Kit
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Invites

Applications for Appointment as Director of Nuclear Medicine

Applicants should possess an appropriate post-graduate qualification and experience in nuclear medicine. Duties include diagnostic and therapeutic patient services, teaching, research and development. Hospital facilities include radioisotope laboratories, with standard equipment including a Picker magna scanner, gamma camera and the availability of an automatic gamma spectrometer and liquid scintillation counter. Prince Henry's is a general teaching hospital of 409-bed capacity; is affiliated with Monash University and houses university departments of medicine, surgery and psychological medicine, and the appointee may receive an appointment to the department of medicine. This is a senior full-time appointment, the salary and associated conditions of service being as prescribed by the Senior Medical Officers Wages Board. Current salary range in Australian dollars is 393 to 573 per week dependent on qualifications and experience; annual leave of 4 weeks per year and superannuation is available. Further information is available from the director of medical services, Dr. L. N. Walsh. Application forms are available from the undersigned, with whom applications close on March 1st, 1976. W. A. Cross, Manager.

Director, Nuclear Medicine Technology Program (B.S.)

Applications and nominations are invited for the position of Director of a new University-based four-year B.S. program. Responsibilities include implementation of the program, including the clinical year, instruction and advisement of students, initiation of research in Nuclear Medicine Technology or related area. M.S. or Ph.D. in radiochemistry, radiopharmacy, medical physics, or related area and two or three years clinical or instructional experience in Nuclear Medicine Technology is expected. Associate or assistant professor; salary dependent on experience and qualifications. Position available immediately. Applications and nominations to: Dr. David G. Onn, Division of Health Sciences (NMT), University of Delaware, Newark, Delaware, 19711.

An Equal Opportunity/Affirmative Action Employer. Minorities and women are encouraged to apply.

PHYSICIST

The Royal Victoria Hospital (a teaching hospital of McGill University) has an opening for a suitably qualified Radiologic Physicist in the Dept. of Nuclear Medicine. The position calls for 3–4 years previous experience in instrumentation and quality control in Nuclear Medicine and Diagnostic Radiology, radiologic and health physics and radiation protection. Knowledge of computer programming would be helpful. Whereas the Physicist's primary responsibility would be in Nuclear Medicine, he/she would have the opportunity of interacting with the Group in Physics at the McGill University Radiation Therapy Centre.

Apply to: **Miss J. D. Dollin, Personnel Department, Royal Victoria Hospital, 687 Pine Avenue West, Montreal, Quebec H3A 1A1.**

RESIDENCY AND FELLOWSHIPS IN NUCLEAR MEDICINE NOW AVAILABLE

For information contact:

John A. Burdine, M.D.
Chief, Nuclear Medicine Section
Department of Radiology
Baylor College of Medicine
Texas Medical Center
Houston, Texas 77025
Phone (713) 521-2272

Nuclear Medicine Technologist registered or registry eligible needed for well-equipped progressive department in a 427-bed general hospital. Generous fringe benefit program and competitive salary offered. Contact Personnel Office, **Mercy Hospital, P.O. Box 10036, Charlotte, N.C. 28237.** An Equal Opportunity Employer.

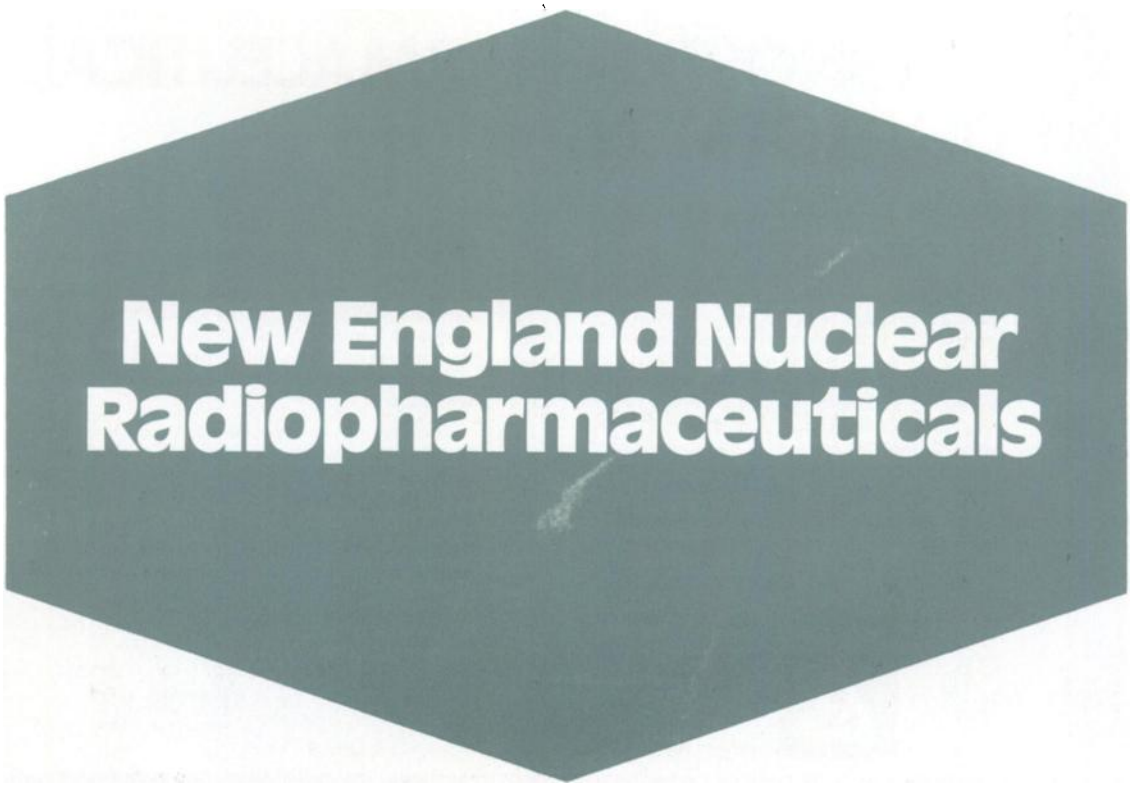
REGISTERED TECHNOLOGIST DIVISION OF NUCLEAR MEDICINE DEPARTMENT OF RADIOLOGY UNIVERSITY OF COLORADO MEDICAL CENTER

Registered Nuclear Medical Technologist (ASCP or ARRT). Working knowledge of instrumentation and routine procedures.

Please contact

Dee Konterski
Container A034

University of Colorado Medical Center
4200 E. 9th Avenue
Denver, Colorado 80220



INDICATIONS: Technetium Tc 99m Sulfur Colloid Injection is used as an agent for imaging areas of functioning reticuloendothelial cells in the liver, spleen and bone marrow.

CONTRAINDICATIONS: To date, there are no contraindications to the use of Technetium Tc 99m Sulfur Colloid Injection reported.

WARNINGS: The contents of the two unit dose syringes, one syringe containing the appropriate acidic solution and the second syringe containing the appropriate buffer solution, are intended only for use in the preparation of the Tc 99m Sulfur Colloid **and are not to be directly administered to the patient.**

The contents of the kit before preparation are not radioactive. However, after the Pertechnetate Sodium Tc 99m is added, adequate shielding of the final preparation must be maintained.

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 governmental agency authorized to license the use of radionuclides.

This radiopharmaceutical preparation should not be administered to pregnant or lactating women 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.

PRECAUTIONS: The components of the kit are sterile and non-pyrogenic. It is essential that the user follows the directions carefully and adheres to strict aseptic procedures during preparation of the colloid.

The stability of the colloidal preparation may be decreased in the presence of polyvalent cations, thus resulting in the agglomeration of the individual colloidal particles. These larger particles are likely to be trapped by the pulmonary capillary bed following intravenous injection.

Pertechnetate solutions containing more than 10 micrograms/ml of aluminum ion should not be used for formation of the Tc 99m Sulfur Colloid.

Technetium Tc 99m Sulfur Colloid Injection is physically unstable and as such the particles will settle with time. Failure to agitate the vial adequately before use may result in nonuniform distribution of radioactivity.

It is also recommended that because of the increasing probability of agglomeration with aging, a batch of Tc 99m Sulfur Colloid should be used as soon as possible and before 6 hours from the time of formulation.

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

ADVERSE REACTIONS: Hypersensitivity reactions, including anaphylaxis, have been reported in patients receiving sulfur colloid preparations. Although rare, pyrogen reactions have been reported following the administration of the drug stabilized with gelatin.

DOSAGE AND ADMINISTRATION: The suggested intravenous dose range used in the average patient (70 kg) is 1 to 8 millicuries of Technetium Tc 99m Sulfur Colloid Injection.

When orally administered, the Technetium Tc 99m Sulfur Colloid Injection is not adequately absorbed from the G.I. tract.

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

Six good things come in one small package

NEN's Sulfur Colloid is a reliable, economical, convenient, compact kit.

Reliable because of long consistent performance and backed up by our optional Minichromatography System, which verifies labeling efficiency.

Economical because NEN's kit has six preparations, not the usual five.

Convenient because you prepare it only as needed.

Compact because an average year's supply of 44 kits occupies only two cubic feet.

NEN New England Nuclear
Radiopharmaceutical Division

Atomlight Place, North Billerica, Mass. 01862
Telephone 617-667-9531

Los Angeles: 213-321-3311 Miami: 305-592-0702

Canada: NEN Canada Ltd, Lachine, Quebec. Tel: 514-636-4971
Europe: NEN Chemicals GmbH, D6072 Dreieichenhain,
W. Germany, Siemensstrasse 1. Tel: Langen 06103-85035

RADIOIMMUNOASSAY WORKSHOP

A one-day radioimmunoassay workshop will be held at Middlesex General Hospital, New Brunswick, N.J., February 24, 1976. The morning session will consist of lectures reviewing basic theory of radioimmunoassay, methods for the performance of specific radioimmunoassays, and quality control procedures. During the afternoon, a radioimmunoassay will be performed with the participants of the workshop. Emphasis will be placed on the importance of quality controls. The morning session may be attended without participating in the afternoon laboratory exercise. Registration for the laboratory session will be limited.

Faculty for the workshop will consist of guest speakers, Dr. Stanley Goldsmith of Mt. Sinai Hospital, New York City and Dr. Bernard Shapiro of Albert Einstein Medical Center, Philadelphia, Pa., who will deliver lectures during the morning session, and the physician and technologist staff of Middlesex General Hospital.

Registration fee for the morning session only is $15.00 and for the all-day session, $30.00.

For further details, please contact:

Theodore J. Stahl, M.D.
Chief, Nuclear Medicine

Middlesex General Hospital
180 Somerset Street
New Brunswick, N.J. 08901

Ian Falvey found that doing our new Ab-TRAC* digoxin test was easy.

Getting his mom's permission was tough.

Ian is ten years old. His mom is a senior medical technologist who knows that tests like our new Ab-TRAC RIA [^{125}I] kit for digoxin should only be performed by trained professional technologists.

We agreed. But we also wanted to illustrate how easy the new Ab-TRAC solid phase digoxin [^{125}I] kit was to use. Its solid phase design combines 3 steps into 1 (the color coded anti-body and tracer are contained within the Ab-TRAC tubes). New "wet" serum standards require no reconstitution and there is only one incubation. All designed for accuracy and reproducibility, resulting in time saving for the technologist.

Shelley Falvey MT (ASCP) finally consented. Providing she could supervise ("but no coaching, Mom").

How did Ian do? Just great. His chart was on a par with his mom's when she did the test. Here are Ian's comments: "It's easy. It turns colors so you know where to put the stuff."

And here's what Mrs. Falvey said: "This new kit is so easy, even my ten year old boy can do it."

The Falveys' conclusion? The new Schwarz/Mann RIA Ab-TRAC digoxin kit is going to make things a lot easier for technologists all over the country.

And they don't even have to get their mom's permission.

*Ab-TRAC stands for anti-body and tracer contained in tubes. This saves technologists time and eliminates a source of potential pipetting error.

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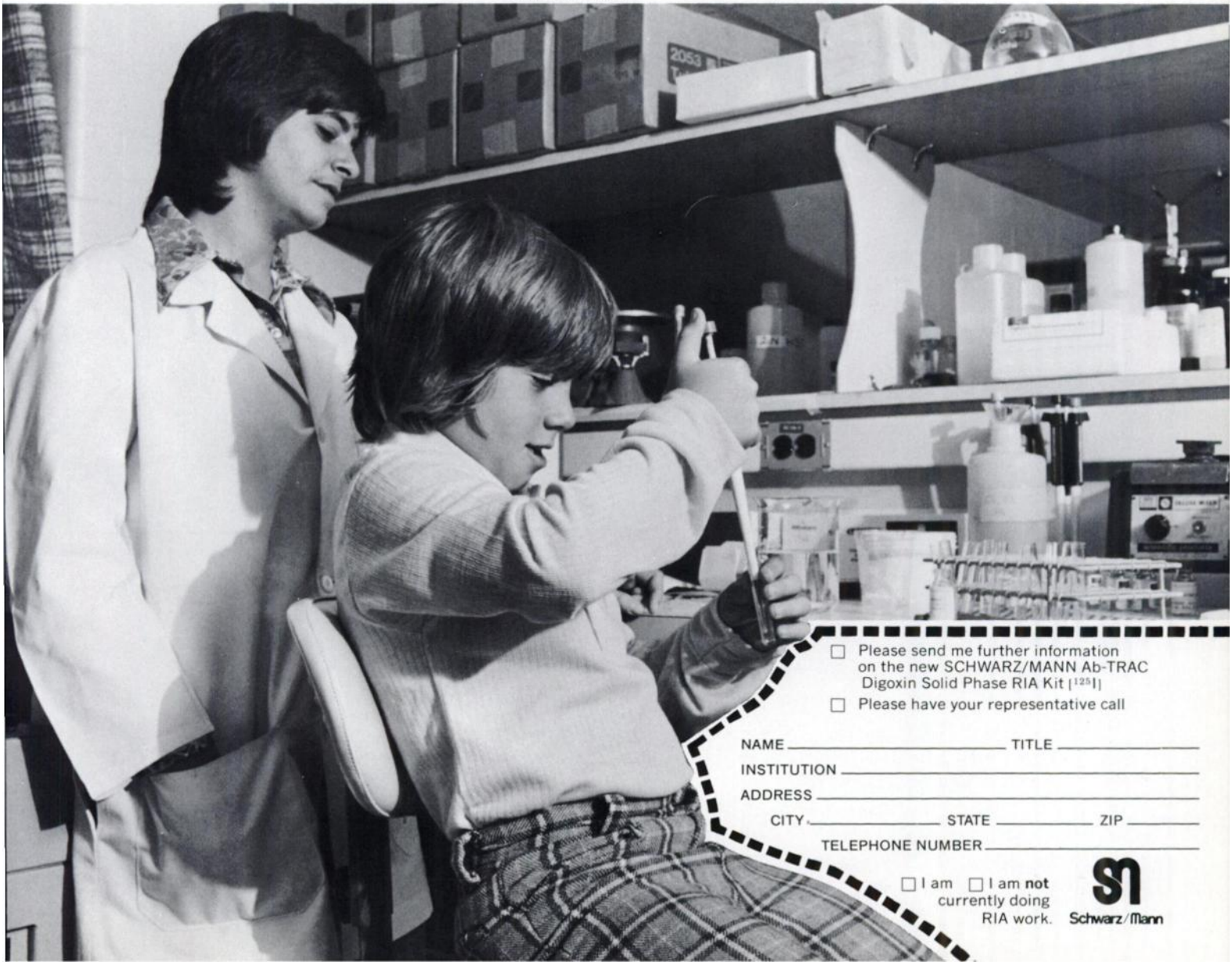

☐ Please send me further information on the new SCHWARZ/MANN Ab-TRAC Digoxin Solid Phase RIA Kit [^{125}I]

☐ Please have your representative call

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INSTITUTION _____

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☐ I am ☐ I am **not** currently doing RIA work.

Schwarz/Mann

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ADAC Clinical Data System

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- ■ Clinical Software Package
- ■ In Vivo and In Vitro Data Analysis
- ■ Free Software Upgrades
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- ■ One-Year Warranty

Optional Features

- ☐ Third Disc Drive (allows simultaneous processing while acquiring data)
- ☐ 64K x 16 Memory
- ☐ 8 x 10 X-ray Film Camera
- ☐ Polaroid Camera
- ☐ FORTRAN IV Compiler
- ☐ Paper Tape Reader (for input of RIA data)
- ☐ High Speed Disc Drive (list mode, mass storage)
- ☐ Remote Dual Displays
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- ☐ Microdot (Searle TM) Interface

... for the price of a $25,000 tape system!

The new ADAC Clinical Data System may be just what you're looking for . . . it's more than a video tape recording system, more than a hard-wired, tape-based data system (and easier to use), and comparable in performance and flexibility to the minicomputer systems that cost $50,000 to $75,000.

Quantitative organ function analysis will play a significant role in the future of nuclear medicine. Effective data acquisition and analysis is becoming more of a necessity than ever before. Until now, your choice was between expensive programmable computers and less costly (and less effective) tape-oriented systems. Recent advancements in computer technology give you a third choice that closes the gap!

For less than $30,000 you can have a programmable computer that incorporates the very latest technology, giving you a system that is low priced, easy to use, versatile, and expandable to meet the most demanding needs of the future.

Call or write today for a sample clinical study and the locations of our current installations.

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NEW PRODUCT ANNOUNCEMENT

SLIM-LINE
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SL-110	10cc	26.75
SL-120	20cc	29.75

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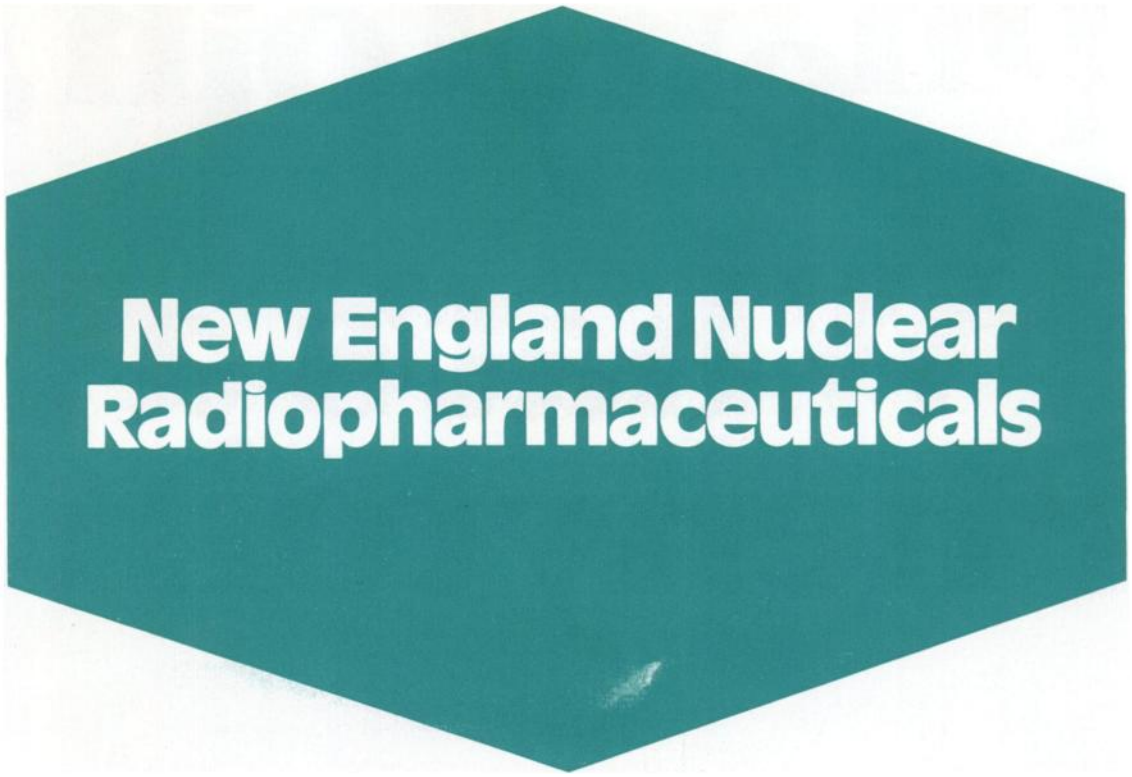

INDICATIONS: Pertechnetate Sodium Tc 99m is used for brain imaging, thyroid imaging, salivary gland imaging, placental localization and blood pool imaging.

CONTRAINDICATIONS: To date, there are no contraindications to the use of Pertechnetate Sodium Tc 99m.

WARNINGS: This radiopharmaceutical should not be administered to pregnant or lactating women 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 the 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 governmental 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.

At the time of administration the solution should be crystal clear.

IMPORTANT: Refer to Operating Instructions on the proper use of the New England Nuclear Generator. These instructions are enclosed with each generator.

ADVERSE REACTIONS: To date, no adverse reactions based on the use of this agent have been reported.

DOSAGE AND ADMINISTRATION: Pertechnetate Sodium Tc 99m is usually administered by intravenous injection but can be given orally. The dosage employed varies with each diagnostic procedure.

The suggested dose range employed for various diagnostic indications in the average patient (70 kg) is:

Brain Imaging:	10-20mCi
Thyroid Imaging:	1-10mCi
Salivary Gland Imaging:	1-5mCi
Placental Localization:	1-3mCi
Blood Pool Imaging:	10-20mCi

Note: Up to 1 gram of reagent grade potassium perchlorate in a suitable base or capsule may be given orally prior to administration of Pertechnetate Sodium Tc 99m injection for brain imaging, placental localization and blood pool imaging.

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

Have a good M, T, W, Th, F & S.

M begins with a handy lifting handle and a quick peel-off top. No pre-assembly. From then on you simply charge and elute. Any day you can get extra high concentrations with fractional elutions (useful on Th, F, and S to compensate for radioactive decay since M).

Every generator is tested for sterility, non-pyrogenicity, Mo 99 breakthrough, alumina breakthrough, and functionality.

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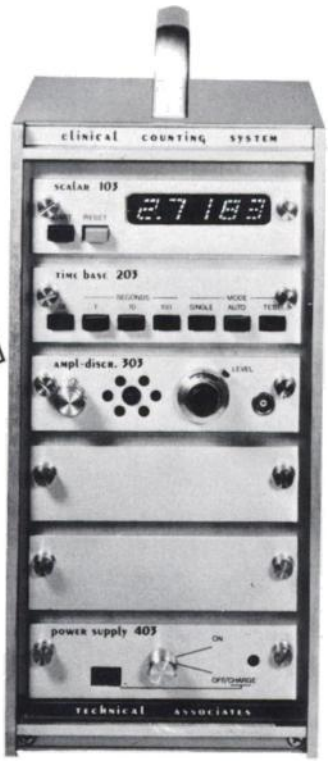

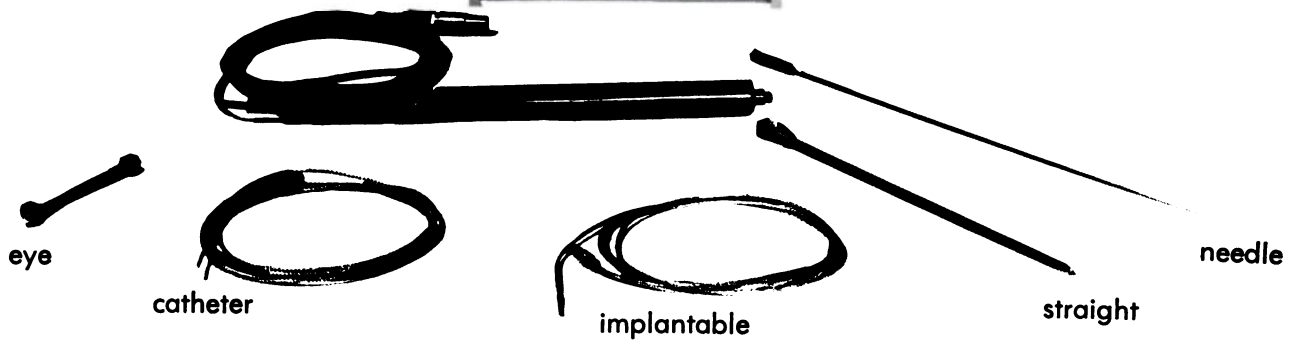

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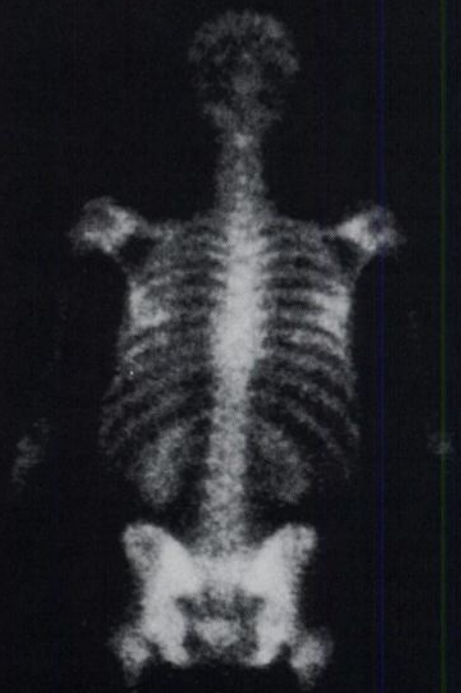
The Cleon Imager fills basic needs in the busy nuclear medicine department. In "WHOLE BODY MODE," it handles patient caseloads three to five times as rapidly as a conventional *rectilinear scanner,* providing dual anterior and posterior skeletal images of such clarity and sharpness that repeat small-area scans to confirm diagnoses rarely are needed. Yet it can provide, in "ORGAN MODE," small-area organ images with speed comparable to (and in-depth resolution better than) a *gamma camera.*

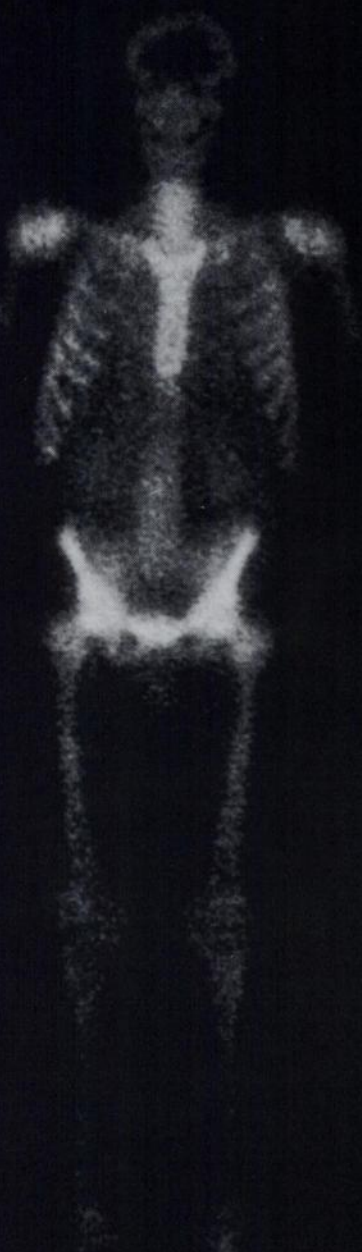
Large crystal area (109 square inches in each detector head) gives high information density with reproducible results for given scan times. Interchangeable focused collimators permit use with various nuclides for skeletal and organ imaging, as well as tumor-screening. (The Imager has proved successful in detecting abnormalities in soft tissue when used with Ga-labelled agents.)

The Imager's display and recording options, enhancement of photo-images, and the capability to playback stored data greatly increase its clinical usefulness. Reliability, rapidity of operation, and high patient turnover mean increased utilization and economy, along with improved diagnostic efficiency.



BONE IMAGE OF 58-YEAR-OLD MALE.
Imaging agent: 15 mCi Tc-99m Pyrophosphate.
Time-to-scan (2 views) 24.8 minutes.
Image courtesy of
Cedars of Lebanon Hospital, Los Angeles.

BRAIN IMAGE.
Imaging agent: 15 mCi Tc-99m Pertechnetate.
Time-to-scan (4 views): 13.7 minutes.
Image courtesy of *Cedars of Lebanon Hospital, Los Angeles.*



LUNG IMAGE SERIES.
Imaging agent: 1.5 mCi Tc-99m MAA.
Time-to-scan (8 views): 16 minutes.
Image courtesy of *Leonard Morse Hospital, Natick, MA.*

LIVER AND SPLEEN IMAGE OF PATIENT SHOWING SPLENOMEGALY AND CIRRHOTIC LIVER.
Imaging agent: 1.5 mCi TC-99m Sulfur Colloid.
Time-to-scan (4 views) 14 minutes.
Image courtesy of *Cedars of Lebanon Hospital, Los Angeles.*

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we've just made a good test easier.

Don't separate both parts of the Schilling test by three days. With Dicopac both parts are performed at the same time. The results are derived in less time, because the two labelled forms of vitamin B_{12} (free cyanocobalamin Co-58 and cyanocobalamin Co-57 bound to [human] gastric juice) are administered simultaneously.

The results are expressed as a percentage of each nuclide excreted and, more importantly, as a ratio of Co-57 to Co-58. An incomplete urine collection will affect the absolute amounts of each nuclide collected, but not the ratio of Co-57 to Co-58. Therefore, the test is not necessarily invalidated by incomplete urine collection.

For convenience, the flushing dose of unlabelled vitamin B_{12} (1 mg) is supplied in individual single dose ampules.

For more detailed information, please refer to the next page of this advertisement or contact our Customer Service Department.

Dicopac for diagnosis of vitamin B_{12} malabsorption.

Dicopac®

(0.25 µg cyanocobalamin gastric juice, 0.25 µg Co-57 bound to [human] cyanocobalamin Co-58)

DESCRIPTION: Each Dicopac® Kit consists of five single-test cylinders, a vial of Cobalt 57 (Co 57) standard, and a vial of Cobalt 58 (Co 58) standard. Each test cylinder contains a capsule of cyanocobalamin Co 58 (vitamin B_{12} Co 58), a capsule of cyanocobalamin Co 57 (vitamin B_{12} Co 57) bound to human gastric juice, and an ampule of unlabelled cyanocobalamin for injection.

ACTIONS: Oral vitamin B_{12} is normally coupled with intrinsic factor (IF) contained in the gastric juice secreted by the stomach and the vitamin B_{12} combined with intrinsic factor is absorbed in the terminal ileum. Only intrinsic factor bound vitamin B_{12} is absorbed by this route. Following parenteral administration or gastrointestinal absorption, cyanocobalamin is bound to plasma proteins and distributed to the liver and blood forming organs.

INDICATIONS: Dicopac Kit consisting of cyanocobalamin Co 58 and cyanocobalamin Co 57 combined with human intrinsic factor is used to assess vitamin B_{12} absorption in the diagnosis of malabsorption due to the lack of intrinsic factor, e.g. Addisonian (pernicious) anemia, and as a diagnostic adjunct in other defects of intestinal absorption.

CONTRAINDICATIONS
None

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

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

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.

The test should not be started within 24 hours of a therapeutic dose (1000 μg) of vitamin B_{12} or within 24 hours of a loading dose of vitamin B_{12} given for the Schilling test.

If bone marrow examinations are to be done, they should precede the administration of this test, as the flushing parenteral dose of vitamin B_{12} may alter the bone marrow picture.

ADVERSE REACTIONS
None

DOSAGE AND ADMINISTRATION: One purple/white capsule containing 0.25 μg cyanocobalamin Co 57 (nominal activity 0.5 μCi at activity date) bound to human gastric juice for oral administration.

One red/ivory capsule containing 0.25 μg cyanocobalamin Co 58 (nominal activity 0.8 μCi at activity date) for oral administration.

One ampule of unlabelled cyanocobalamin (1 mg) for intramuscular injection.

The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration. Care must be taken when measuring the activity in the Co 57 and Co 58 capsules because of the small amount of radioactivity present.

ADMINISTRATION AND TEST PROCEDURE*: The Dicopac test is performed in a manner similar to the Schilling test, however, with this test both Co 58 cyanocobalamin and Co 57 cyanocobalamin bound to intrinsic factor are administered simultaneously. Thus, both vitamin B_{12} absorption and response to intrinsic factor are measured with the Dicopac test.

Both Dicopac capsules are orally administered to a fasting patient, who is instructed to collect all urine for the next 24 hours. An intramuscular injection of non-radioactive vitamin B_{12} is administered to the patient up to two hours after the radioactive capsules are administered.

After the total volume of urine is measured, aliquots are taken for counting. The urine samples and the Co 57 and Co 58 standards provided with the Dicopac Kit are counted using dual isotope counting procedures. This data is used to calculate the percent excretion of each radionuclide and the ratio of the percent excretion of Co 57 to the percent excretion of Co 58.

*Refer to "The Technical Information for the Performance of the Dicopac Test" brochure provided with the Dicopac Kit for further information on procedural techniques.

INTERPRETATION OF RESULTS: The usual percent excretion values and the ratios obtained with Dicopac are presented in Table I.

Table I. Results of 24-hour urine excretions and $\frac{\text{Co 57}}{\text{Co 58}}$ ratios with Dicopac:

Diagnosis	Mean values % (usual range) Co 57 + I.F.	Co 58	$\frac{\text{Co 57}}{\text{Co 58}}$ ratio
Normals	18 (10-42)	18 (10-40)	0.7-1.3
Pernicious anemia and certain gastric lesions	9 (6-12)	3 (0-7)	>1.7
Malabsorption syndromes not caused by lack of I.F.	<6	<6	0.7-1.3

A small number of patients have been found to excrete a "normal" (i.e., >10%) amount of Co 58, but these individuals exhibit elevated ratios (>1.4). The clinical significance of these findings is presently unclear.

PHYSICAL CHARACTERISTICS: Cobalt-57 decays by electron capture with a physical half life of 270 days. The primary gamma energy of Co 57 is about 122 KeV. Cobalt-58 decays by electron capture and positron and gamma emissions with a physical half life of 71 days. The primary gamma energy of Co 58 is 811 KeV. Photons that are useful for counting are listed in Table I.[1,2]

Table I. Principal Radiation Emission Data

	Radiation	Mean %/disintegration	Mean Energy (KeV)
Co 57	Gamma -2	87.1	121.9
	Gamma -3	9.6	136.3
Co 58	Beta -1	15.0	203.7
	Gamma -1	99.4	810.5
Annihilation Radiation		30.0	511.0

[1]Dillman, L.T., Radionuclide Decay Schemes and Nuclear Parameters for Use in Radiation-Dose Estimation, Supplement No. 2. MIRD pamphlet No. 4, *J Nucl. Med.*, p. 27, 1969.

[2]Dillman, L.T., Radionuclide Decay Schemes and Nuclear Parameters for Use in Radiation-Dose Estimation, part 2, Supplement No. 4, MIRD pamphlet No. 6, *J. Nucl. Med.*, p. 16, 1970.

The specific gamma ray constant for Co 57 is 1.0 R/mCi-hr at 1 cm. For Co 58 it is 5.5 R/mCi-hr at 1 cm. The half value layer for Co 57 is 0.2mm of Pb. For Co 58 it is 9mm of Pb.

To correct for physical decay of these radionuclides, the fractions that remain at selected time intervals before and after the day of calibration are shown in Table II.

This table is not needed for routine calculation, as all counting is relative to the standards which have been prepared from the same batch of each of the radionuclides as the corresponding cyanocobalamin capsules.

Table II. Physical Decay Chart: Co 57, half life 270 days; Co 58, half life 71 days

Weeks Before Activity Date	Co 57 μCi	Co 58 μCi	Weeks After Activity Date	Co 57 μCi	Co 58 μCi
10	0.60	1.48			
9	0.59	1.38	1	0.49	0.75
8	0.58	1.38	2	0.48	0.70
7	0.57	1.29	3	0.47	0.65
6	0.56	1.21	4	0.47	0.61
5	0.55	1.13	5	0.46	0.57
4	0.54	1.05	6	0.45	0.53
3	0.53	0.98	7	0.44	0.50
2	0.52	0.92	8	0.43	0.46
1	0.51	0.86	9	0.43	0.43
0*	0.50	0.80	10	0.42	0.40

*Activity date

RADIATION DOSIMETRY: The estimated absorbed radiation doses[1] to an average patient (70 kg) following the oral administration of one Dicopac capsule of Co 57 and one of Co 58 at calibrated nominal activities of 0.5 μCi and 0.8 μCi, respectively, are shown in Table I.

Table I. Radiation Doses

Tissue	Absorbed Radiation Dose (rads/0.5 μCi Co 57 + Intrinsic Factor) Normal and Pernicious Anemia	(rads/0.8 μCi Co 58) Normal	Pernicious Anemia
Liver*	0.065	0.14	0.03
Stomach	0.000041	0.00027	0.00042
Small Intestine	0.00007	0.00043	0.0013
Upper Large Intestine	0.00013	0.00070	0.0021
Lower Large Intestine	0.00030	0.0018	0.0053
Testes*	0.0026	0.0074	0.00037
Ovaries*	0.0033	0.010	0.0021
Whole-body*	0.0050	0.012	0.0022

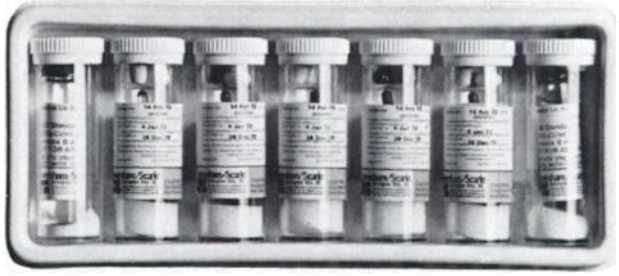
*The administration of a flushing dose of non-radioactive B_{12} will decrease the dose to the liver, gonads, and whole-body from Co 57 and Co 58 by about 30%.

[1]Method of Calculation: A Schema for Absorbed-Dose Calculation for Biologically Distributed Radionuclides, Supplement No. 1, MIRD pamphlet No. 1, *J. Nucl. Med.*, p. 7, 1968.

HOW SUPPLIED: Each Dicopac Kit consists of five single-test cylinders and two 8 ml vials containing the standard solutions. The vial containing the blue solution is the Co 57 standard and the vial containing the yellow solution is the Co 58 standard. Each standard solution is prepared so that 1 ml of solution is equivalent to 2% of the total activity of each of the corresponding capsules.

Each cylinder contains two capsules and an ampule of unlabelled cyanocobalamin (1 mg). The red/ivory capsule contains 0.25 μg Co 58 cyanocobalamin (nominal activity 0.8 μCi at activity date). The purple/white capsule contains 0.25 μg Co 57 cyanocobalamin (nominal activity 0.5 μCi at activity date) bound to human gastric juice.

Dicopac Kits should be stored at 4°C and not used after the expiry date stated on the label.



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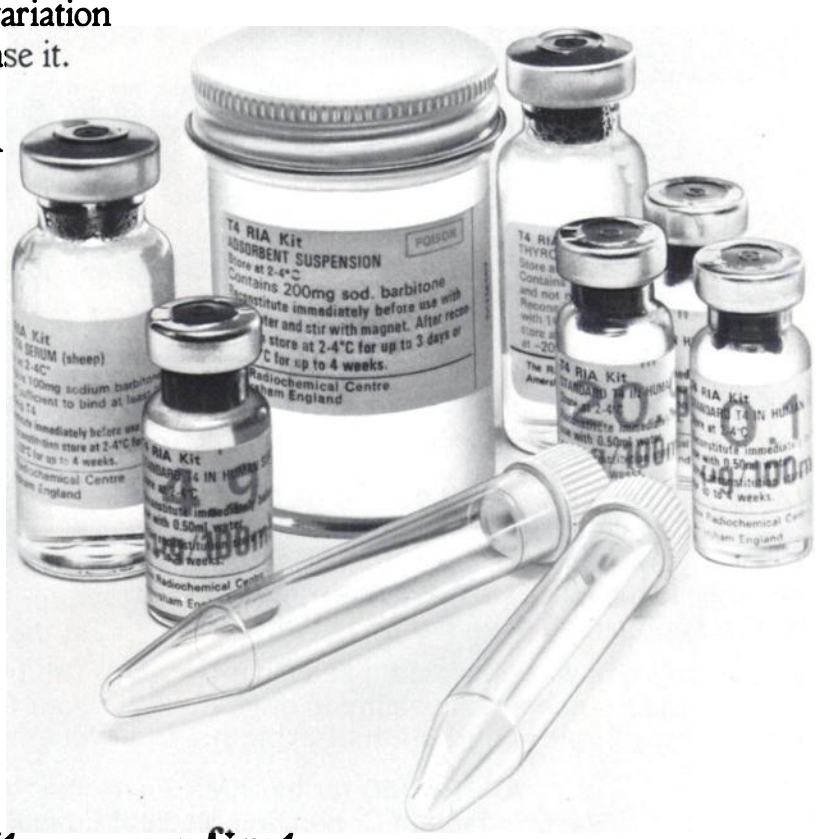

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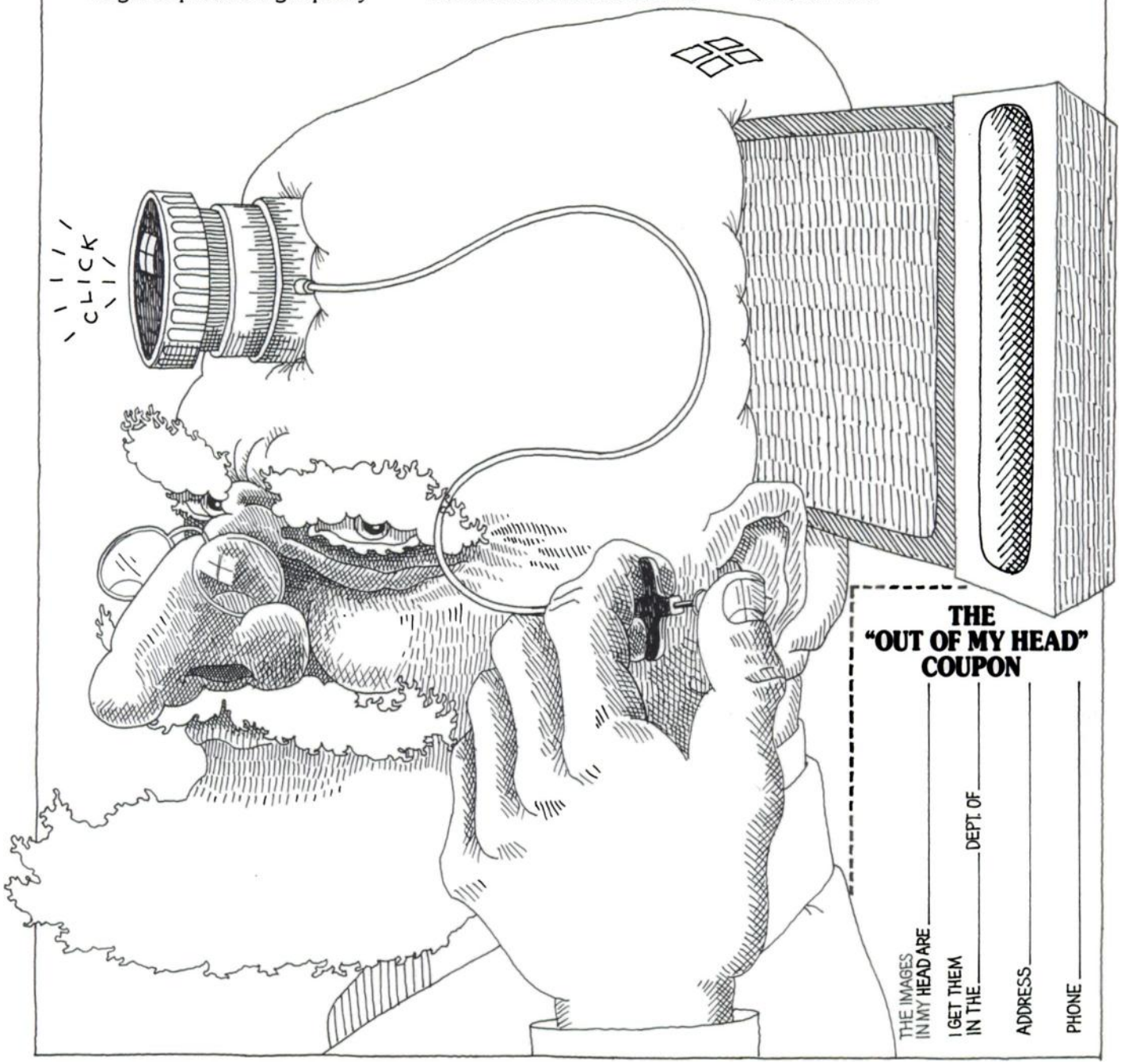

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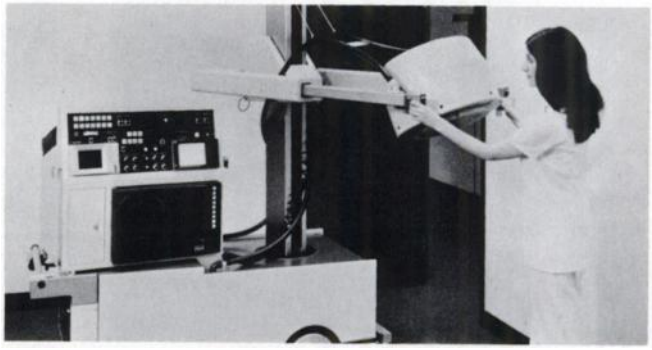

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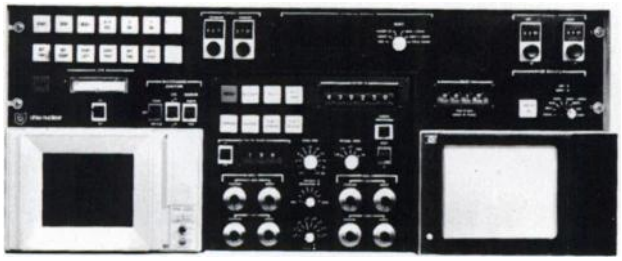

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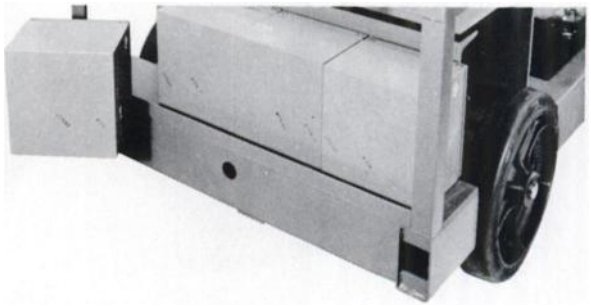

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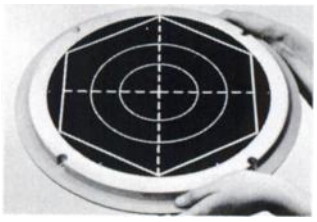

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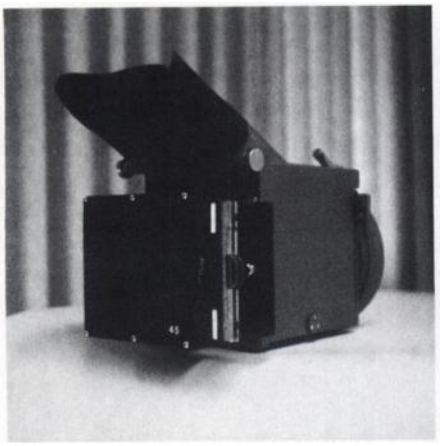

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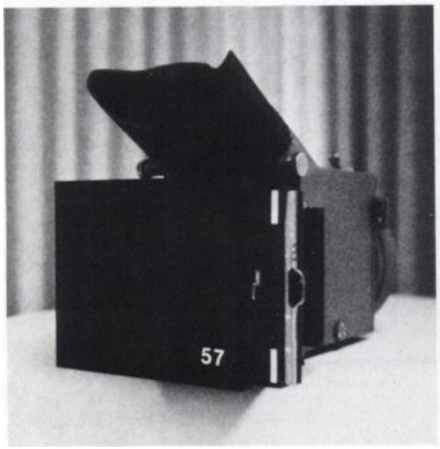

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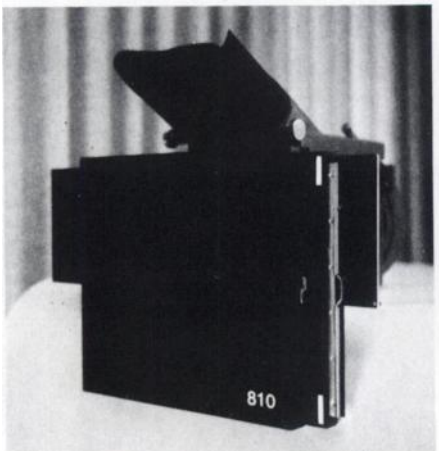

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CONTRAINDICATIONS: The safety of *TechneScan MAA* Tc 99m in patients with a known right-to-left cardiac shunt has not been established and its use in such patients is contraindicated.

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The contents of the *TechneScan MAA* reaction vial are intended only for use in the preparation of *TechneScan MAA* Tc 99m and are not to be directly administered to the patient.

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Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capacity 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.

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

ADVERSE REACTIONS: Although no anaphylactoid reactions have been reported in patients following the administration of *TechneScan MAA* Tc 99m, the possibility should be considered that hypersensitivity reactions may occur rarely in patients who, after the initial administration, receive additional doses a number of weeks after the initial dose.

[1]Dworkin, H. J., Smith,: J. R. and Bull, F. E.: Reaction after Administration of Macroaggregated Albumin for a Lung Scan, *New England J. Med., 275*:376, August 18, 1966.

[2]Roberts, H. J.: Fatal hemoptysis in pulmonary embolism probably precipitated by pulmonary scanning—Report of a case and suggested precautions. *Angiology, 21*:270, 1970.

[3]William, J. O.: Death following injection of lung scanning agent in a case of pulmonary hypertension. *Br. J. Radiol. 47*:61, 1974.

TechneScan™ PYP™ Bone Scan Kit

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 *TechneScan PYP* Kit must be maintained at refrigerator temperature until use.

The contents of the *TechneScan PYP* reaction vial are intended only for use in the preparation of Technetium Tc 99m Stannous Pyrophosphate and are not to be directly administered to the patient.

Sodium pertechnetate Tc-99m solutions containing an oxidizing agent are *not* suitable for use with the *TechneScan PYP* Kit.

The contents of the kit are not radioactive. However, after the sodium pertechnetate Tc-99m is added, adequate shielding of the final preparation must be maintained.

The *TechneScan PYP* Tc 99m should not be used more than six hours after preparation.

PRECAUTIONS: Both prior to and following *TechneScan PYP* Tc 99m administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the *TechneScan PYP* Tc 99m 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.

Mallinckrodt
NUCLEAR
RADIOPHARMACEUTICALS

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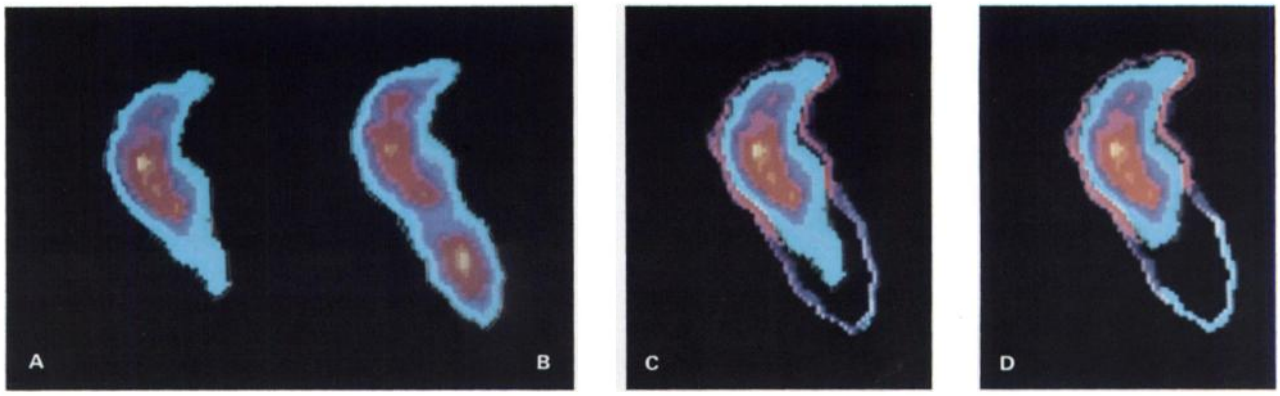
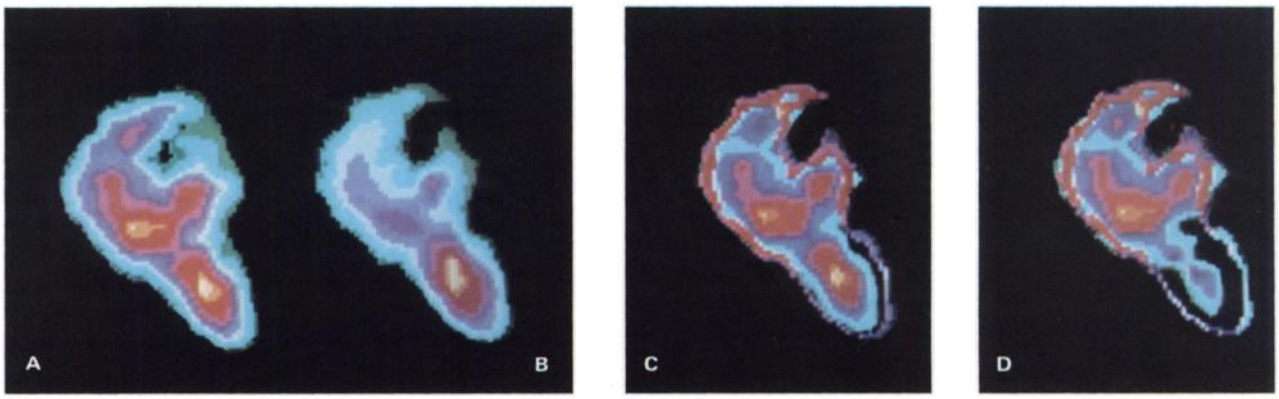
SEVENTY SEVEN REASONS:

1. Comprehensive, first-pass dynamics of cardiac wall motion



NORMAL PATIENT. Anterior View. Ejection Fraction 63%. (A) Image at End Systole shows volume displacement flow is maximum in the aorta and volume is minimum in the ventricle. (B) Image shows that volume displacement flow is minimum in the aorta and volume is maximum in the ventricle at End Diastole. (C) ES, with perimeter at ED superimposed, shows normal volume displacements and symmetric wall motion band due to motion of the septal and lateral walls. (D) Subtraction of stroke volume from ES, with ED perimeter superimposed, shows that all volume displacements in the stroke volume exceed volume components in residual distribution at ES.



ABNORMAL PATIENT. Anterior View. Ejection Fraction 34%. (A) ES, showing spatial distribution of volume components. Abnormally high residual volume at ES in the ventricle compared to volume flow components in the aorta. (B) ED, showing distribution of left heart volume components. Comparison with ES suggests relative lack of ventricular volume displacement during systole. (C) Lack of wall motion is indicated by very narrow wall motion band between ED perimeter and the ES distribution along the septal wall to the apex. Wall motion of the lateral wall is closer to normal. (D) Volume component in ES distribution exceeds stroke volume displacement because of reduced anterior or posterior wall motion proximal to the septal wall.

Shown here are stop-action data extracted from the representative cycle of first-pass images showing hemodynamics of the left heart, including volume distribution of end systole, end diastole, end systole with the end diastolic perimeter superimposed, stroke volume subtracted from end systole with end diastolic perimeter superimposed. These images provide the basis for the clinical diagnosis of ventricular wall motion, in addition to providing data for a closer examination of specific areas for evidence of hypokinesia, akinesia, or dyskinesia.

Because of the high count rate of System Seventy Seven's multicrystal matrix detector, no ECG gating was required. These studies are therefore unique in nuclear medicine and, because of the computer built into the system, remarkably fast and easy to perform. There is simply no other gamma camera that can do all that you see here.

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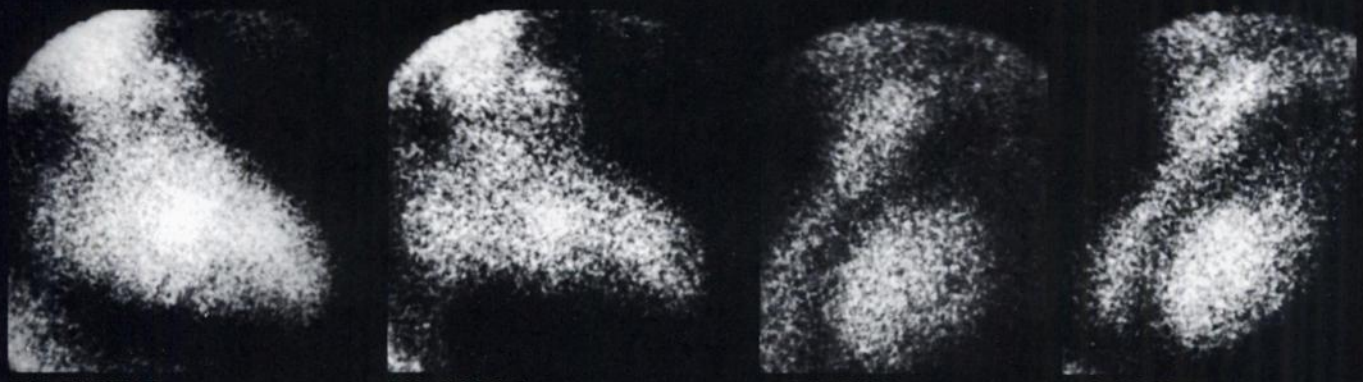
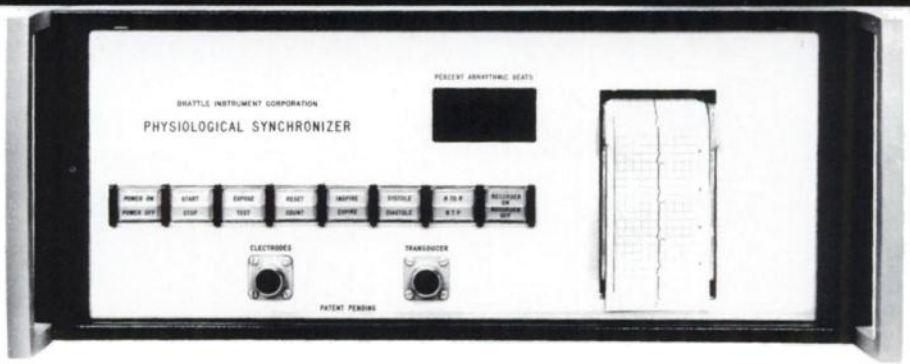


RAO, DIASTOLE | RAO, SYSTOLE | LAO, DIASTOLE | LAO, SYSTOLE

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.)

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PHO/CON — the first of a new generation of multi-plane imaging devices — gives you significant new dimensions, whether you are imaging the brain, whole-body organs, individual organs, or bone. It can quickly confirm lesions masked by normal anatomical structures and provide definitive visualizations when other methods fail.

Your facility gets up to six anterior and six posterior tomographic images from one PHO/CON scan, each readout being sharply focused on a different plane in the subject. Lesions can be dramatically visualized with near-constant resolution regardless of depth or the organ being imaged.

PHO/CON utilizes two detector heads for simultaneous anterior-posterior imaging. It has a 26″ x 70″ scan field, suitable for any size study. Each detector head produces six simultaneous 2″ x 2″ tomographic images on 5″ x 7″ film, or three simultaneous 2″ x 5½″ whole body images on 8″ x 10″ film.

PHO/CON's tomographic capability provides significantly more data than is available from conventional dual-headed scanners. In addition, PHO/CON has 3 times the crystal area of a dual 5″ scanner, with scanning speed up to 1000 cm/min. A full range of collimators is available.

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