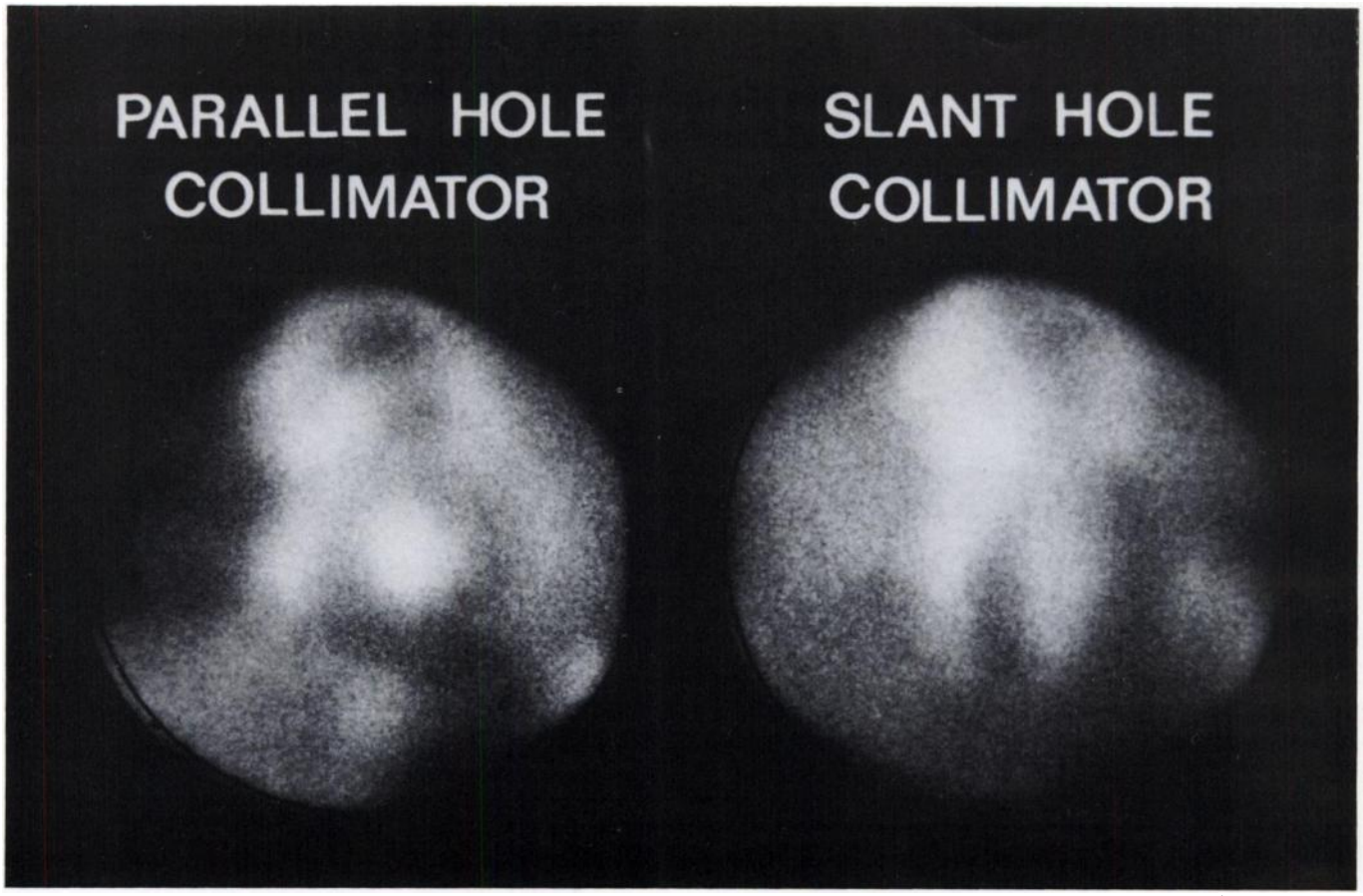


Ungated image of cardiac blood pool in patient with aortic stenosis and left ventricular hypertrophy. Both straight-bore, parallel-hole collimator and straight-bore, 30° slant-hole collimator were positioned in LAO projection. In both images camera head was positioned flat against chest. Due to slope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

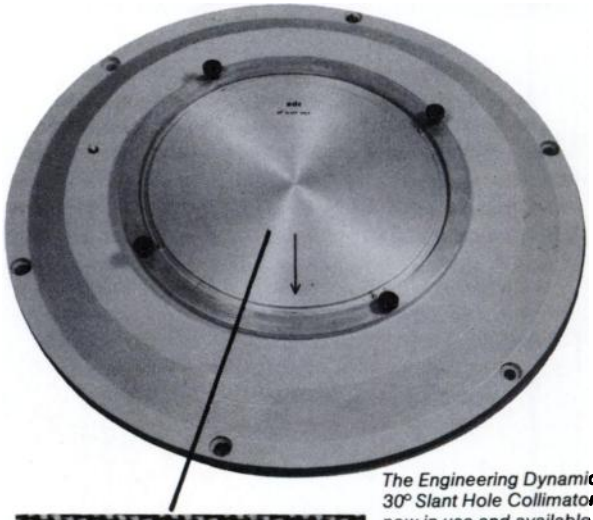
NOW! BETTER MLAO's & RAO's FROM FLAT AGAINST THE CHEST WALL

Our unique 30° slant hole design allows collimator positioning flat against the chest—for sharper, more meaningful cardiac imaging than is possible with conventional, straight bore collimators. For example, you get better separation of the left atrium and left ventricle with no foreshortening of the septum; better resolution of the cardiac apex; and optimum separation of the distribution of the left anterior descending and left circumflex arteries.

Other applications include: ejection fraction on first pass data; oblique views of spine and kidneys; RPO views of spleen, LAO views of liver, images of fossa, all images with a caudal or cephalad angulation, etc.

Easily mountable: as an insert on any commercial Anger scintillation camera... in the external diverging-converging mounting frame of an Ohio Nuclear or Searle camera, or in a special rotatable mounting for large field of view cameras.

High sensitivity relative to low-energy, all-purpose collimators: 1.18 ± .01. Standard and high resolution models are now available. Write for more information.



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

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

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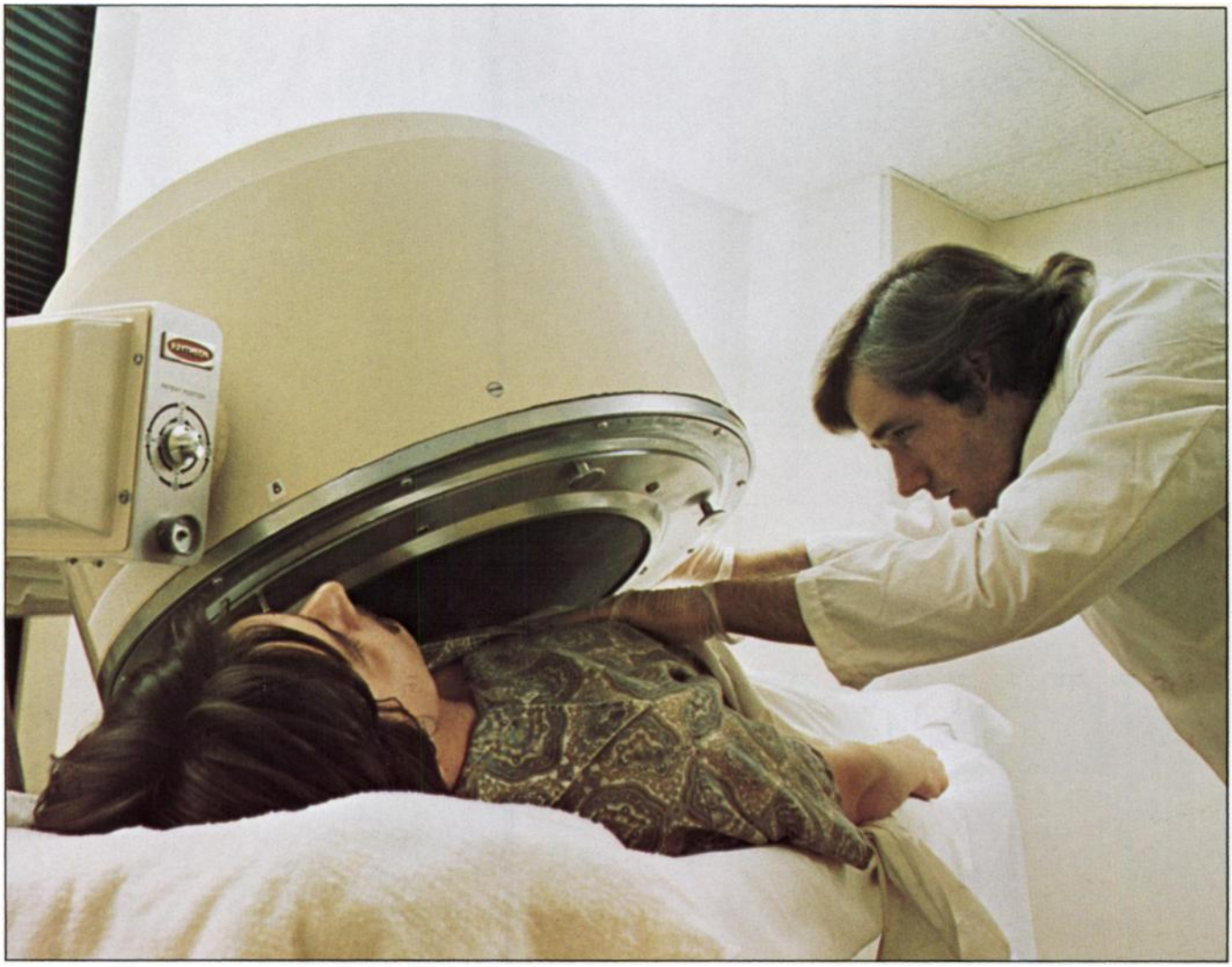
SR-514

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



The Raytheon Cameray XL-91.

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

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

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

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

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

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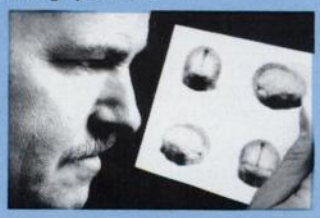

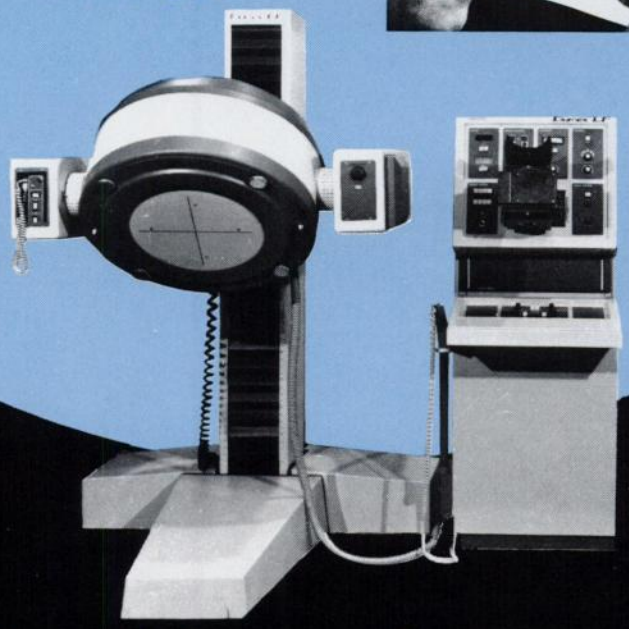

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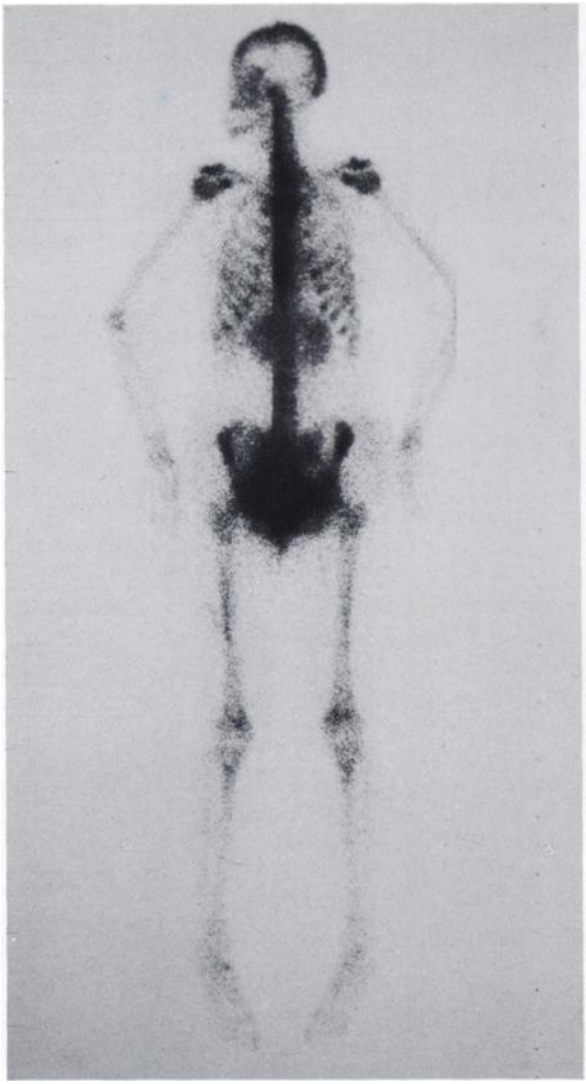

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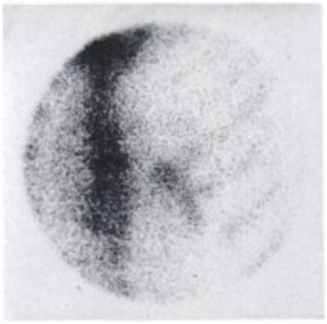
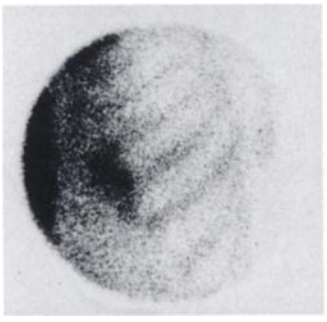
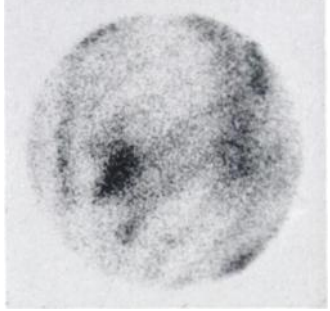


Anterior wall infarction, anterior view



Left anterior oblique



Left lateral

For brief summary of prescribing information, please see next page.

TechneScan® PYP™ Kit
(Stannous Pyrophosphate)

Kit for the Preparation of Technetium Tc 99m Stannous Pyrophosphate
Diagnostic—For Intravenous Use

CLINICAL PHARMACOLOGY

When injected intravenously, **TechneScan PYP Tc 99m** has a specific affinity for areas of altered osteogenesis. It is also concentrated in the injured myocardium, primarily in areas of irreversibly damaged myocardial cells.

One to two hours after intravenous injection of **TechneScan PYP Tc 99m,** an estimated 40 to 50 percent of the injected dose has been taken up by the skeleton, and approximately 0.01 to 0.02 percent per gram of acutely infarcted myocardium. Within a period of one hour, 10 to 11 percent remains in the vascular system, declining to approximately 2 to 3 percent twenty-four hours post injection. The average urinary excretion was observed to be about 40 percent of the administered dose after 24 hours.

INDICATIONS AND USAGE

TechneScan PYP Tc 99m is a skeletal imaging agent used to demonstrate areas of altered osteogenesis, and a cardiac imaging agent used as an adjunct in the diagnosis of acute myocardial infarction.

As an adjunct in the diagnosis of confirmed myocardial infarction (ECG and serum enzymes positive), the incidence of false negative images has been found to be 6 percent. False negative images can also occur if made too early in the evolutionary phase of the infarct or too late in the resolution phase. In a limited study involving 22 patients in whom the ECG was positive and serum enzymes questionable or negative, but in whom the final diagnosis of acute myocardial infarction was made, the incidence of false negative images was 23 percent. The incidence of false positive images has been found to be 7 to 9 percent. False positive images have also been reported following coronary by-pass graft surgery, in unstable angina pectoris, old myocardial infarcts and in cardiac contusions.

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.

Warning: Preliminary reports indicate impairment of brain scans using Tc 99m pertechnetate which have been preceded by bone scan. The impairment may result in false positives or false negatives. It is recommended, where feasible, that brain scans precede bone imaging procedures.

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.

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

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.

Bone Imaging

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.

Cardiac Imaging

Patient's cardiac condition should be stable before beginning the cardiac imaging procedure.

If not contraindicated by the cardiac status, patients should be encouraged to injest fluids and to void frequently in order to reduce unnecessary radiation exposure.

Interference from chest wall lesions such as breast tumors and healing rib fractures can be minimized by employing the three recommended projections.

ADVERSE REACTIONS

None.

DOSAGE AND ADMINISTRATION

The recommended adult dose of **TechneScan PYP** is:

1. Skeletal Imaging — 5 to 15 millicuries (1 to 14 milligrams stannous pyrophosphate).
2. Cardiac Imaging — 10 to 15 millicuries (4 to 7 milligrams of stannous pyrophosphate).

TechneScan PYP Tc 99m is injected intravenously over a 10- to 20-second period. For optimal results, bone imaging should be done 1 to 6 hours following administration. Cardiac imaging should be done 60 to 90 minutes following administration. The acute myocardial infarct can be visualized from 24 hours to 9 days following onset of symptoms, with maximum localization at 48 to 72 hours. Cardiac imaging should be done with a gamma scintillation camera. It is recommended that images be made of the anterior, left anterior oblique and left lateral projections.

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

HOW SUPPLIED

Catalog Number—*094* **TechneScan PYP Kit**

Kit Contains:

5—Stannous Pyrophosphate Reaction Vials (Lyophilized) for the preparation of Technetium Tc 99m Stannous Pyrophosphate.

Reaction Vial Contains:

15.4 mg Sterile Stannous Pyrophosphate (Lyophilized). Hydrochloric acid is added for pH adjustment prior to lyophilization.

5—Pressure-sensitive "Caution—Radioactive Material" labels.

5—Radioassay Information String Tags.

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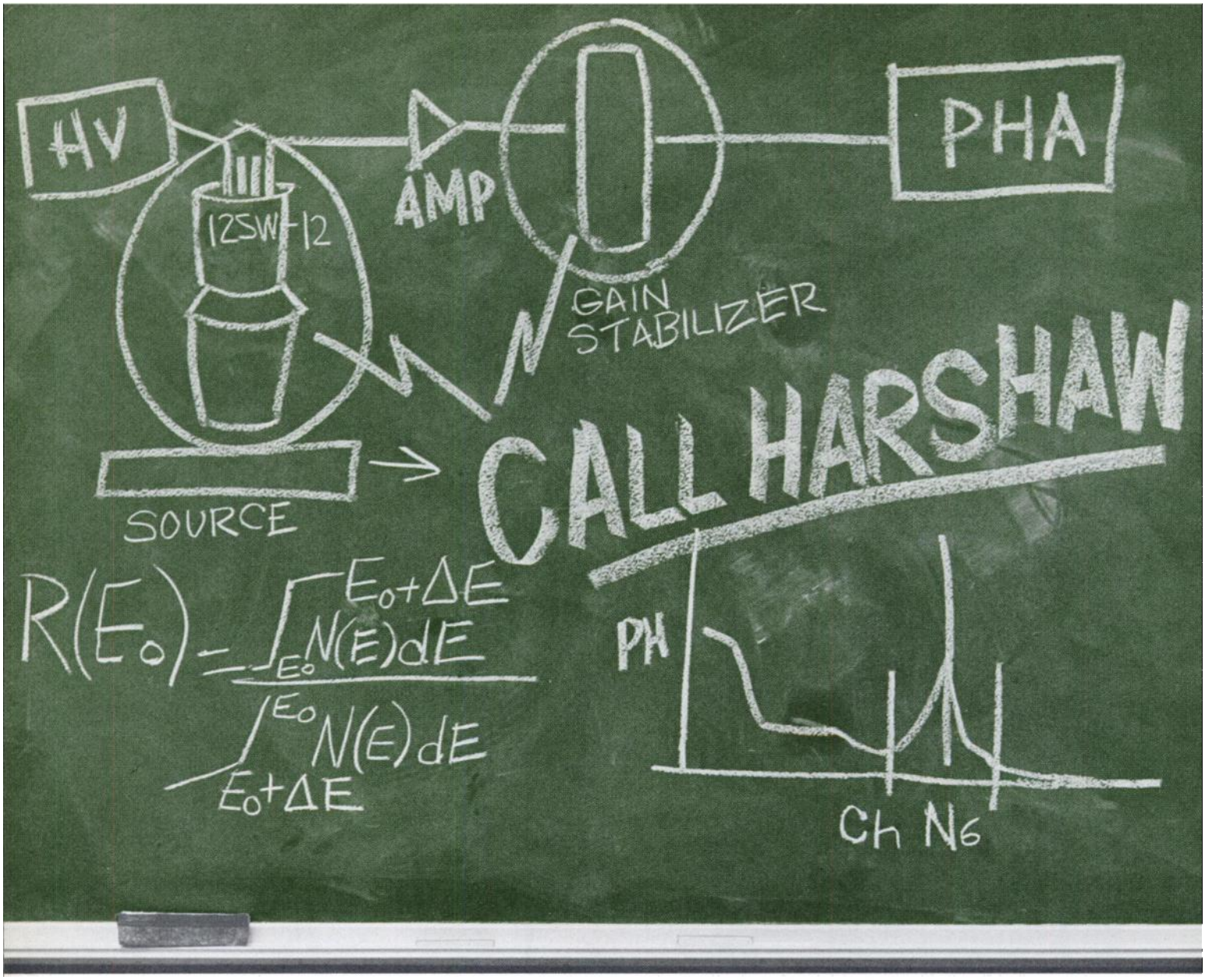

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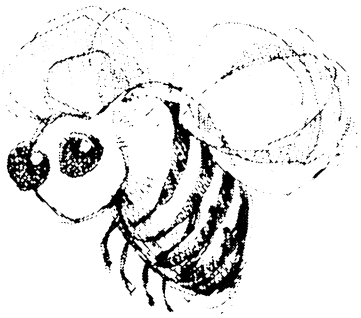

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L.E. High Resolution	FWHM –	4.6 mm

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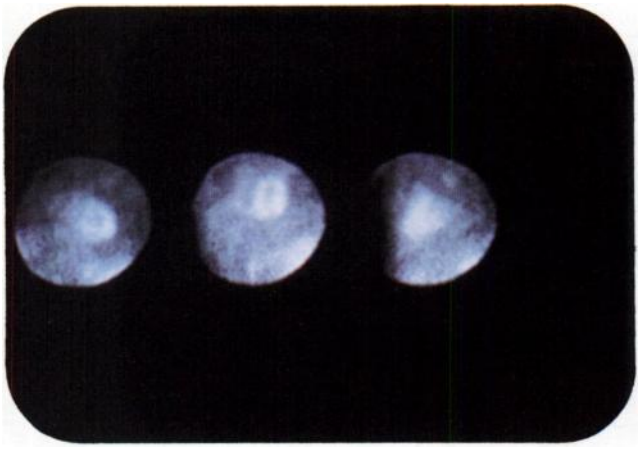
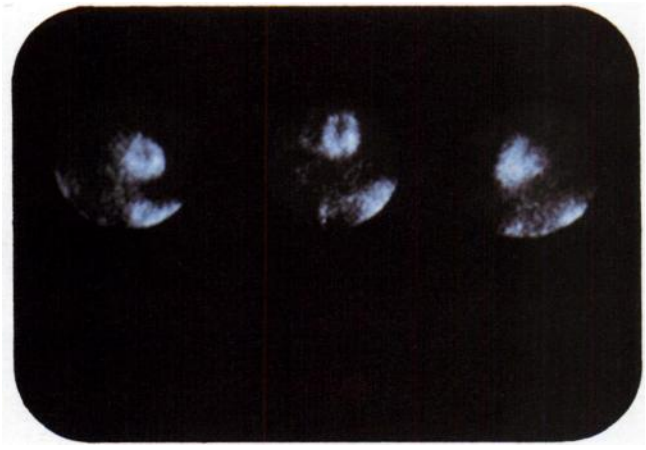


Thallium^{201} ANT, LAO & L LAT Views
Before Image Enhancement with CIP

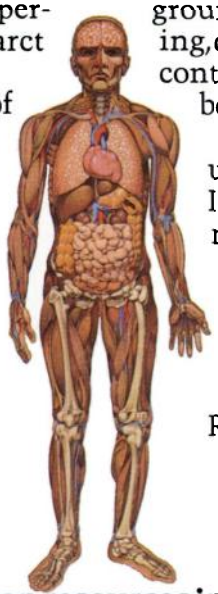


Thallium^{201} ANT, LAO & L LAT Views
After Image Enhancement with CIP

The Clinical Image Processor™ displays a new concept in viewing, interpreting and recording scintillation camera images.

Interactive contrast enhancement and background subtract controls result in outstanding image presentation of those static studies which exhibit high background and poor contrast. This is valuable in Thallium^{201} myocardial perfusion imaging and pyrophosphate infarct scanning.

Another important feature in the area of nuclear cardiology is the Cardiac Gate accessory. By using the R wave of an EKG trace as a trigger, and dividing the R-R interval into a number of equal "windows," a series of images illustrating ventricular wall motion during the cardiac cycle may be accumulated. Images can then be replayed in a cine mode to instantly study regional wall motion in a manner never before available.



All flow studies can be sequentially collected in a multiple image format. Any individual image can then be magnified and enhanced for further study or the entire series can be replayed in cine mode for a dynamic flow presentation.

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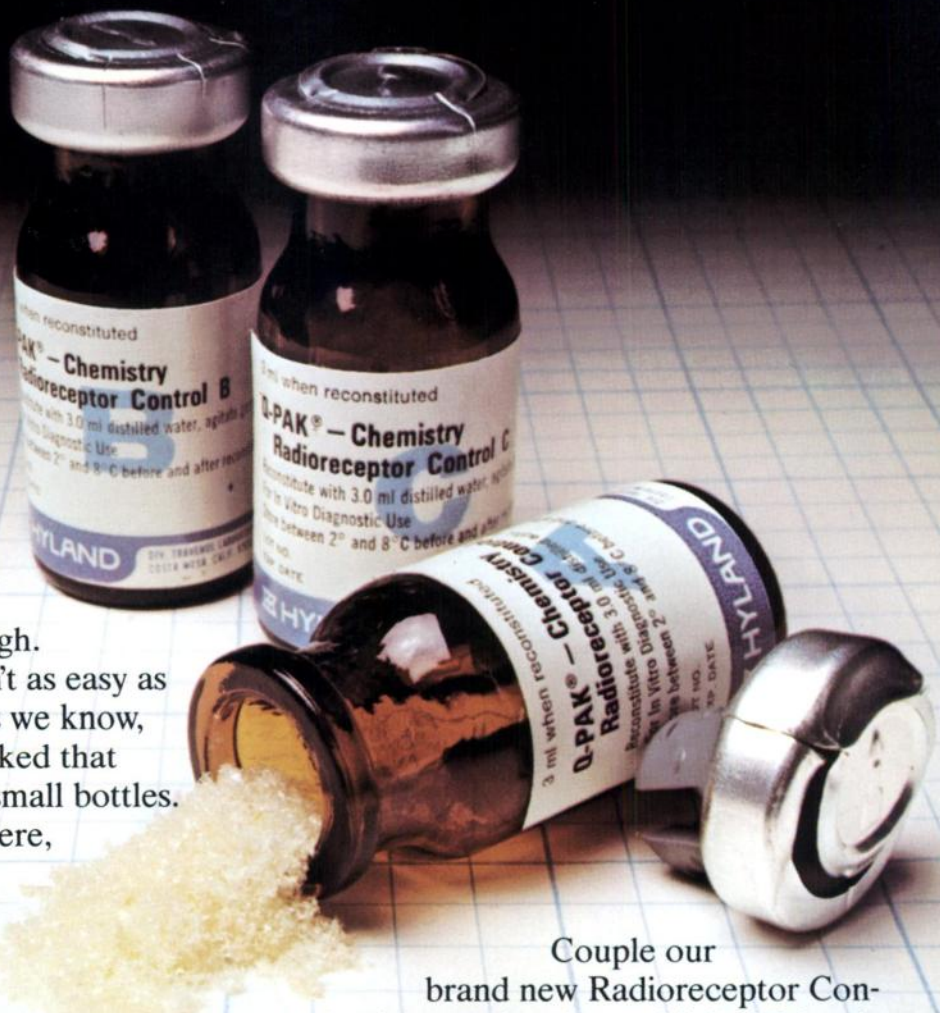

Hyland announces a new series of Radioreceptor Controls, in three clinically significant levels, with 12 constituents and a common protein base.

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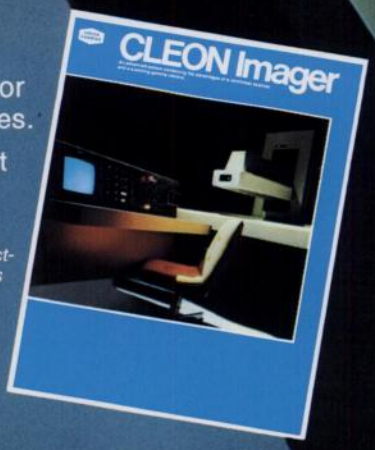

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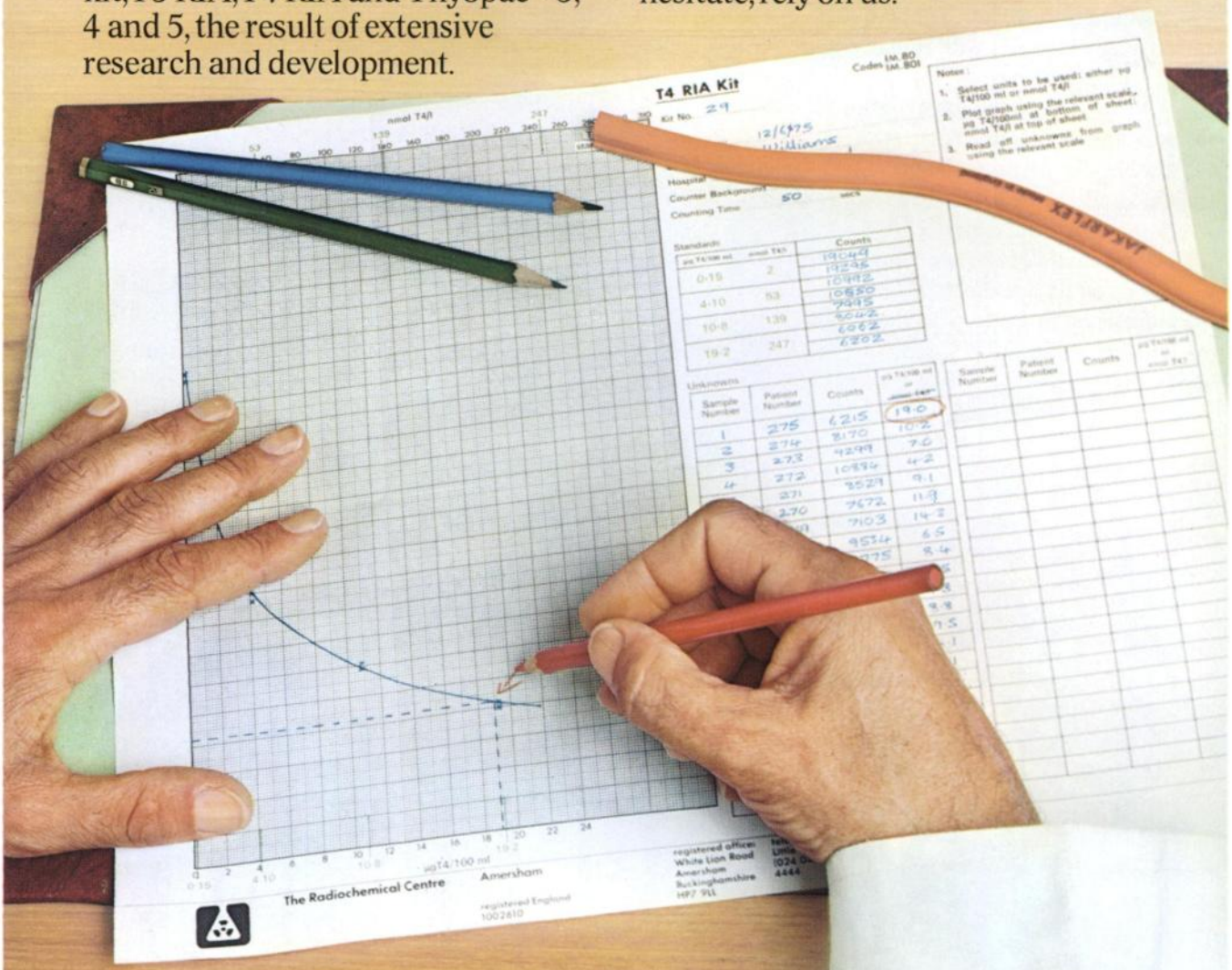

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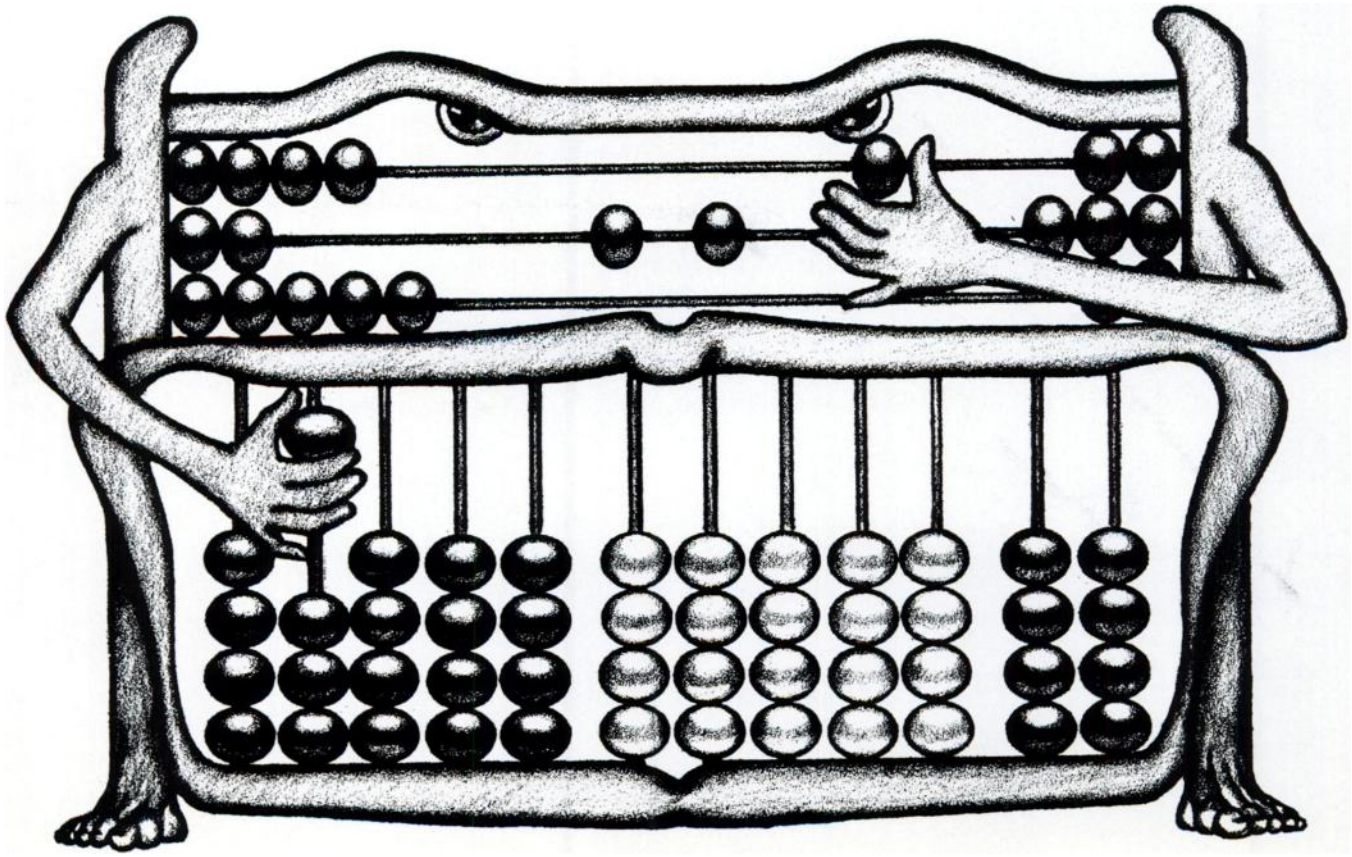

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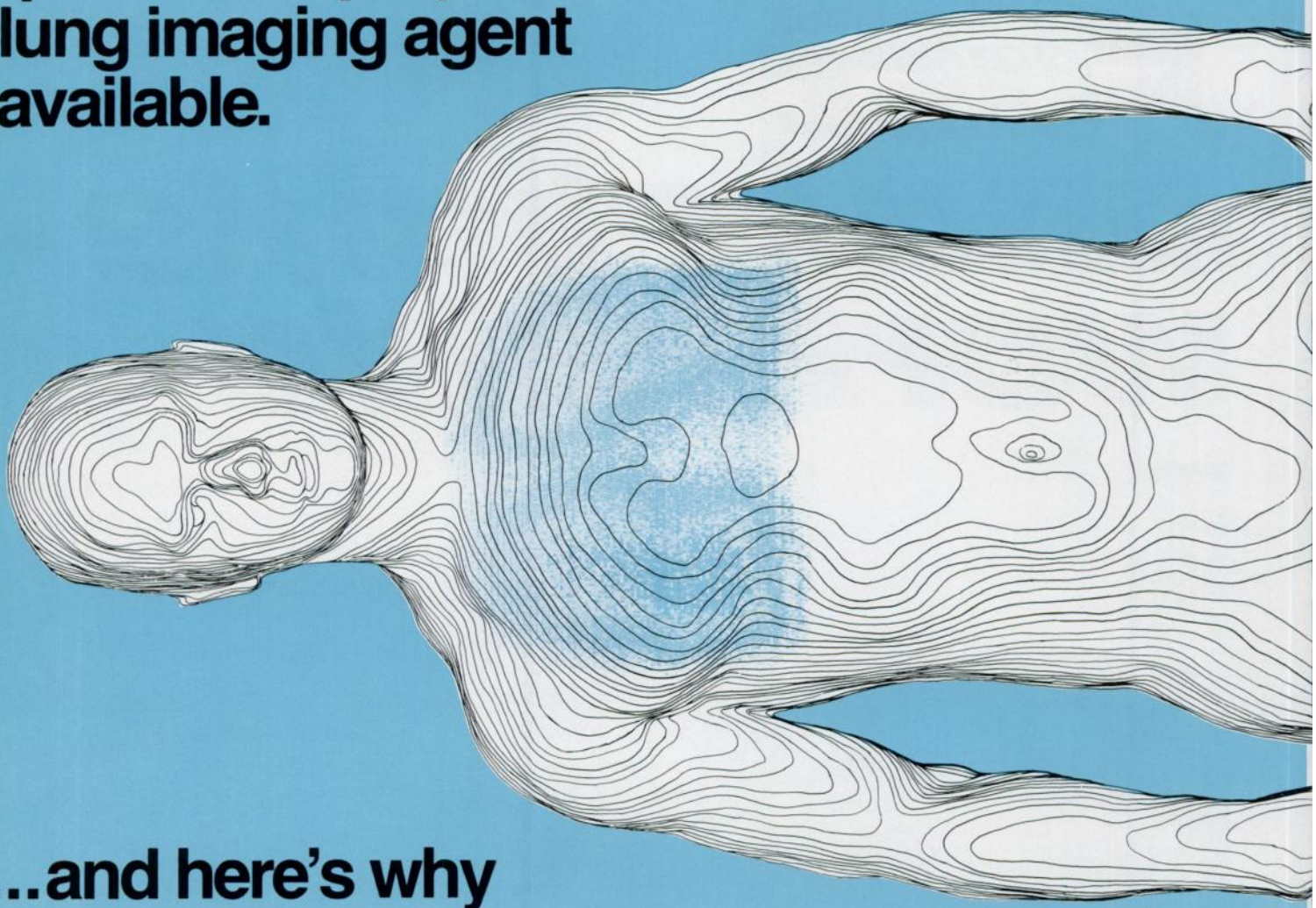
Macrotec®
Aggregated Albumin (Human)
for labeling with technetium 99m

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



...and here's why

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

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

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

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

BASIC STEPS IN PREPARING FOUR TECHNETIUM

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

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

MACROTEC® (Aggregated Albumin [Human])

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

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

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

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

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

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

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

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

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

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

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

For full prescribing information, consult package insert.

HOW SUPPLIED: In boxes of 5 vials.

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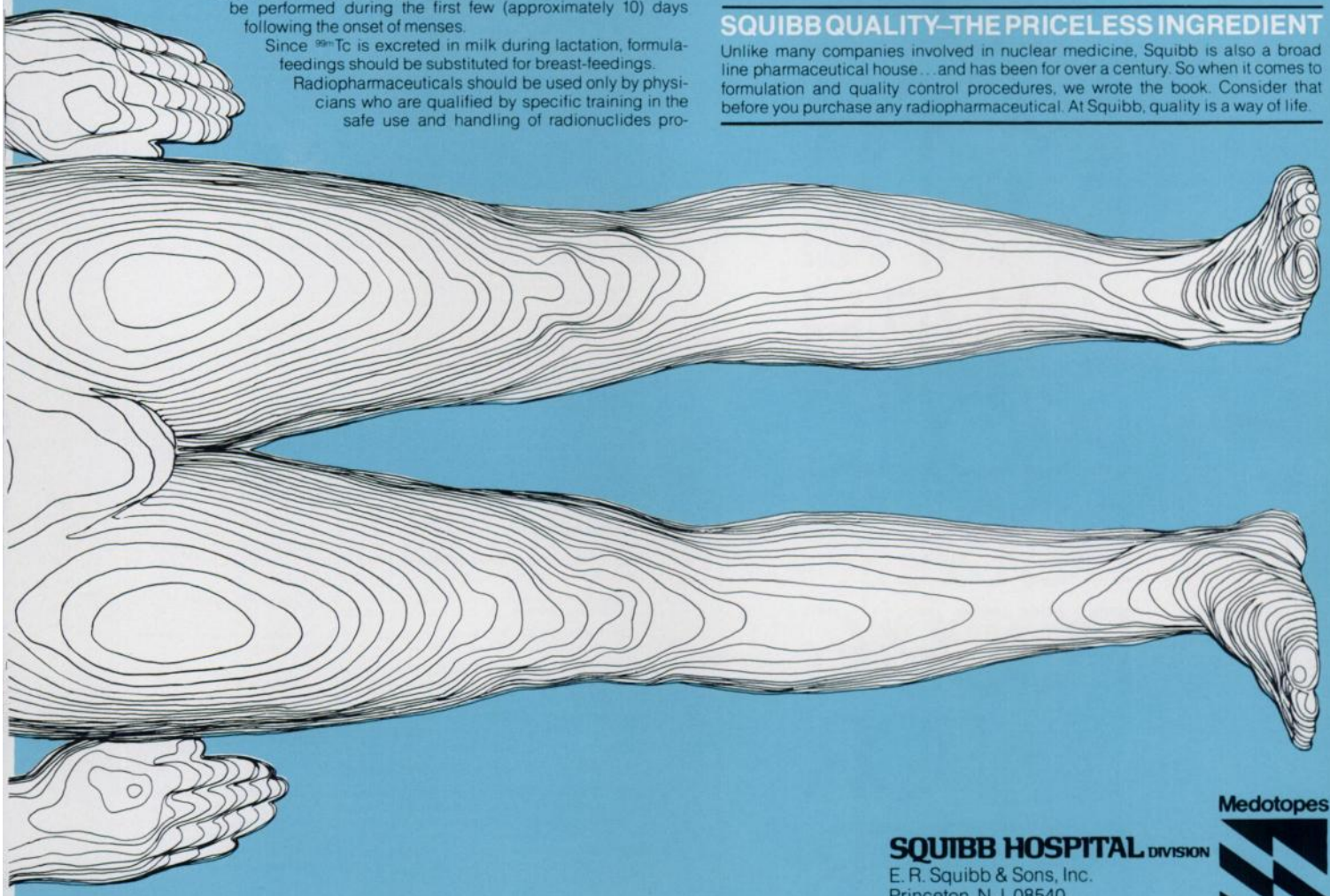
Unlike many companies involved in nuclear medicine, Squibb is also a broad line pharmaceutical house... and has been for over a century. So when it comes to formulation and quality control procedures, we wrote the book. Consider that before you purchase any radiopharmaceutical. At Squibb, quality is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



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

H606-504

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 2-5 minutes.* **7.** Shake contents vigorously just before removing aliquot intended for patient use.

**Recommended maximum activity: 25 mCi/ml.

**Recommended maximum activity: 50 mCi.

*Based on manufacturers' product information.

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

Aggregated Albumin (Human) Kit

DESCRIPTION - The kit contains 6 sterile vials containing 9-11 mg. of pyrogen-free aggregated albumin (human), 0.67 - 0.83 mg. stannous chloride, and 18 mg. sodium chloride. When sterile, pyrogen-free sodium pertechnetate Tc99m is added to the vial, technetium-labelled macroaggregated human serum albumin (Technetium MAA Tc 99m Technetium Macroaggregates) is formed. The particles of aggregated albumin in the kit are formed by the denaturation of Normal Serum Albumin (Human) USP through heat and pH adjustment. Sodium hydroxide of hydrochloric acid may be present in variable amounts. At least 95% of the macroaggregated particles are between 10 and 100 microns in size, the great bulk, (as seen on a microscope slide) being an average of 10 to 70 microns. None are larger than 150 microns. Vial counts indicate that each vial contains 6.8 ± 0.8 million particles per mg. The labelling efficiency is essentially quantitative and the bound Tc-MAA remains stable *in vitro* throughout the useful period after preparation.

Application has been filed with the U. S. Nuclear Regulatory Commission for distribution of this reagent kit to persons licensed pursuant to §35.14 and §35.100, Group III of CFR Part 35, or under equivalent licenses of agreement states; and is still pending.

ACTIONS - Following intravenous injection, Technetium MAA Tc 99m is rapidly transported by the blood stream to the lungs. The aggregates do not enter the tissues of the lungs, but remain in the pulmonary vasculature. When pulmonary blood flow is normal, the material is carried throughout the entire lung field; when pulmonary blood flow is diminished or obstructed by a disease process, the particles are correspondingly prevented in part of in whole from passage through the affected portion of the pulmonary vasculature.

Technetium Macroaggregates remain in the lungs for variable amounts of time depending on particle size. The particles disappear from the lungs in exponential fashion with the larger-sized aggregates having the longer half-life; particles ranging from 10 to 90 microns in diameter usually have a half-life of 2 to 8 hours. Apparently, the aggregates are temporarily trapped by the narrow pulmonary capillaries where the particles are broken down until they are small enough to pass. In rats 4.3% of the Tc 99m remains in the lungs after 24 hours.

Although the particles of macroaggregates remain for a time in the pulmonary capillaries, they do not appear to interfere even temporarily with pulmonary blood flow or ventilation in the dosage required for lung scanning. This is evidenced by the fact that these doses do not produce any respiratory distress nor any tachycardia, even in patients severely ill with pulmonary and/or cardiac disorders.

Once the albumin particles leave the lungs, they are carried to the liver, where they are removed from the blood stream primarily by the Kupffer cells. There, the particles are phagocytized and rapidly metabolized.

INDICATIONS - Scintillation scanning of the lungs with Technetium Macroaggregates is indicated as an adjunct to other diagnostic procedures whenever information about pulmonary vasculature is desired. The most useful clinical applications of lung scanning have been outlined by one investigator: 1) The diagnosis of pulmonary embolism; 2) differentiation of focal conditions such as bullae or cysts from diffuse pulmonary disorders; 3) determination of the degree of pulmonary vascular obliteration in parenchymal disease; and 4) evaluation of the patient's ability to withstand pulmonary surgery.

Perhaps the most frequently useful indication for the lung scan has been the early detection of pulmonary emboli. The lung scan is uniquely able to demonstrate the existence of an embolism before radiological signs become apparent. Although an area of increased radiolucency on the chest film may suggest an embolism, X-ray findings do not usually become apparent until the embolism has produced signs of ischemia or infarction. Once an embolism has been diagnosed, information obtained from the scan is of value in determining the desirability of surgical embolectomy, while subsequent scans provide information on the effectiveness of surgical or anticoagulant therapy.

Lung scanning is similarly helpful in the diagnosis of various types of malignancies affecting the lungs. Again, scanning is of value in locating the affected areas, in determining the need for and probable effectiveness of surgery or of radiation therapy, and in following up the benefits of treatment.

Useful information is also provided by the scan in the diagnosis or evaluation of other pulmonary problems, such as pneumonia, atelectasis pleural effusion, pulmonary tuberculosis, parenchymal disease, emphysema and chronic asthmatic bronchitis.

CONTRAINDICATIONS - The presence of right to left shunts which would allow Technetium MAA Tc 99m injected in a systemic vein to reach a systemic artery is contraindication to the use of this material. Particulate material such as Technetium MAA Tc99m should not be administered to patients with evidence of severe restriction to pulmonary blood flow such as may be present in pulmonary hypertension.

WARNINGS - Technetium MAA Tc99m 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.

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 staff and occupational workers.

To insure the integrity of this product use needles in gauge sizes 18 to 21.

ADVERSE REACTIONS - No adverse reactions have been observed with this product. However Vincent et al (3) have recorded the only immediate and fatal reaction following infusion of Tc 99m macroaggregates (technetium labelled macroaggregates). This was in a seven-year-old child who had severe pulmonary vascular disease. The exact size of the particles used was not disclosed, and in the summary of the publication "it is suggested that this type of reaction will continue to be rare and that it will probably be somewhat predictable on the basis of clinical and laboratory evidence of severe pulmonary hypertension. Such a patient might be scanned safely by strict control of macroaggregates dose, size range and mean particle size".

The literature has recorded two adverse reactions to lung scanning with I-131 labelled macroaggregates. Wagner et al (4) observed that urticaria developed in a young girl several hours after lung-scanning procedure with Iodine-131 macroaggregates where Lugol's solution was administered to block the thyroid gland. The subject had a history of angio-edema. The reaction may have been caused by either material. Dworkin et al (5, 6) reported "I-131-labelled macroaggregated albumin highly suspect as the causative agent" in the death of a woman who was scanned for the possibility of demonstrating pulmonary embolism. With a 2½-year history of adenocarcinoma of the breast she had severe and rapidly progressive edema. Prior to scanning, the nasal administration of oxygen was interrupted. "Within 1 or 2 minutes after injection of 300 uCi of I-131 labelled macroaggregates albumin (11 mg. of albumin or 0.219 mg. per kilogram of body weight) she complained of faintness and became cyanotic, diaphoretic, and agitated with distended neck veins. The initial pulse rate of 50 rose to 140 with a fall in blood pressure to 100/30. Oxygen therapy relieved the profound dyspnea and cyanosis. An electrocardiogram 40 minutes later was compatible with acute cor pulmonale. Within several hours she had returned to her pre-scan status, but on the next day the temperature rose, dyspnea increased and she died 26 hours after the lung scan. We have continued lung scanning but limit the albumin to 0.020 mg. per kilogram, reject lots with more than 15 percent of particles over 40 microns and require two minutes for injection".

More recently, Williams (7) has reported a severe reaction immediately after injection of macroaggregated albumin (MAA) particles followed by death six hours later (while the patient was undergoing right-heart catheterization). Like those previously reported, it occurred in a patient with severe chronic pulmonary hypertension due to disease of the pulmonary vascular bed. The patient died in right heart failure. Post-mortem examination revealed "severe atheroma and thickening of all the pulmonary arteries but no macroscopic evidence of emboli. The right heart was hypertrouphied and dilated".

Transient neurological complications following intra-arterial injection of I-131 labelled macroaggregates have been reported (3).

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7. Williams, J. O., *Brit. J. Radiol.* 47, 61-63 (1974).

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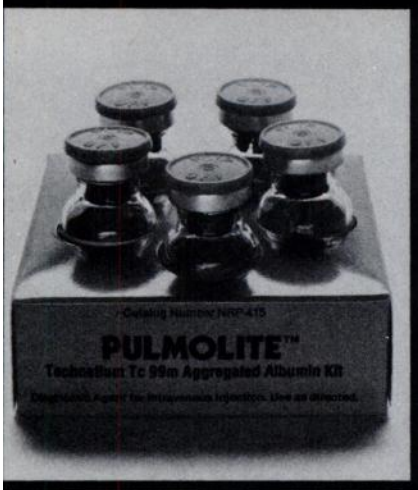

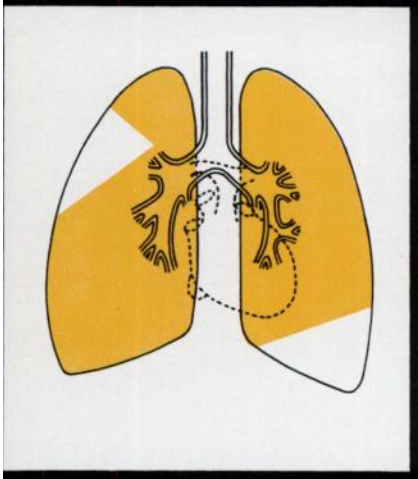

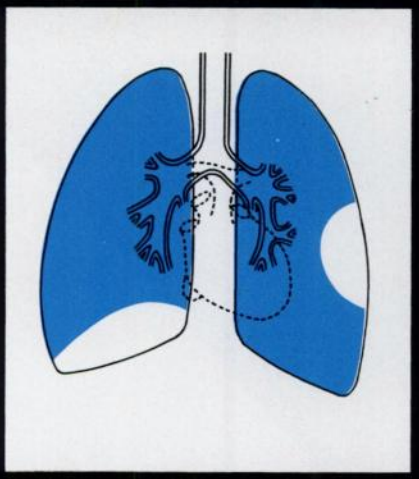

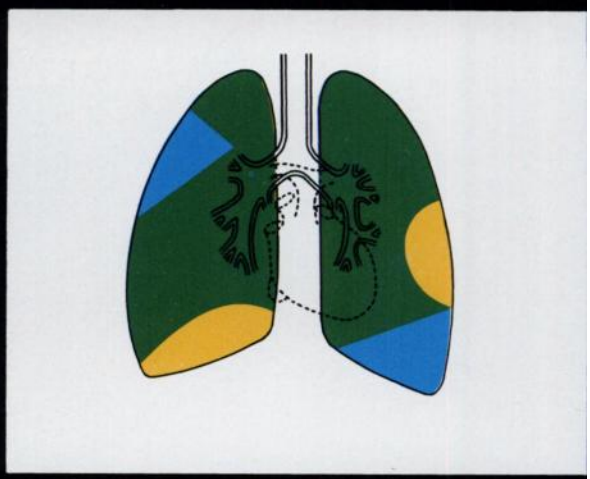

Perfusion + Ventilation: The two together are diagnostically better.

The ventilation-perfusion ratio $\left(\frac{V}{Q}\right)$ is the crucial factor determining the regional oxygen partial pressure. This can be evaluated by assessing the gas exchange occurring in any part of the lung. The single most *sensitive* non-invasive test for diagnosing Pulmonary Embolus is the perfusion lung image.[1] However, pulmonary diseases, such as chronic obstructive lung disease, infectious diseases, and neoplasms are all characterized by altered arterial blood flow. Therefore the most reliable way to increase the *specificity* of perfusion lung imaging is to add a Xenon 133 ventilation study.[2]

[1]Urokinase Pulmonary Embolism Trial. A National Cooperative Study. Circulation (Suppl 11) 47:11-61. 1973 (April)

[2]Wagner, Henry N. Jr., Strauss, H. William. *Radioactive Tracers In The Differential Diagnosis of Pulmonary Embolism.* Progress in Cardiovascular Diseases, Vol. XVII, No. 4 (January/February), 1975.

PULMOLITE™—Technetium Tc 99m Aggregated Albumin Kit Diagnostic—For Intravenous Use

Indications and Usage: Technetium Tc 99m aggregated albumin is indicated as a lung imaging agent to be used as an adjunct in the evaluation of pulmonary perfusion.

Contraindications: Technetium Tc 99m aggregated albumin should not be administered to patients with severe pulmonary hypertension.

The use of Tc 99m aggregated albumin is contraindicated in persons with a history of hypersensitivity reactions to products containing human serum albumin.

Warnings: The possibility of allergic reactions should be considered in patients who receive multiple doses.

Theoretically, the intravenous administration of particulate material such as aggregated albumin imposes a temporary small mechanical impediment to blood flow. While this effect is probably physiologically insignificant in most patients the administration of aggregated albumin is possibly hazardous in acute cor pulmonale and other states of severely impaired pulmonary blood flow.

This radiopharmaceutical preparation should not be administered to children or to pregnant or lactating women unless the expected benefits to be gained outweigh the potential risks.

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: In cases of right-to-left cardiac shunt, additional risk may exist due to the rapid entry of aggregated albumin into the systemic circulation.

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 labeling reactions involved in preparing the agent depend on maintaining tin in the reduced state. Any oxidant present in the sodium pertechnetate Tc 99m supply may thus adversely affect the quality of the prepared agent. Hence, sodium pertechnetate Tc 99m containing oxidants, or other additives, should not be employed without first demonstrating that it is without adverse effect on the properties of the resulting agent.

The contents of the vial are sterile and non-pyrogenic. It is essential that the user follow the directions carefully and adhere to strict aseptic procedures during preparation of the radiodiagnostic.

Technetium Tc 99m aggregated albumin is physically unstable and as such the particles will settle with time. Failure to mix the vial contents adequately before use may result in non-uniform distribution of radioactivity.

It is also recommended that, because of the increasing probability of agglomeration with aging, a batch of Technetium Tc 99m aggregated albumin not be used after eight hours from the time of reconstitution. Refrigerate at 2° to 8°C after reconstitution. If blood is withdrawn into the syringe, unnecessary delay prior to injection may result in clot formation in situ.

The contents of the vial are under a nitrogen atmosphere and should be protected from air. Do not use if clumping or foaming of the contents is observed.

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Technetium Tc 99m aggregated albumin should be used in pregnant women only when clearly needed.

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

Safety and effectiveness in children have not been established.

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

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

Adverse Reactions: The literature contains reports of deaths occurring after the administration of aggregated albumin to patients with pre-existing severe pulmonary hypertension. Instances of hemodynamic or idiosyncratic reactions to preparations of Tc 99m-labeled aggregated albumin have been reported.

Hypersensitivity reactions are possible whenever protein-containing materials such as Tc 99m-labeled aggregated albumin are used in man. Epinephrine, antihistamines and corticosteroid agents should be available for use.

Dosage and Administration: The recommended intravenous dose range for the average patient (70kg) is 1 to 4 millicuries. The volume of the dose may vary from 0.2 to 1.3ml.

The recommended number of aggregated albumin particles to be administered per dose is 200,000-700,000 with the suggested number being approximately 350,000.

For ease and accuracy in dispensing the prepared agent, it is recommended that prior to reconstitution, concentrated sodium pertechnetate Tc 99m be further diluted to a volume of 8ml with fresh, preservative-free sodium chloride injection (U.S.P.).

How Supplied: PULMOLITE™ Technetium Tc 99m Aggregated Albumin Kit is supplied in kits of five (5) or thirty (30) vials, sterile and non-pyrogenic, each vial containing in lyophilized form:

Aggregated albumin (human) - 1.0mg
Normal human serum albumin - 10mg
Sodium chloride - 10mg
Stannous chloride dihydrate, maximum - 0.07mg

Each vial contains 3.6-6.5 x 10^6 aggregated albumin particles.

PULMOLITE contains no preservative; after reconstitution the shielded vial should be stored at 2° to 8°C.

Included in each five (5) vial kit is one (1) package insert and six (6) radiation labels. Included in each thirty (30) vial kit is one (1) package insert and thirty-six (36) radiation labels.

Cat. No. NRP-415

Xenon Xe 133 Gas (CALIDOSE™) Dispensing System.

Indications: Inhalation of Xenon Xe 133 gas has proved valuable for the evaluation of pulmonary function and for imaging the lungs. It may also be applied to assessment of cerebral flow.

Contraindications: To date, no known contraindications to the use of Xenon Xe 133 gas have been reported.

Warnings: This radiopharmaceutical should not be administered to pregnant or lactating women 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 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. Expired Xenon Xe 133 gas should be controlled in a manner that is in compliance with the appropriate governmental agency regulations. Xenon Xe 133 adheres to some plastics and rubber and should not be allowed to stand in tubing or respirator containers. Such unrecognized loss of radioactivity from the dose for administration may render the study non-diagnostic. Xenon Xe 133 gas delivery systems, i.e., respirators or spirometers, and associated tubing assemblies must be leakproof to avoid loss of radioactivity into the laboratory environs not specifically protected by exhaust systems.

Adverse Reactions: To date, no adverse reactions based on the use of Xenon Xe 133 gas have been reported.

Dosage and Administration: Xenon Xe 133 gas is administered by inhalation from closed respirator systems or spirometers. The suggested activity range employed for inhalation by the average adult patient (70 kg) is:

Pulmonary function including imaging:
in 3 liters of air.
Cerebral blood flow: 10-30 mCi in 3 liters of air.

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

How Supplied: The Xenon Xe 133 gas is supplied as part of the Calidose™ system, consisting of 2 ml unit dose vials and the Calidose dispenser* for shielded dispensing.

Normally vials containing either 10 or 20 mCi/vial, packed up to 5 vials per shield tube, are supplied. Vial sets containing up to 100 mCi/vial are available.

*Patent Pending

Cat. No. NRP-186

New England Nuclear
Radiopharmaceutical Division
Atomlight Place, North Billerica, Mass. 01862
Telephone 617-667-9531
Los Angeles: 213-321-3311

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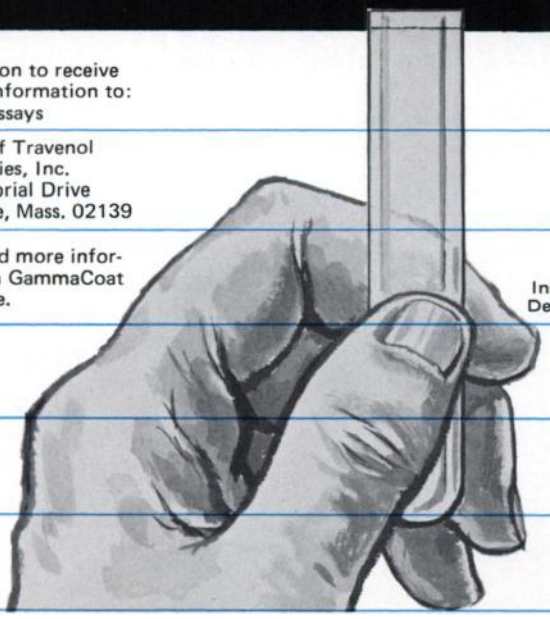
Directions for use are provided with each product. These directions should be read and understood before using. Particular attention should be paid to all warnings and precautions. Should you have any questions, contact your Clinical Assays representative.



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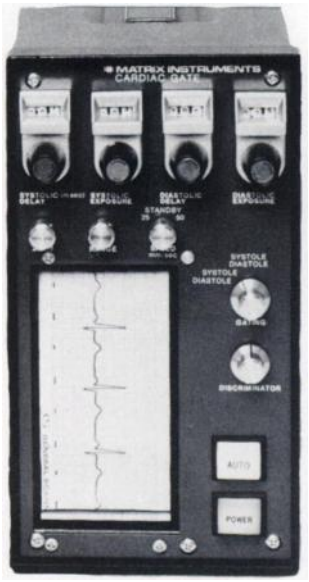


Cardiac Gate is designed to synchronize the cardiac image exposure with predetermined phases of the cardiac cycle.

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

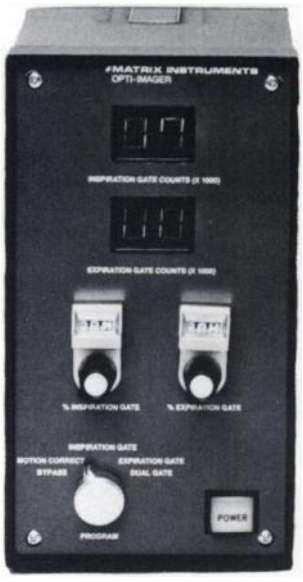
The dual gating operation mode allows recording of both end-systole and end-diastole simultaneously in a split screen two image format.

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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Matrix Instruments, Inc., 1 Ruckman Rd., Closter, N.J. 07624
Please send Cardiac Gate and Opti-Imager literature and samples studies

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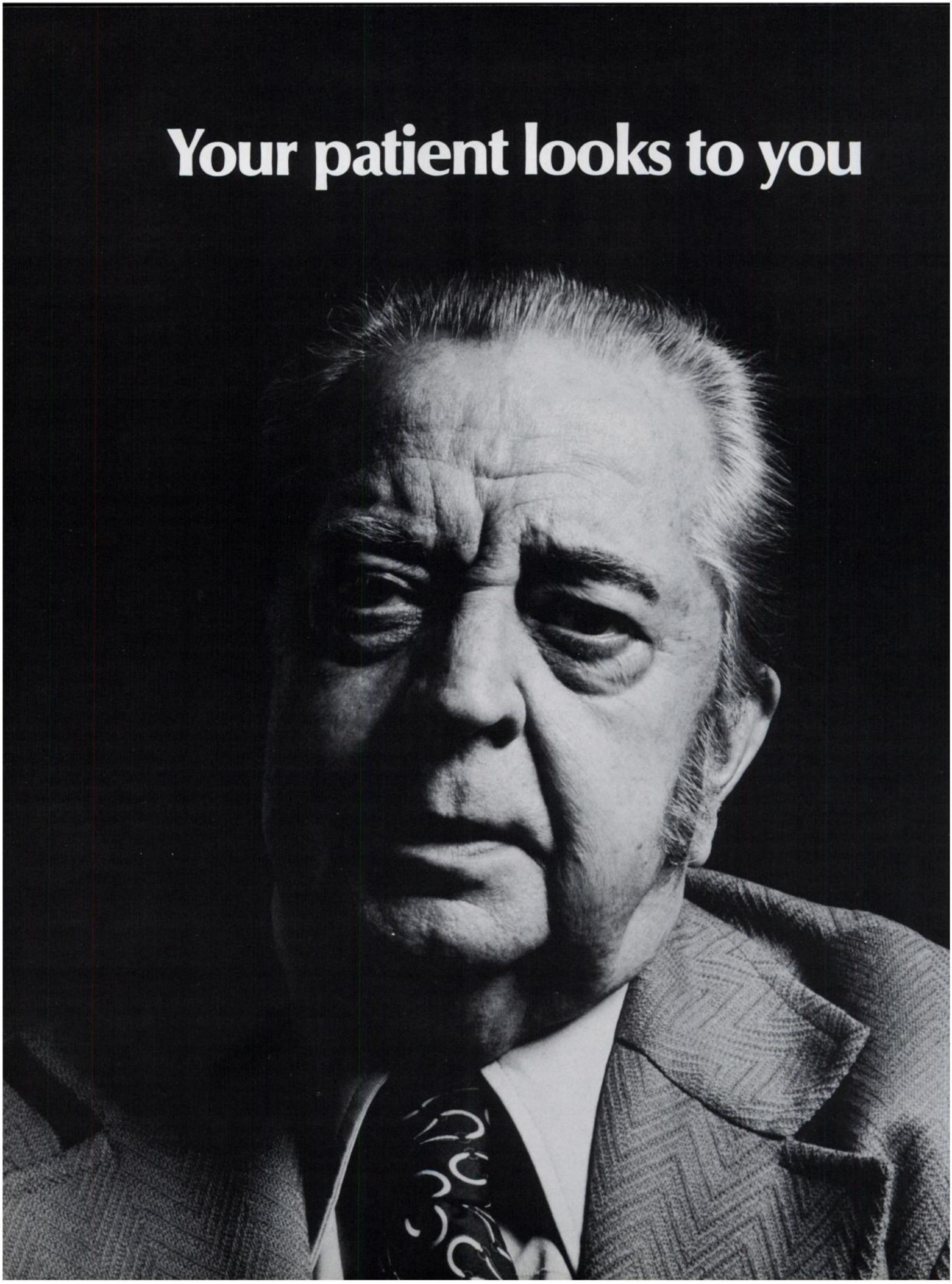
Your patient looks to you



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- **The use of positron-emitting radiopharmaceuticals.**
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The ECAT (Emission Computerized Axial Tomographic) whole-body scanner uses positron-emitting radiopharmaceuticals for patient imaging.

Developed and manufactured by the Life Sciences Division of Ortec Inc., the ECAT represents an accumulation of the extensive line of research instruments which Ortec supplies. Data acquisition is achieved with standard NIM and CAMAC modules identical to those proven reliable throughout the world in research, industrial, and clinical laboratories. It is this modular approach that not only helps prevent obsolescence but also provides for ease of service should the need ever arise.

The ECAT measures and locates the concentration of a positron-emitting radiopharmaceutical compound, such as ^{68}Ga-EDTA, ^{11}CO, or $^{13}NH_3$, administered to the patient. When a positron annihilates, two gamma rays are emitted in opposite directions. By detecting these gamma rays with electronically collimated opposing detector banks, the ray projection in which the annihilation occurred is determined. This method of detection provides for high resolution, high contrast, and high sensitivity in a format uniquely suited to reconstruction tomography. Compiling, sorting, and processing these data with a reconstruction algorithm results in a cross-sectional image similar to the images generated by transmission CAT (TCAT) scanners. The difference is that Ortec ECAT images are a measure of the physiology, or function, rather than the morphology, or density, of the structure.

For more information, call or write Life Sciences Division, Ortec Incorporated, 100 Midland Road, Oak Ridge, TN 37830; (615) 482-4411.
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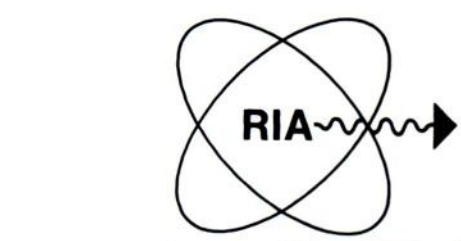

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↑ High Sensitivity

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The use of radioimmunoassay (RIA) technique is further stimulating the demand for antibodies produced with increased specificity. This is not an easy task since SPECIFICITY of antibodies to steroidal haptens is influenced by the position on the steroidal molecule used for coupling the protein carrier. Professor H. R. Lindner and his colleagues in the Department of Biodynamics of Weizmann Institute of Science have produced a number of steroidal molecules bound to bovine serum albumin or thyroglobulin at the 1, 3, 6, 7, 11, and 17 positions. Antisera produced against these antigens are found to be highly HAPTEN SPECIFIC, in contrast to antibodies elicited to antigens coupled in other functional positions which cross react strongly with other steroids.

In addition to those products listed below, other RIA antisera and reagents are under development. Please inquire. Sensitivity and cross-reactivity data as well as complete procedural details are available on request.

Lyophilized, Prediluted Antiserum to:

NEW Aldosterone (3-thyroglobulin)

Androstenedione (7α-BSA)

NEW Compound S (3-BSA)
(17α hydroxy-11-deoxycorticosterone)

Cortisol (21-thyroglobulin)

NEW Digitoxin (BSA)

5α-Dihydrotestosterone (1-BSA)

20α-Dihydroprogesterone (3-thyroglobulin)

NEW Enkephalin-Leucine

17β-Estradiol (17-BSA)
(For assay of total 17β-Estradiol and Estrone)

Lyophilized, Prediluted Antiserum to:

17β-Estradiol (6-BSA)

Estriol (6-BSA)

Estrone (6-thyroglobulin)

17α-Hydroxyprogesterone (7-BSA)

LH-RH (Lutinizing Hormone-Releasing Hormone)

Progesterone (11α-BSA)

Prostaglandin E_2 (BSA)
(For assay of total PGE_2 and PGE_1)

Prostaglandin F_2 α-(BSA)
(For assay of total $PGF_2\alpha$ and $PGF_1\alpha$)

Testosterone (7α-BSA)

For details and specific prices write for free brochure 1429, Antisera for RIA.
Note: substantial price discounts are available for large quantities.

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Miles Research Products offers a number of second antibody products useful in the RIA separation step. Included are IgG fractions and whole antisera to IgG of rabbit, goat, guinea pig, sheep and others. New products include antiserum to rabbit IgG characterized for RIA procedures and agarose bound anti-rabbit IgG and anti-goat IgG. Please inquire for product information and pricing.

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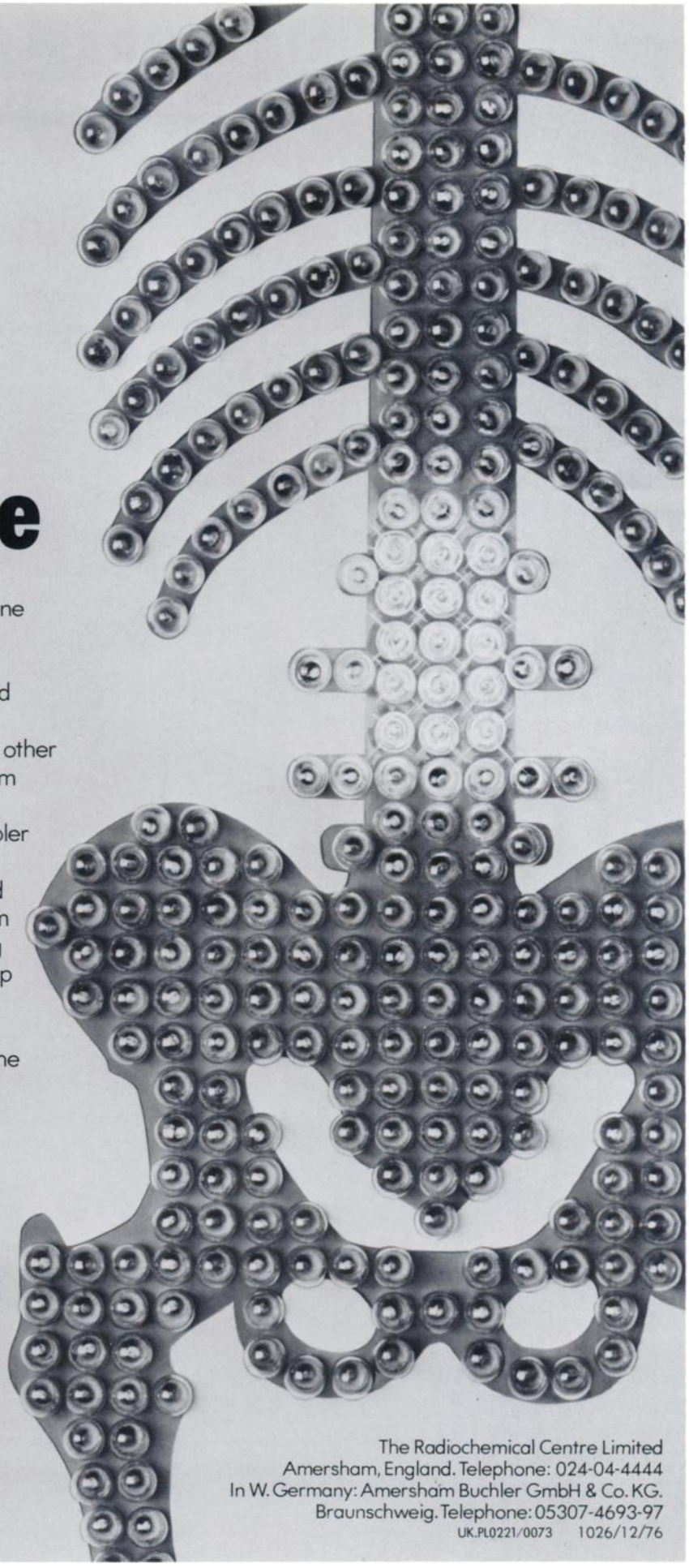

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From any point of view this is the bone agent of choice.

Write or telephone for full information now.

(1) Subramanian *et al*, *J. Nuc. Medicine*, vol. 16, pp. 744-755, 1975.

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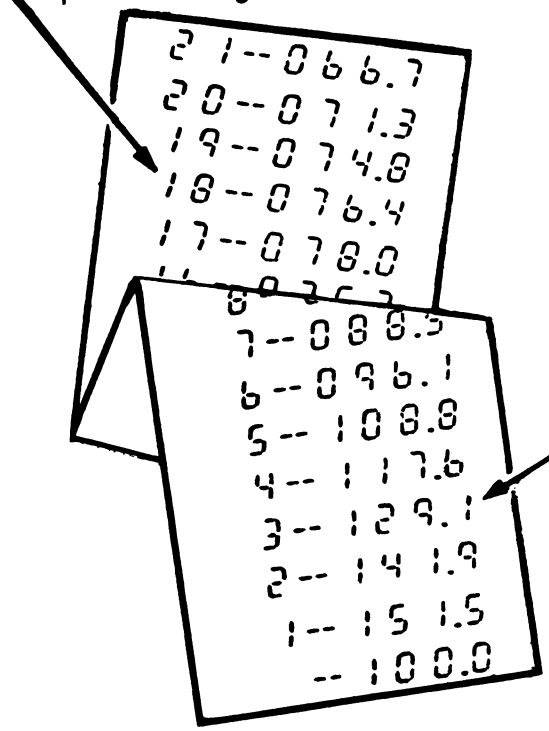
thrombosis

detection of DVT using I-125 fibrinogen

CCC-4TP

position on leg



percent uptake

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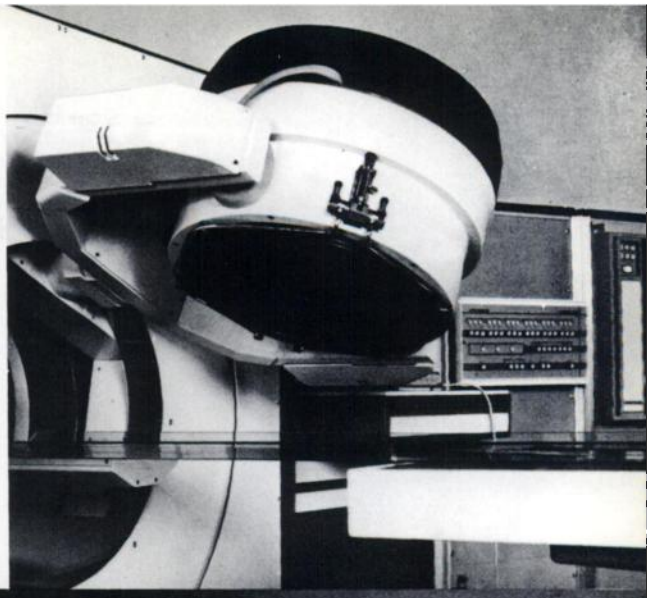
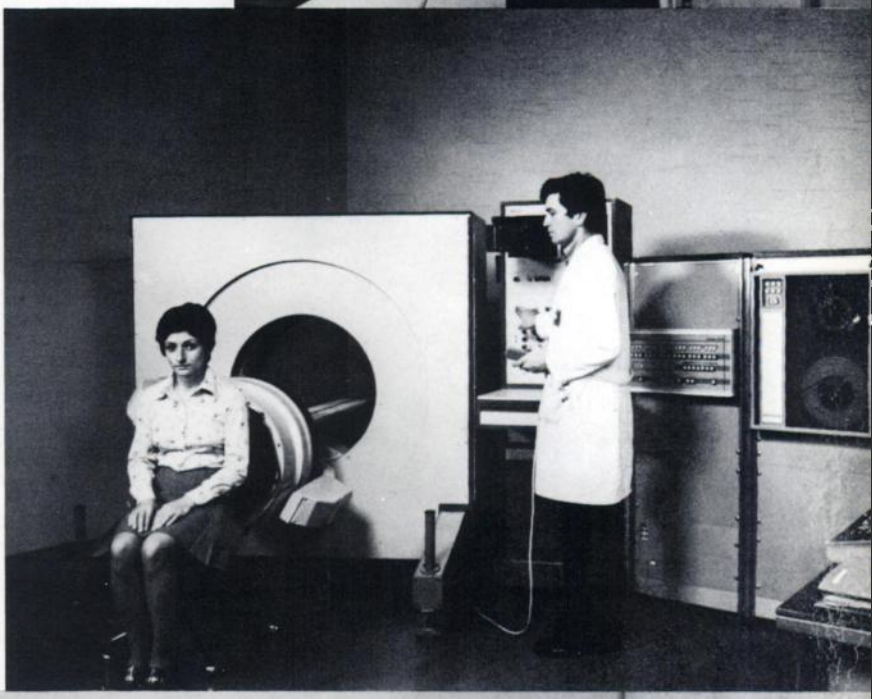
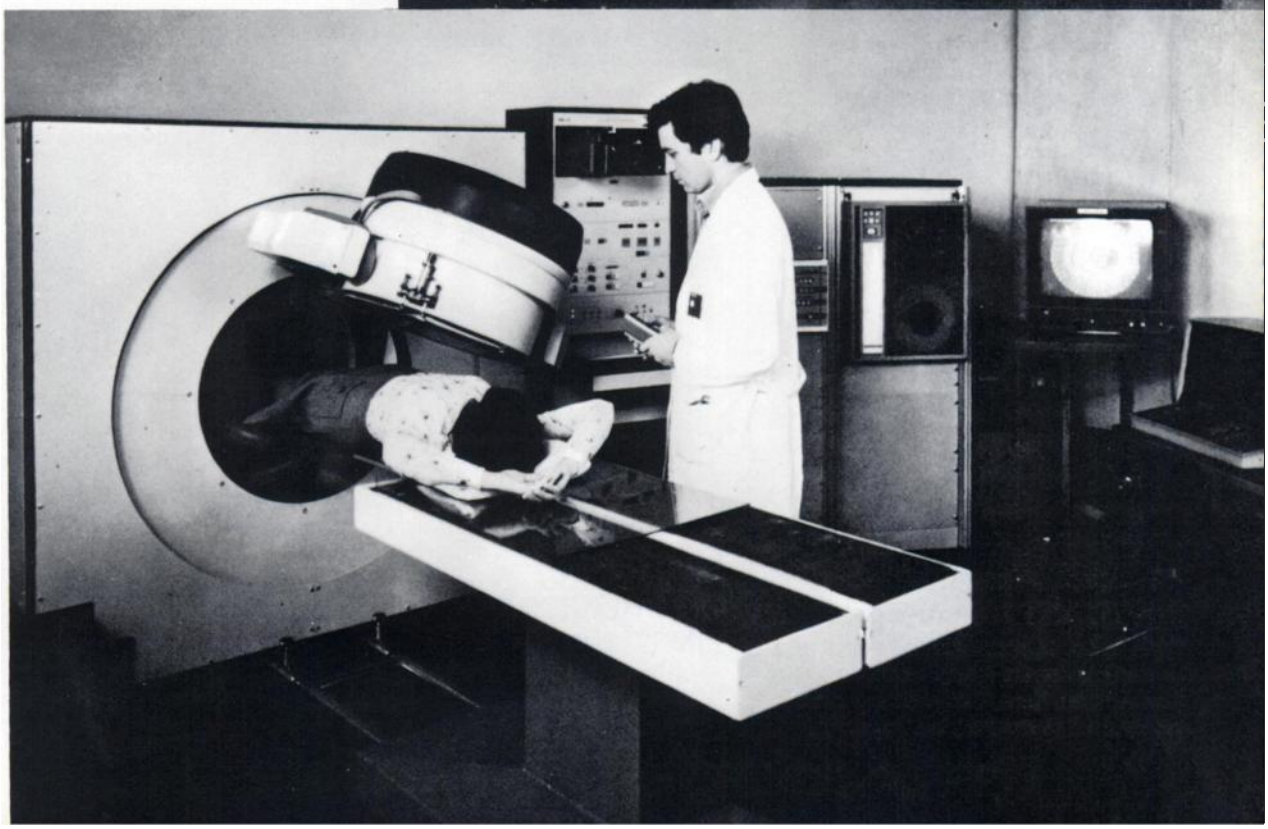


Flexible: computerised tomography is the main goal of the Gamma–CAT.
However, in addition traditional scintigraphy (organs and whole body) and fast dynamic studies can be easily performed with the same system.

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



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



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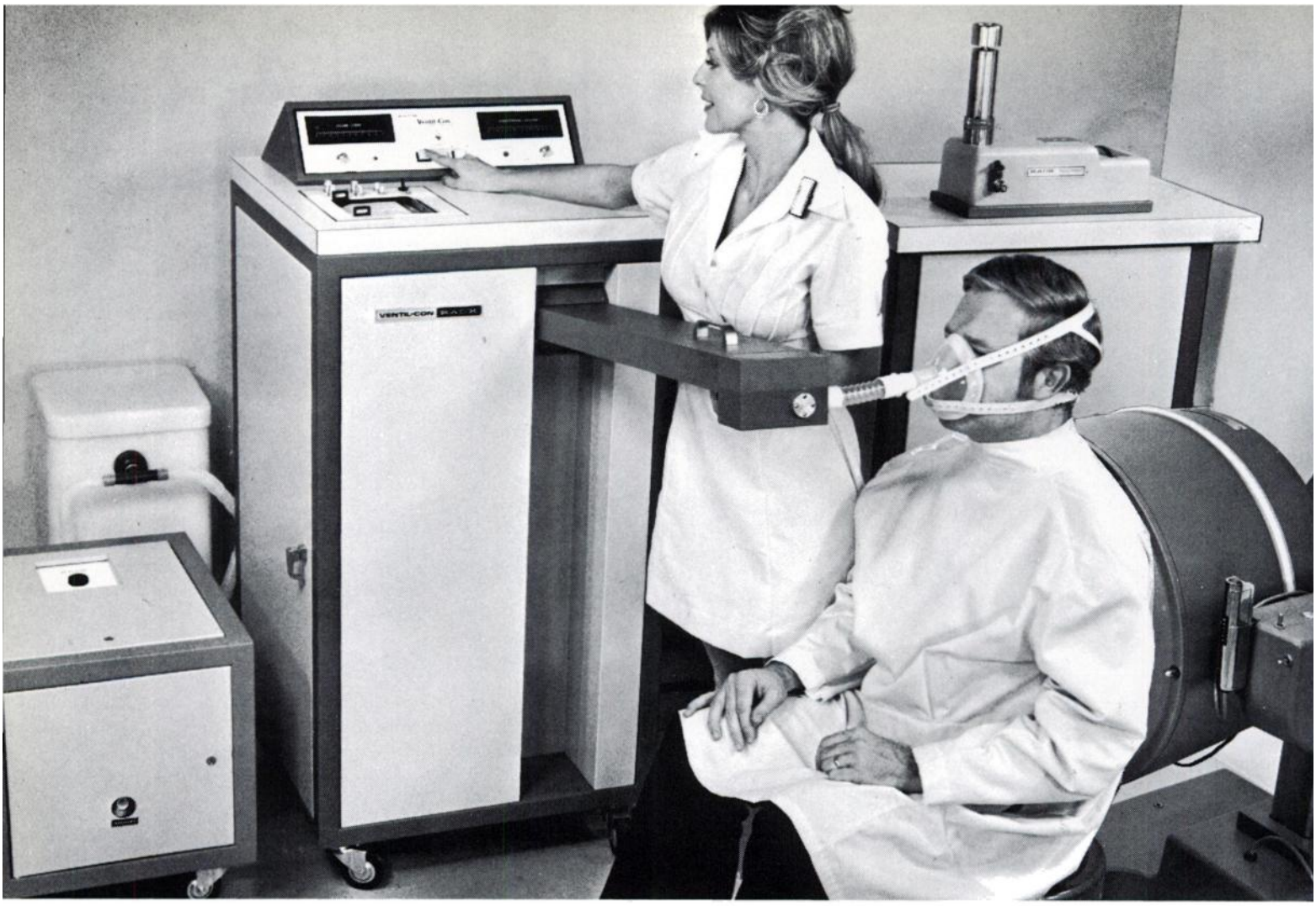

A Complete ^{133}Xe Gas Control System from RADX

The Complete System for Lung Ventilation Studies

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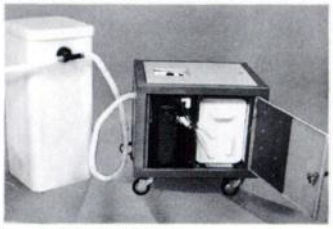

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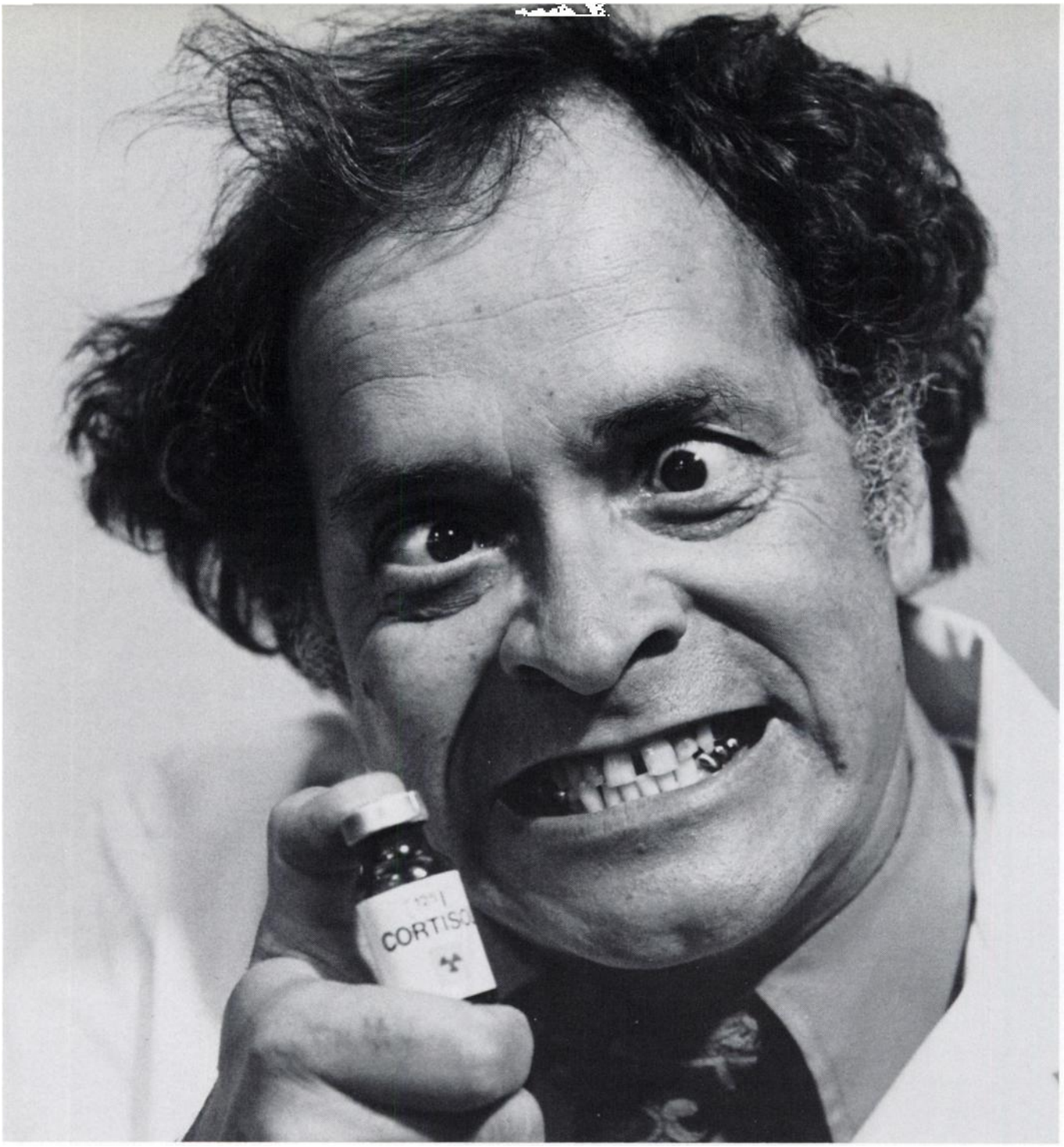

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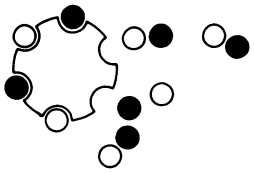

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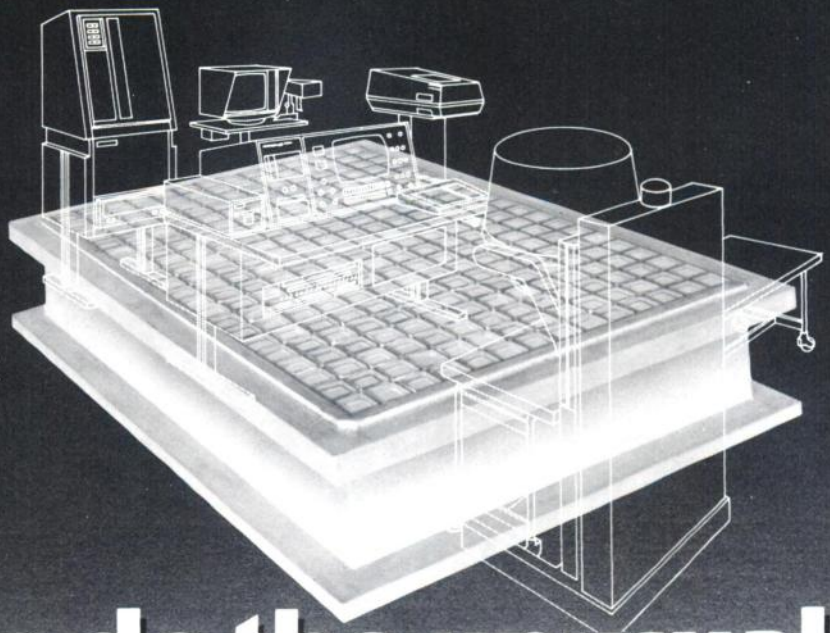

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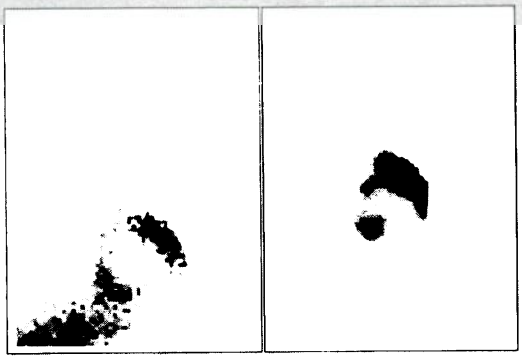

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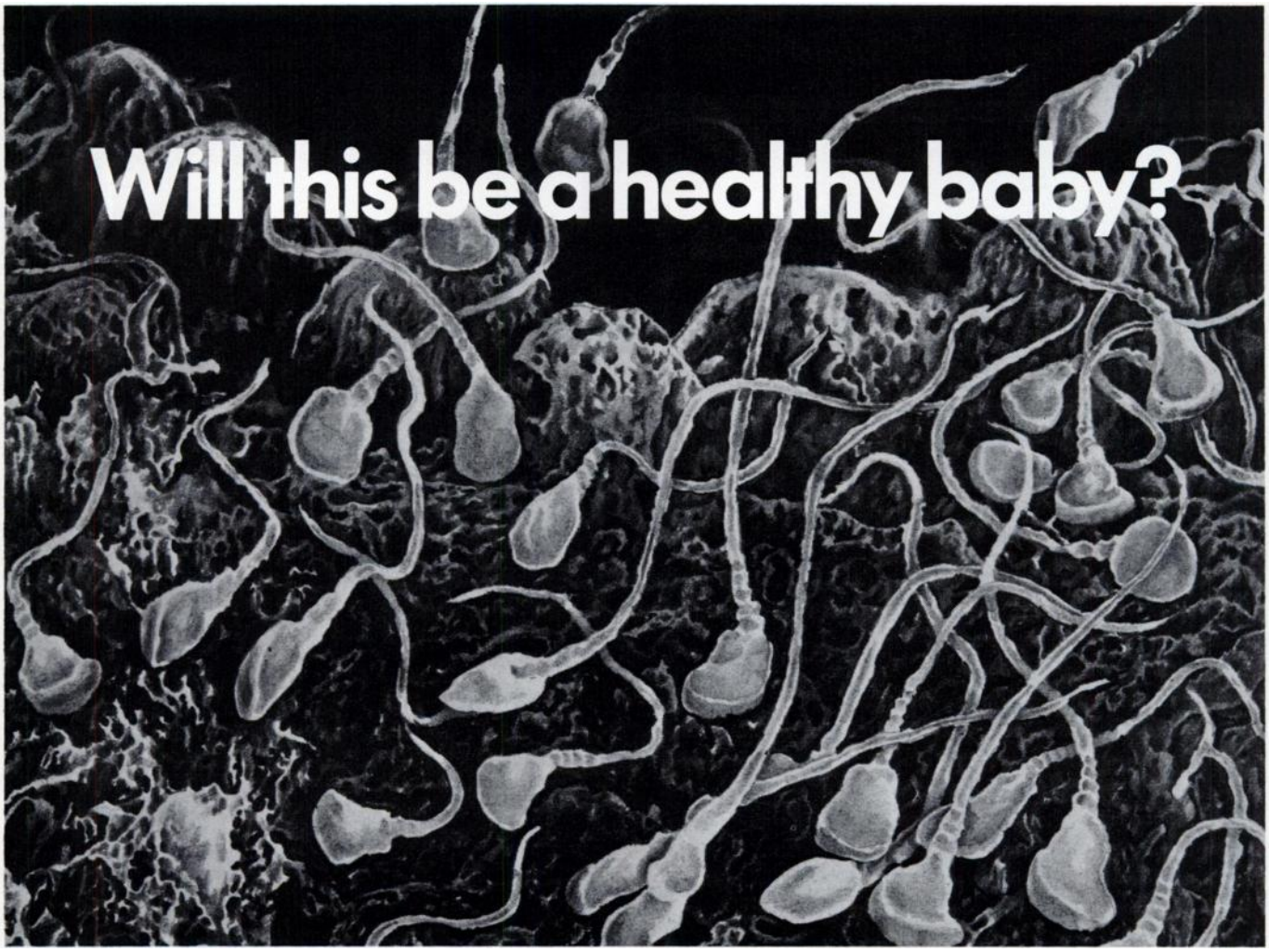

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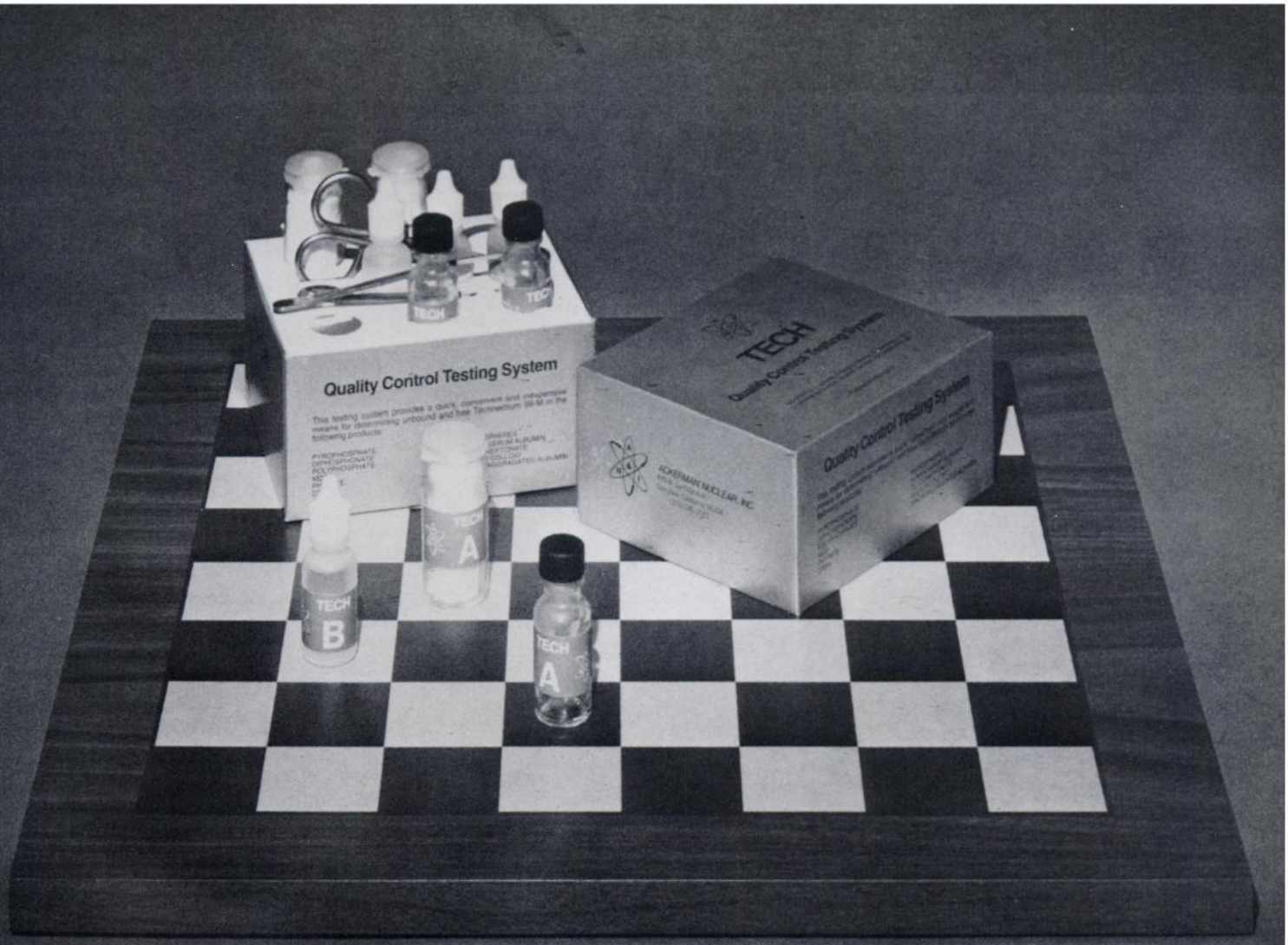

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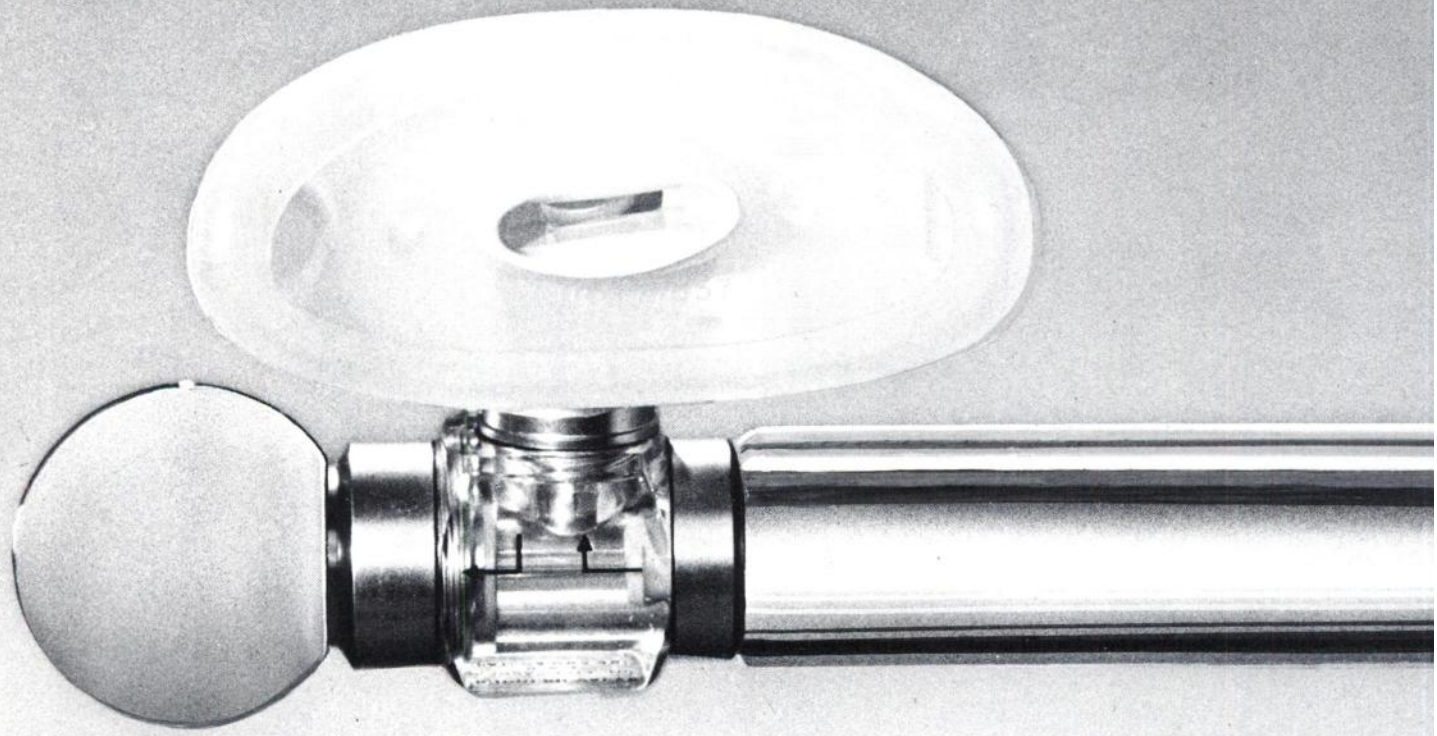

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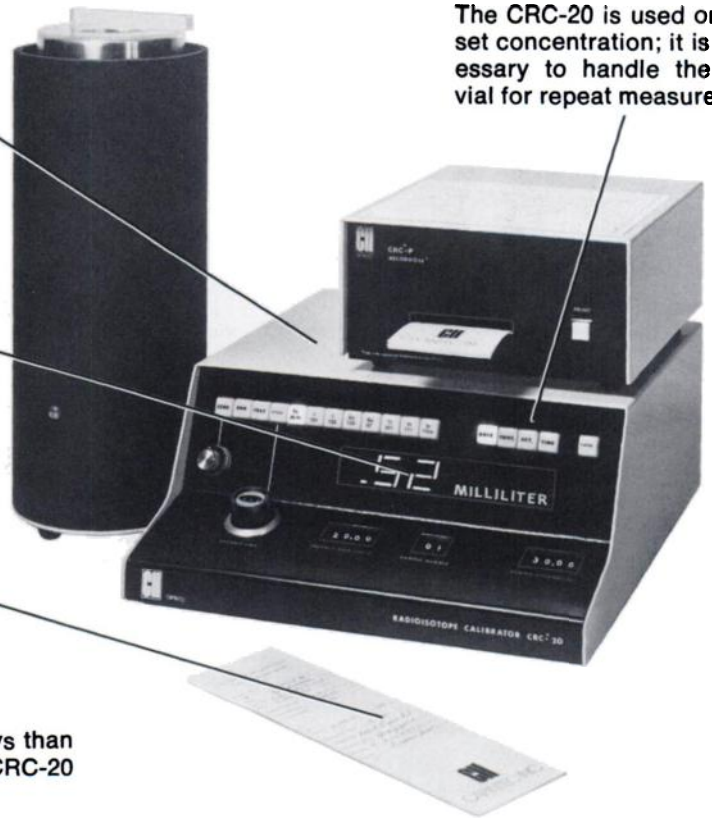

The CRC-20 is used only once to set concentration; it is never necessary to handle the multidose vial for repeat measurement.

All this to reduce exposure . . . in more ways than one. Like all Capintec Calibrators, the CRC-20 features:

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JNM

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POSITIONS OPEN

NUCLEAR MEDICINE TECHNOLOgist. 500-bed medical center is presently seeking a registered or registry eligible nuclear medicine technologist to work in a rapidly expanding nuclear medicine laboratory. Competitive salary and excellent hospital benefits. Reply may be directed to: Joe Wells, Employment Manager, Mt. Carmel Medical Center, 125 South Souder, Columbus, Ohio 43222 (614) 225-5288. An Equal Opportunity Employer—Male/Female.

BECAUSE OF A RECENT EXPANsion to a fully integrated program, the Divisions of Nuclear Medicine at the George Washington University Medical Center now has positions available (PG4 and PG5). This program includes the George Washington University, Washington Hospital Center and VA Hospitals. Training exposure to a variety of imaging devices, computer applications, in-vitro and clinical patient services are provided. Opportunity for research in an active research program in Radiochemistry/Radiopharmaceutical Development and Medical Imaging associated with an advanced degree program (MS/Ph.D.) is encouraged. For applications please contact: Richard C. Reba, M.D., Director, Nuclear Medicine Training Program, GWUMC, 901 Twenty-Third Street, N.W., Washington, D.C., 20037. Phone 202-676-3458.

PHYSICIAN CERTIFIED ABNM OR eligible—full time, private practice with active teaching and research program in midwest community hospital. Ultrasound experience desirable. Please reply: P.O. Box 800, Society of Nuclear Medicine, 475 Park Avenue South, New York, N.Y. 10016.

NUCLEAR MEDICINE, UNIVERSITY of Washington, Seattle, Washington; Now considering candidates to enter two-year residency in July 1978 and 1979. Fully approved, leading to NM Board eligibility. Comprehensive basic science and clinical experience. In Vitro, Metabolic, Imaging, Therapy. Opportunities in CAT and ultrasound. Large patient referral, excellent facilities and equipment. Research opportunities. For full details contact: Wil B. Nelp, M.D., Director, Division of Nuclear Medicine, University Hospital, RC-70, Seattle, Wa. 98195; Phone (206) 543-3538.

NUCLEAR MEDICINE RESIDENCY. 930-bed VA general hospital offers AMA approved two year program. Two positions available July, 1978. Located in San Fernando Valley 15 minutes from affiliated hospitals (UCLA and Wadsworth VA). Program covers isotope and ultrasound imaging, in vivo and in vitro procedures, including RIA. Prerequisite: two years post graduate training in medicine, radiology or pathology. Minimum stipend: $20,000. Contact: Marvin B. Cohen, M.D., Chief, Nuclear Medicine Service. Nondiscrimination in employment. VA Hospital, 16111 Plummer St., Sepulveda, CA, 91343.

NUCLEAR MEDICINE TECHNICIAN needed. This is a sole technician position in a 129-bed general medical and surgical hospital and a 47-bed nursing home care unit. Salary $10,370 per annum with excellent fringe benefits. Excellent educational and recreational facilities in area. City approximately 60,000. No State income tax. Non-discrimination in employment. Two years of nuclear medicine technician experience required. Write or call collect: Personnel Serviec (05), Veterans Administration Center, Cheyenne, WY 82001. Phone (307) 778-7550, extension 241.

NUCLEAR MEDICINE TECHNOLOgist, ASCP, ARRT. B.S. or higher. Imaging and in vitro experience, to teach AMA approved program leading to B.S. Nuclear Medicine Technology. Full time faculty appointment. Excellent fringe benefits. Personal interview required. Send resume by September 1, 1977, to Chairman —Search Committee, Nuclear Medicine Technology, RTI Room 118, University of Alabama in Birmingham, University Station, Birmingham, Alabama 35294. Affirmative action—equal opportunity employer.

CHIEF TECHNOLOGIST. NUCLEAR Medicine position available soon in 600-bed university medical center, providing excellent facilities and opportunity for continued professional development. Excellent fringe benefits; nuclear medicine registry required; equal opportunity employer. Reply to: Mr. Lawrence Flood, Personnel Dept., University of Illinois Medical Center, P.O. Box 6998, Chicago, IL 60680. Tel/(312)996-6688.

POSITIONS 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 801, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

M.D., Ph.D., ABIM ELIGIBLE AND ABNM certified, with considerable experience in nuclear medicine, clinical, research, teaching, and administration. Wishes to relocate. Able and willing to develop a comprehensive nuclear medicine program for either academic or community medicine. Send reply with job description to P.O. Box 802, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

CURRENT CONCEPTS IN NUCLEAR MEDICINE
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Division of Nuclear Medicine, University of Washington School of Medicine
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- Diagnostic Problems in Pediatric Medicine
- Bone Images & Your Diagnosis
- Correlating the Diagnostic Process
- Overview of Thrombosis & Thrombotic Disease
- Experience with Indium-labelled Platlets
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- Radionuclide Studies of Left Ventricular Function —Clinical Relevance
- Diagnostic Case Studies

Category I AMA credit given. For further information contact: Office of Continuing Medical Education, E303 Health Sciences (SC-50), University of Washington, Seattle, Wa. 98195 or telephone Course Directors at (206)543-3538.

Course Directors: Steven M. Larson, M.D. & Wil B. Nelp, M.D.

State of the art in gamma camera hard copy recording.

Multi-Imager 1

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

Multi-Imager 4

Multi-Imager 4 yields unmatched performance in gamma camera hard copy recording. A built in high resolution CRT, state of the art microprocessor technology, and electronically synchronized multiple lens optics provide a very small dot size on 8x10 format without increasing the pulse pair resolution dead time of the gamma camera system. The fast lens system of Multi-Imager 4 is compatible with both conventional x-ray film and the slower single emulsion radiographic films that provide the best image quality. Up to 64 images can be recorded in ten different formats. The dual intensity recording mode allows simultaneous acquisition of whole body or static views at two different intensity levels. Positive patient indentification is achieved through a nine digit keyboard LED system.

Both Multi-Imager 1 and Multi-Imager 4 can provide thousands of dollars in annual film cost savings and are compatible with all gamma cameras. Mail coupon to receive detailed information and sample clinical studies.

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...and get it fast with Phosphotec®

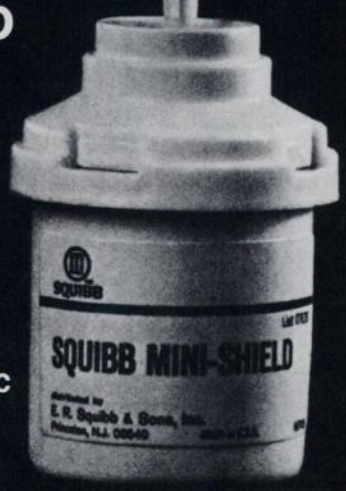
Technetium Tc 99m-Pyrophosphate-Tin Kit

Simple two-step procedure

Maintain shielding at all times.

1

Add sterile sodium pertechnetate ^{99m}Tc solution to reaction vial.



2

Shake vial gently... assay dose and inject IV.

- Excellent labeling efficiency—95% bound at optimum time for scanning (2-4 hours post-injection).
- Rapid skeletal uptake. After two hours, approximately 55% of injected dose localizes in bone.
- Scan evaluation 93% excellent/good in 215 clinical cases (11 investigators)*
- Minimum amount of uptake in soft-tissue organs... little urinary tract visualization.
- Ratio of pyrophosphate to stannous tin: 20.5
- Rapid blood and renal clearance.
- May be used up to 12 hours after reconstitution, stored at 2°-8° C.

*Data on file at the Squibb Institute for Medical Research.

See following page for brief summary.

INDICATIONS AND USAGE: Technetium Tc 99m Pyrophosphate/Trimetaphosphate-Tin may be used as a bone imaging agent to delineate areas of altered osteogenesis.

CONTRAINDICATIONS: None known.

WARNINGS: Technetium Tc 99m Pyrophosphate/Trimetaphosphate-Tin should not be administered to patients who are pregnant or lactating 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.

It has been reported that false-positive or false-negative brain scans may result when brain scans using sodium pertechnetate Tc 99m are performed after a bone scan has been done using an agent containing stannous chloride, e.g., a pyrophosphate or polyphosphate bone agent. This is thought to be due to the interaction of Tc 99m with stannous ions inside red blood cells. Therefore, in those cases where both brain and bone scans are indicated, the brain scan should be performed first, if feasible. Alternatively, another brain imaging agent, such as Tc 99m DTPA, may be employed.

PRECAUTIONS: Tc 99m Pyrophosphate/Trimetaphosphate-Tin, as well as any radioactive agent, must be handled with care. Once sodium pertechnetate Tc 99m is added to the Kit, appropriate safety measures should be used to minimize external radiation exposure to clinical personnel. Care should also be taken to minimize radiation exposure to patients in a manner consistent with proper patient management.

To minimize radiation dose to the bladder, the patient should be encouraged to void when the examination is completed and as often thereafter as possible for the next 4-6 hours.

Technetium Tc 99m Pyrophosphate/Trimetaphosphate-Tin should be used within six hours of preparation.

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Tc 99m Pyrophosphate/Trimetaphosphate-Tin should be used in pregnant women only when clearly needed.

It is not known whether this drug is excreted in human milk. As a general rule nursing should not be undertaken when a patient is administered radioactive material.

Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: No adverse reactions specifically attributable to the use of Technetium Tc 99m Pyrophosphate/Trimetaphosphate-Tin have been reported.

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

Bone imaging: 5-15mCi Technetium Tc 99m labeled Pyrophosphate/Trimetaphosphate-Tin. Scanning post-injection is optimal at about 3-4 hours.

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

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

The components of the New England Nuclear Technetium Tc 99m Pyrophosphate/Trimetaphosphate-Tin Kit are supplied sterile and non-pyrogenic. Aseptic procedures normally employed in making additions and withdrawals from sterile, non-pyrogenic containers should be used during addition of pertechnetate solution and the withdrawal of doses for patient administration.

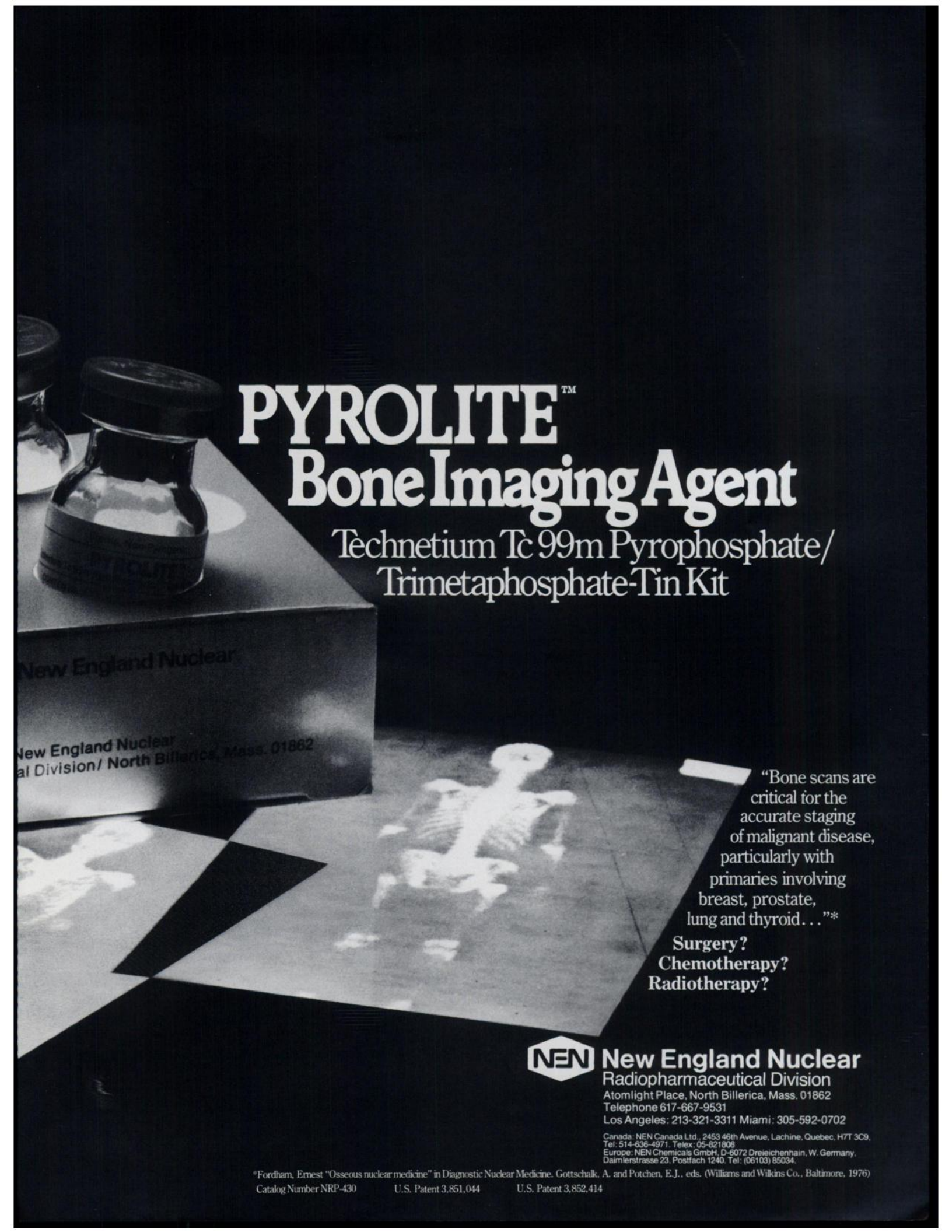
Technetium Tc 99m Pyrophosphate/Trimetaphosphate-Tin is prepared by simply adding 3-7ml of sodium pertechnetate Tc 99m solution to the vial and swirling for about one minute. Shielding should be utilized when preparing the Tc 99m Pyrophosphate/Trimetaphosphate-Tin.

HOW SUPPLIED: NEN's PYROLITE™ Technetium Tc 99m Pyrophosphate/Trimetaphosphate-Tin Kit is supplied as a set of five or thirty vials, sterile and non-pyrogenic. Each vial contains in lyophilized form:

Sodium Pyrophosphate – 10mg
Sodium Trimetaphosphate – 30mg
Stannous Chloride – 1mg

Prior to lyophilization the pH is adjusted to between 4.5-5.5 with hydrochloric acid and/or sodium hydroxide solution. The contents of the vial are lyophilized and stored under nitrogen. Store at room temperature (15°-30°C).

Included in each five (5) vial kit is one (1) package insert and twelve (12) radiation labels. Included in each thirty (30) vial kit is one (1) package insert and seventy-two (72) radiation labels.



PYROLITE™
Bone Imaging Agent

Technetium Tc 99m Pyrophosphate/ Trimetaphosphate-Tin Kit

"Bone scans are critical for the accurate staging of malignant disease, particularly with primaries involving breast, prostate, lung and thyroid..."*

Surgery?
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Telephone 617-667-9531
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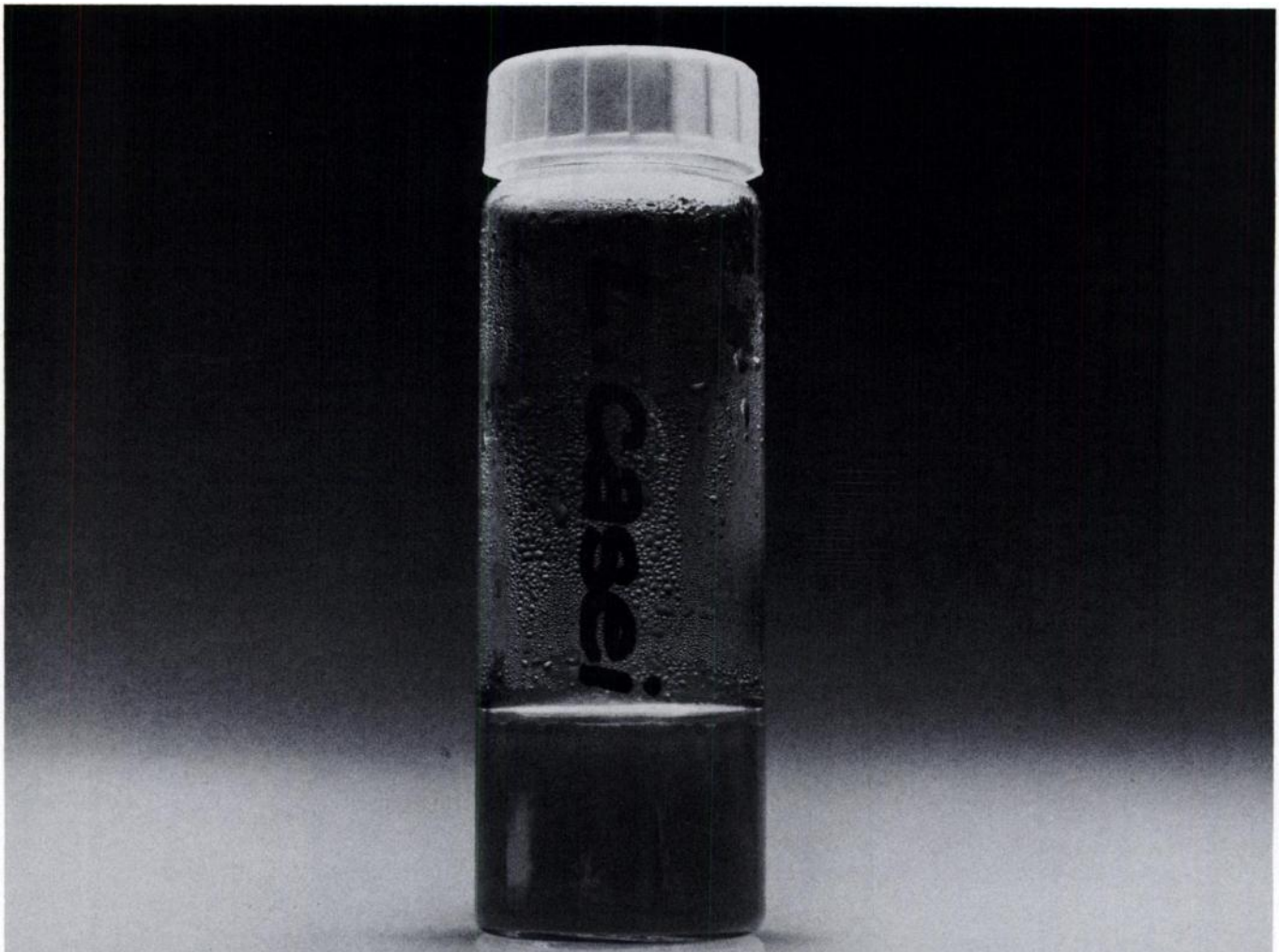
Canada: NEN Canada Ltd., 2453 46th Avenue, Lachine, Quebec, H7T 3C9, Tel: 514-636-4971. Telex: 05-821808
Europe: NEN Chemicals GmbH, D-6072 Dreieichenhain, W. Germany, Daimlerstrasse 23, Postfach 1240. Tel: (06103) 85034.

*Fordham, Ernest "Osseous nuclear medicine" in Diagnostic Nuclear Medicine. Gottschalk, A. and Potchen, E.J., eds. (Williams and Wilkins Co., Baltimore, 1976)

Catalog Number NRP-430 U.S. Patent 3,851,044 U.S. Patent 3,852,414



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Until now, bioassay has been the method of choice in folate testing. Even though there are inherent disadvantages in the method, there hasn't been a more reliable alternative.

Now there is, with our new Serum Folate Radioassay which is simpler, faster and more reproducible than bioassay.

Our test is not affected by antibiotics, and is standardised on N^5 methyltetrahydrofolate the predominant form of folate circulating in blood. A unique selenium-75 γ-label is used for ease of counting, and the assay has been designed to be most precise in the clinically important range of 1.5–4.0ng/ml.

Added to all these advantages our radioassay only takes 2-3 hours, so who needs bioassay?

The new Serum Folate Radioassay kit

The Radiochemical Centre
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0823

Meletron

The dosecalibrator that calibrates itself (almost)

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

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

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

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

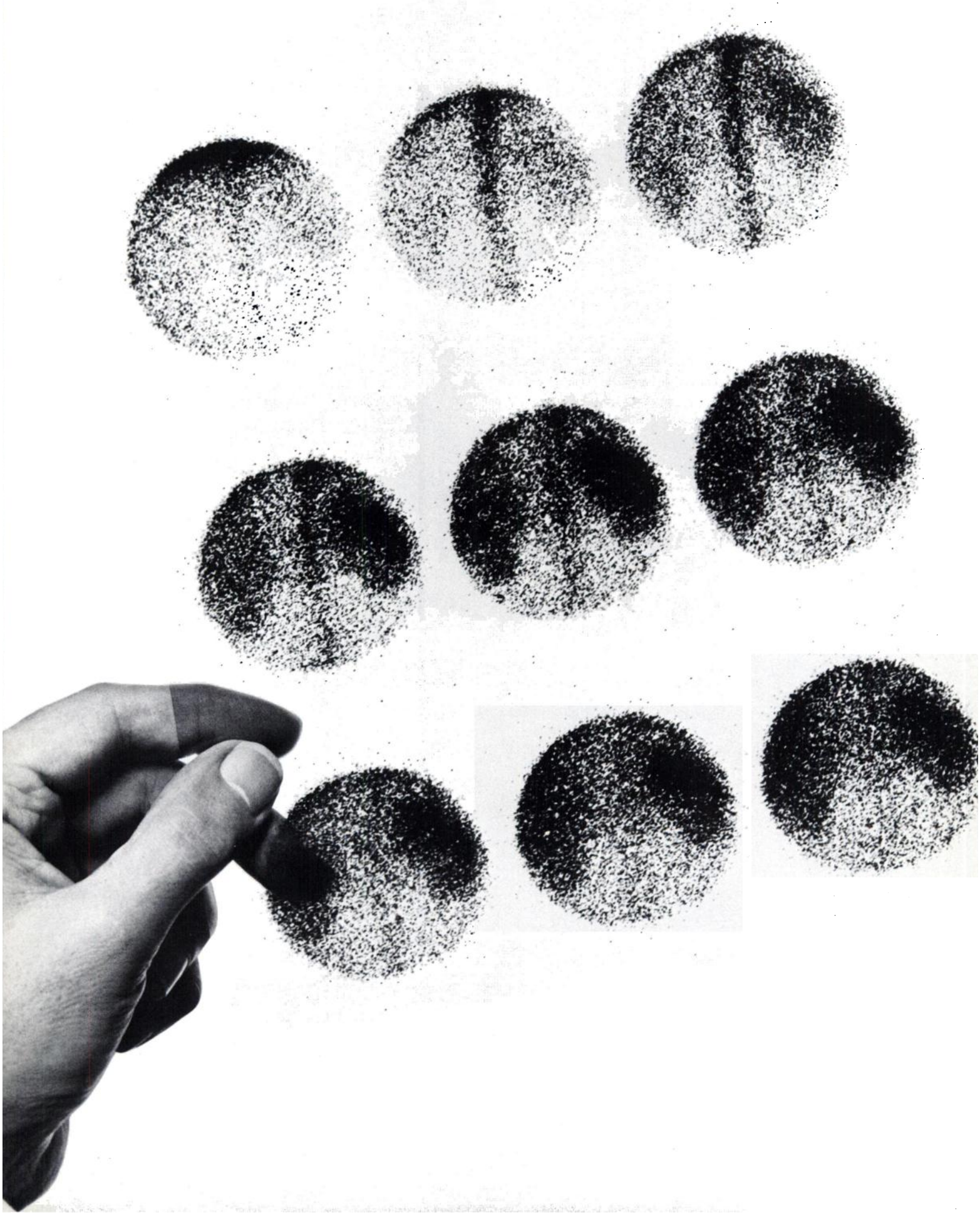
Area radiation can also be monitored by the new Meletron. With the key out, "Background – Error" will flash when the radiation level exceeds approximately 2.0 mr/hr (with an unshielded unit).

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

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

RADX

Melétron & Melécord . . . your key to accurate dosecalibration and error-free records.



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Kodak films for nuclear medicine combine near-ideal emulsion characteristics with high image readability.

Kodak is keeping pace with the rapid progress of nuclear medicine. And the result is a family of high-quality films that can fit your equipment and diagnostic requirements.

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That's just when Red Cross—America's Good Neighbor—steps in to lend a hand. Because helping people is what we're all about.

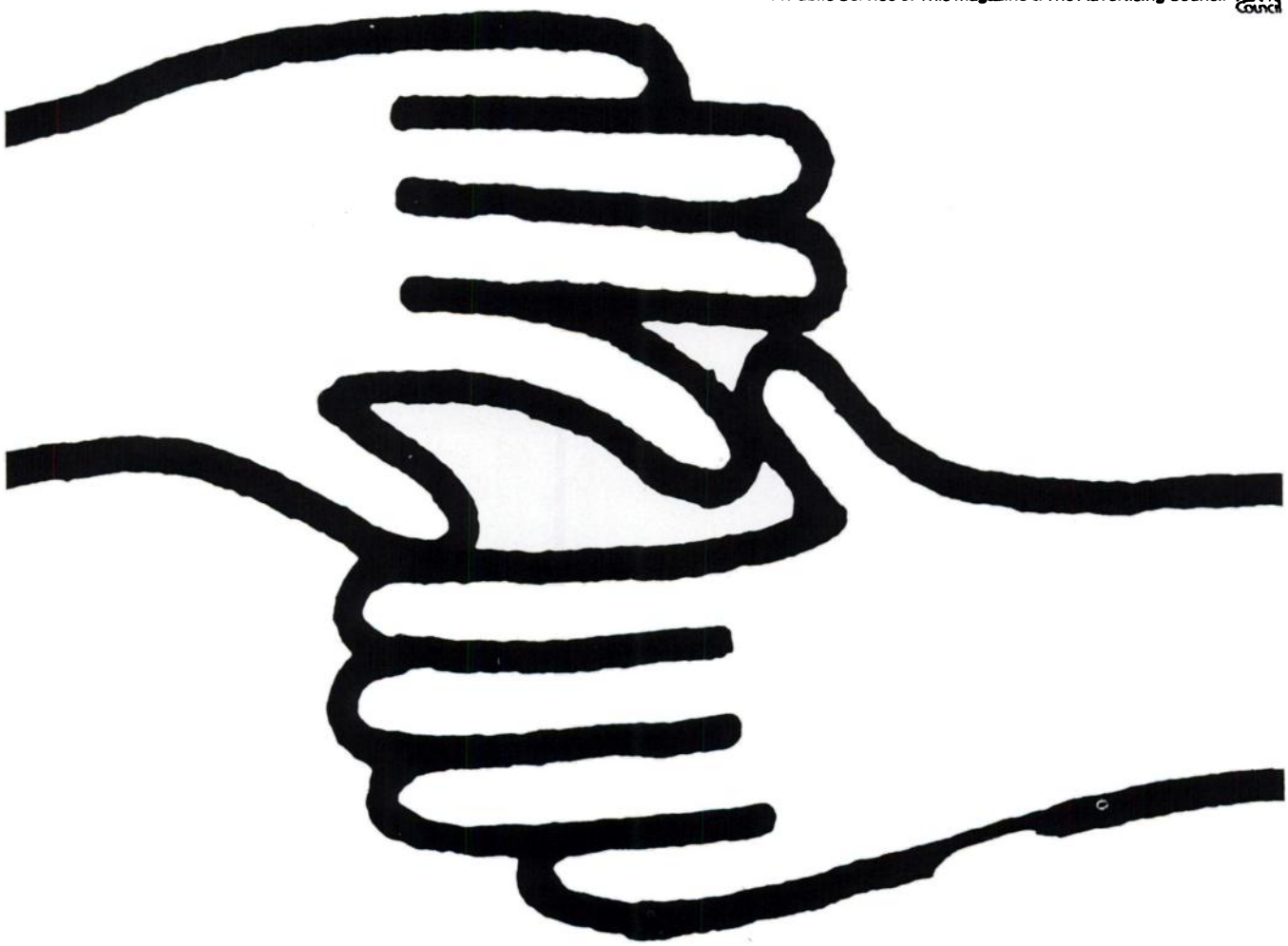
You could say all this helps your company, too.

Because easing people over life's rough spots makes them easier in their minds. And no one has to tell you how important that is on the job.

So help Red Cross any way you can.

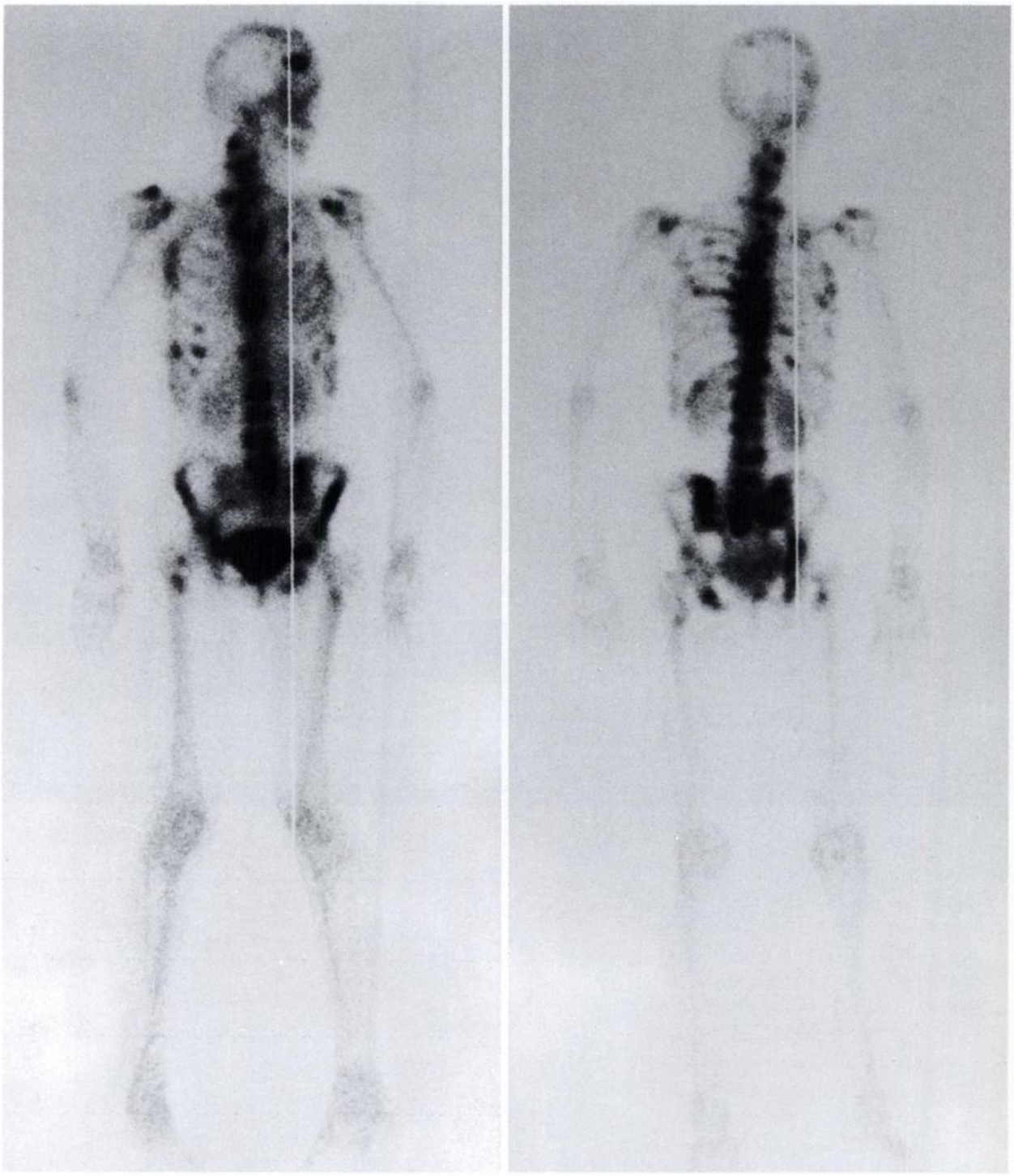
When you help us, it helps your people.

And when you help your people, you help yourself.



Red Cross. The Good Neighbor.

Dependable bone



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R. L.

Posterior
L. R.

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

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

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

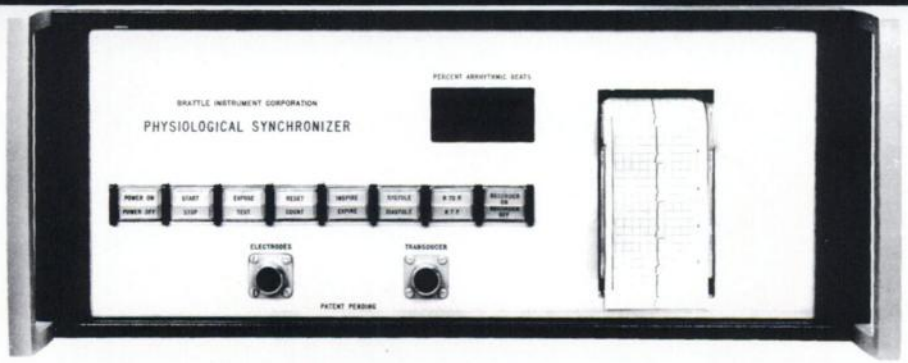
See following page for a brief summary of package insert.

INDEX TO ADVERTISERS

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

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

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



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

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

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

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

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

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

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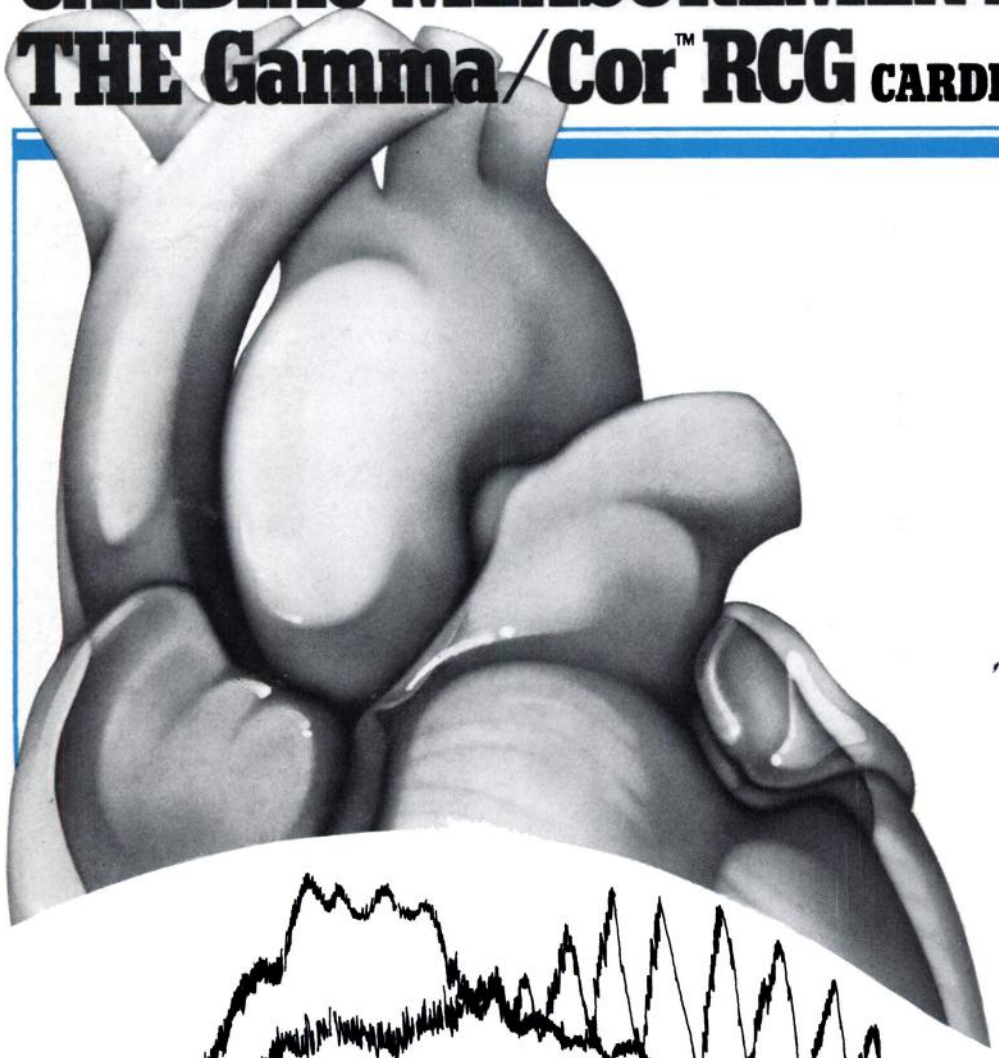
Ask your NEN man about Brattles and HSA Kits. He can show you a portfolio of clinical pictures and arrange to have one of our people give you a demo. Or write or call us direct. We'll send you brochures on this and other models, and will give you your own set of clinical pictures and a bibliography on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

Brattle Instrument Corporation

243 Vassar Street • Cambridge, Massachusetts 02139 • 617-661-0300

A NEW DIMENSION IN DYNAMIC CARDIAC MEASUREMENT. THE Gamma/Cor™ RCG CARDIAC PROBE.



When it comes to innovation in the field of diagnostic nuclear medicine, you can always depend on Searle Radiographics to bring it to you.

And our new Gamma/Cor RCG Cardiac Probe is a perfect example.

Here, for the first time, is a portable, minimally invasive method for rapid and direct measurement of left ventricular ejection fraction. It utilizes a volumetric radionuclide technique right at the patient's bedside and, unlike other instrumentation, it provides all essential data directly on an easy-to-read strip chart.

The Gamma/Cor RCG Cardiac Probe is yet one more example of Searle's expertise in the field of nuclear instrumentation. And when it comes to new dimensions in nuclear cardiology, Searle brings them to you first.

SEARLE

Searle Radiographics
Division of Searle Diagnostics Inc.