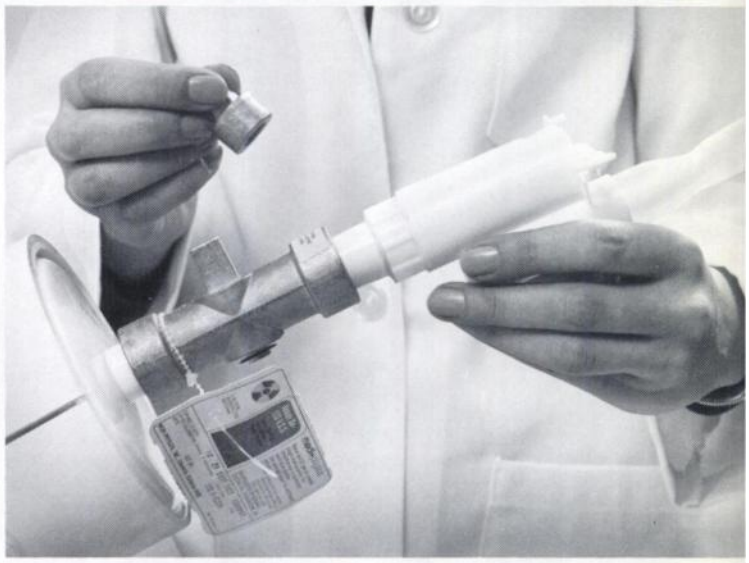
CONSIDERING XENON?



A versatile, disposable system

Xenon 133-V.S.S. includes everything you need for a xenon Xe 133 ventilation study. The completely disposable system includes the xenon Xe 133 contained in a valve-shield, a CO_2 absorber and bag for rebreathing and collection of expired xenon Xe 133, and a mouthpiece.

One system can be used for single-breath, rebreathing and wash-out studies.

The valve-shield can deliver either a concentrated or a dispersed dose.

Safe, convenient assembly

Xenon 133-V.S.S. can be assembled in less than a minute. Radiation exposure is minimized because there is no need to dilute the xenon gas or transfer it to a delivery system. After assembly, the ventilation study may begin immediately.

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

Xenon Xe 133-V.S.S. (Ventilation Study System)
Xenon Xe 133 Diagnostic

DESCRIPTION: The Xenon Xe 133-Ventilation Study System (V.S.S.) consists of a sealed plastic tube containing 10 millicuries ±20% of Xenon 133 gas at calibration time and date with less than 1% carrier Xenon in air.

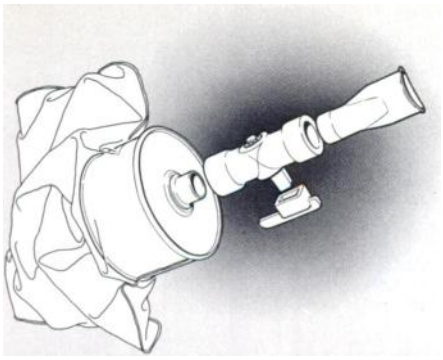
INDICATIONS AND USAGE: Study of pulmonary ventilation.

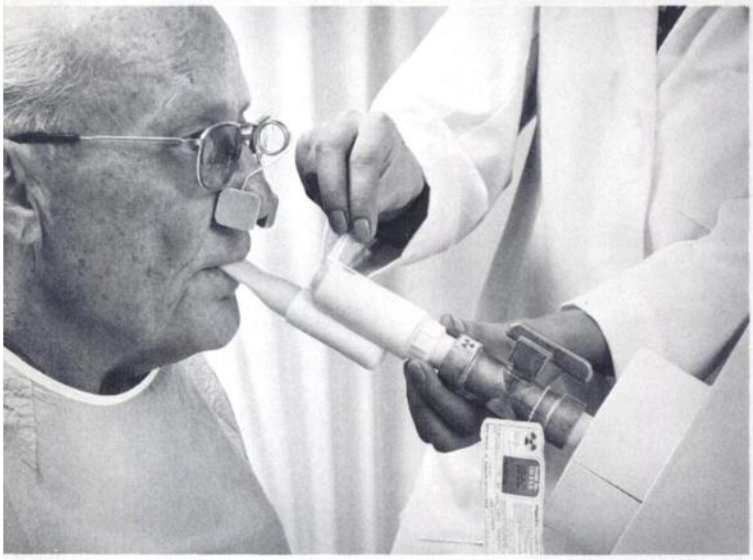
CONTRAINDICATIONS: None known.

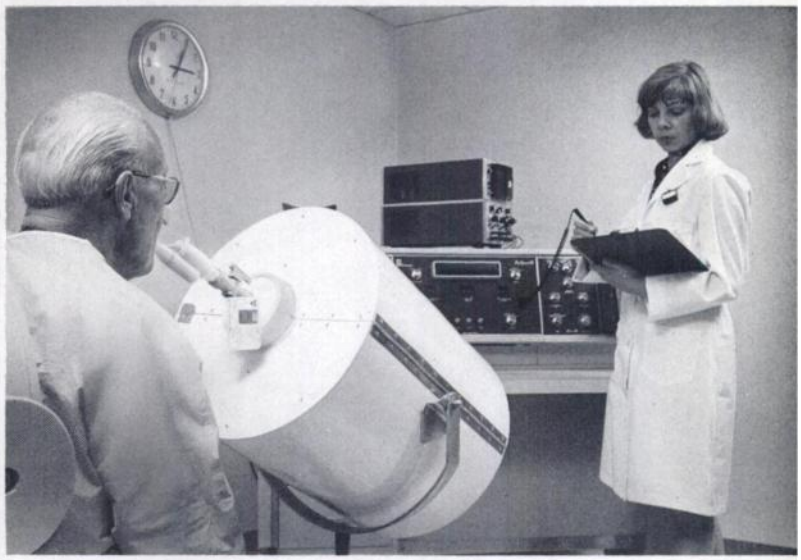
WARNINGS: Xenon Xe 133 should not be administered to children or to patients who are pregnant, or to nursing mothers unless the benefits to be gained outweigh the potential hazards. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

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. Xenon Xe 133 should be used in pregnant women only when clearly needed.

CONSIDER MPI's XENON 133-V.S.S. (VENTILATION STUDY SYSTEM) Xenon Xe 133 diagnostic







True, single-unit dose

The MPI Xenon 133-V.S.S. contains enough xenon Xe 133 for one ventilation study. You only use what you need and are not "locked into" an expensive delivery system that requires daily use to justify costs. Another advantage of single-unit dosage is that the risk of cross infection via reusable apparatus is significantly reduced.

Reduced radiation exposure

The xenon Xe 133 is supplied in a sealed plastic container. The valve-shield is designed to prevent radiation leaks during transport and use. Additionally, a shield to reduce radiation exposure to patient and attending personnel and a valve assembly to minimize the escape of exhaled xenon during washout studies are available as accessory components.

PRECAUTIONS: Xenon Xe 133 as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize radiation exposure to clinical personnel and to the patients consistent with proper patient management.

Exhaled Xenon Xe 133 gas should be controlled in a manner that is in compliance with the appropriate regulations of the government agency authorized to license the use of radionuclides.

Xenon Xe 133 gas delivery systems, i.e., respirators or spirometers, and associated tubing assemblies must be leak-proof to avoid loss of radioactivity into the laboratory environs not specifically protected by exhaust systems.

Xenon Xe 133 adheres to some plastics and rubber and should not be allowed to stand in tubing or respirator containers for such unrecognized loss of radioactivity from the dose for administration may render the study non-diagnostic.

ADVERSE REACTIONS: Adverse reactions specifically attributable to Xenon Xe 133 have not been reported.

DOSAGE AND ADMINISTRATION: The recommended activity range for pulmonary ventilation studies in the average patient (70 kg) is 2 to 20 millicuries (0.03 to 0.3 millicuries/kg).

HOW SUPPLIED: Each Ventilation Study System (V.S.S.) contains Xenon 133 in a sealed plastic tube containing 10 millicuries ±20% at calibration time and date stated on the label.

The sealed plastic tube is enclosed in a metal valve-shield which is sealed with a plastic shrink band to prevent accidental loss of Xenon 133 during shipping. A key is provided to remove the end plugs of the valve-shield and to turn the valve fitting which breaks the sealed plastic tube. The V.S.S. also includes a disposable mouthpiece and a breathing-collection bag with an attached CO_2 absorber canister.

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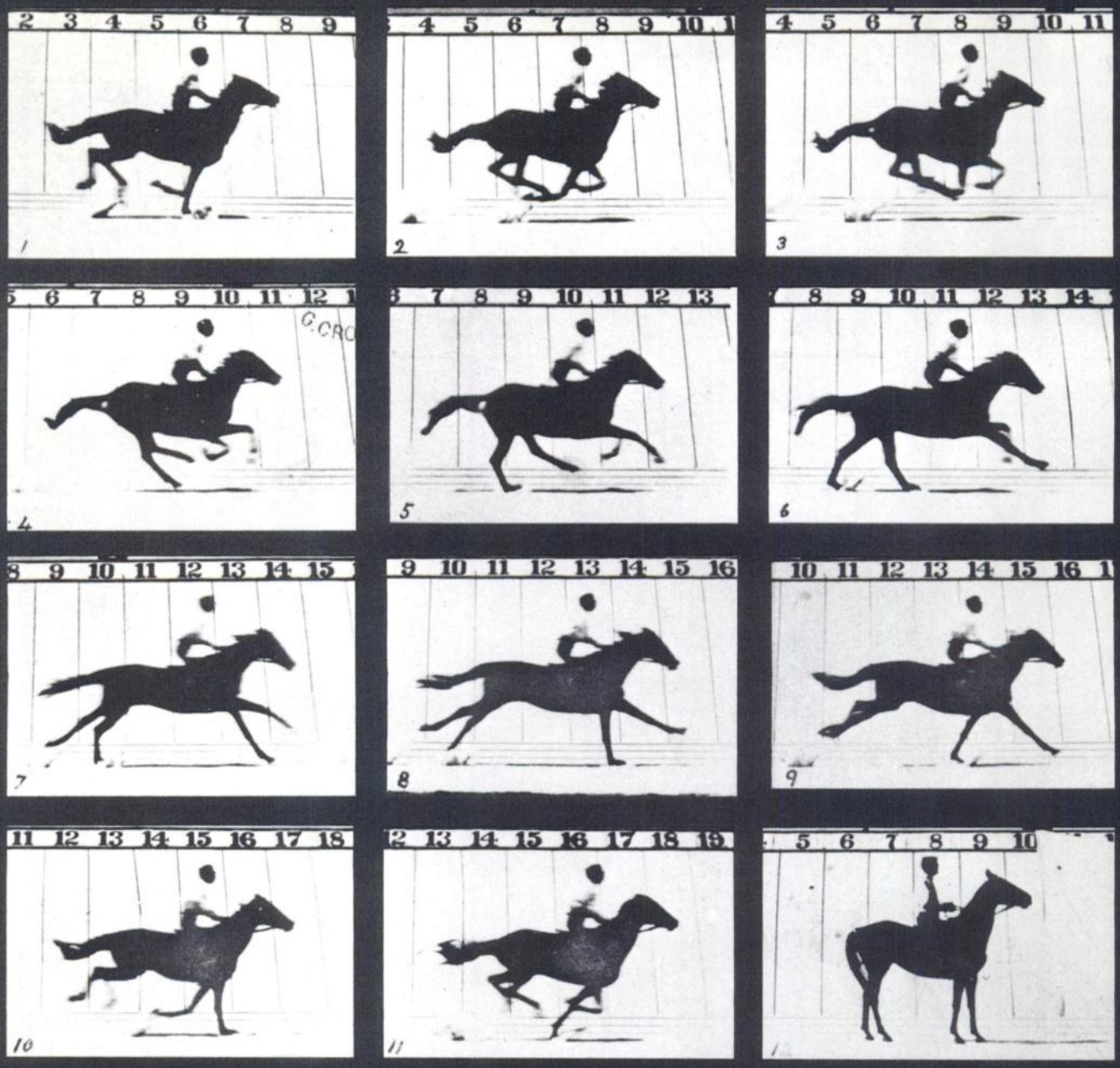


Eadweard Muybridge: *Galloping Horse*, 1878.

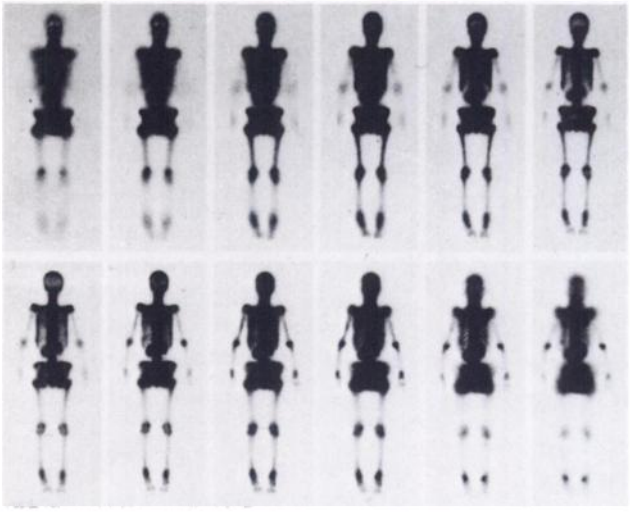
One hundred years ago our concept of how a horse ran was limited to what we thought we saw—the two front legs touching the ground in unison to propel the horse forward, followed by the two hind legs hitting the ground as the front legs recovered. But in 1878, Eadweard Muybridge altered our awareness of reality with 12 great pictures of a galloping horse—stopping the action with a very fast shutter speed. He not only successfully demonstrated that for an instant (panels 2 & 3) all four legs actually lose touch with the ground altogether, but also that horses only place one leg down at a time. Thus, he extended our vision and enabled men to see things that are not normally visible to the human eye.

It took more than one picture to see that horses fly.

Today, the concept of extending vision by utilizing more than one picture has been introduced into nuclear medicine by Searle's PHO/CON Emission Tomographic Scanner. PHO/CON simultaneously provides 12 tomographic images for in-depth representation of the patient in 12 separate coronal planes; thus providing improved capability for locating lesions, as well as enhancing the interpretation of images in many difficult cases by generating additional information on depth, size, shape, and probable nature. PHO/CON also minimizes the need for multiple-view imaging due to its ability to differentiate between confusing overlying activity and that of the target area of interest, and has often provided valuable clinical information in certain planes that was not evident in the one or two images offered by other nuclear cameras. And, because of a flexibility of format sizes, PHO/CON not only permits a wide variety of studies to be performed—from brain and soft tissue to whole body—but it is rapidly demonstrating its superiority for studies using Gallium-67.

PHO/CON™ Emission Tomographic Scanner defines lesions better with 12 GREAT IMAGES.

For additional information on how the 12 great images of the PHO/CON Emission Tomographic Scanner can help you see things other nuclear systems may not, contact Searle Radiographics, a member of the Searle Imaging group.



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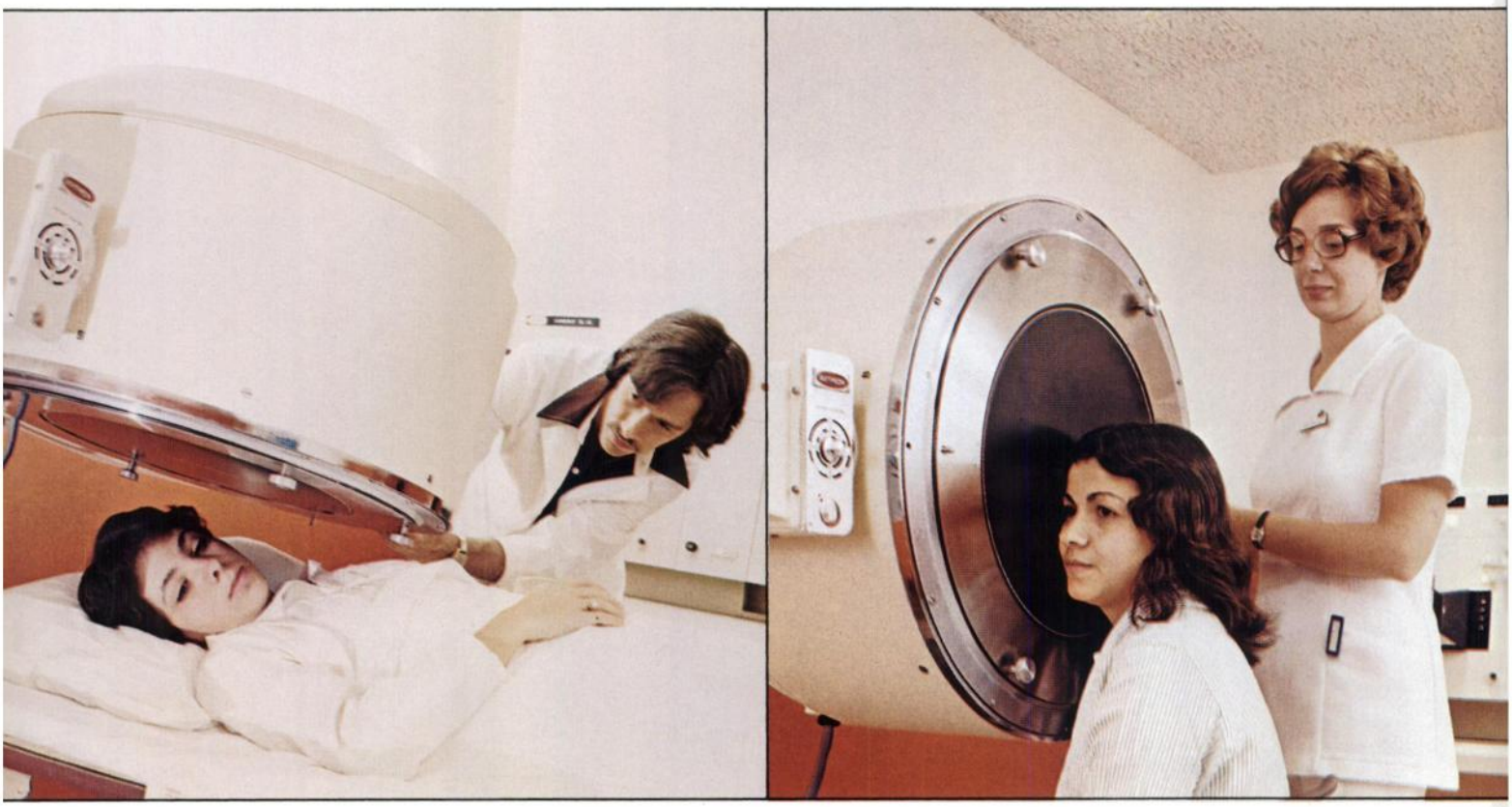
A SUBSIDIARY OF THE RADIOCHEMICAL CENTRE

Abington Memorial chose a camera for maximum image quality and convenience.



The choice: The Raytheon XL-91

The 520-bed Abington Memorial Hospital in Abington, PA, outside Philadelphia, has added a new Raytheon XL-91 gamma camera to its new wing. And right from start-up the XL-91 has been producing images of superior resolution, with much greater patient accessibility and operator convenience than other equipment.

The reasons for the XL-91's success at Abington are clear. At 16½ inches the XL-91 provides the widest undistorted field of view of any gamma camera. The XL-91's exclusive Autocomp circuitry achieves ±2% uniformity and — with as many as four memories — permits users to calibrate to four different isotopes or collimators.

Patient comfort, operator convenience, superior high resolution images. No wonder Abington Memorial had the XL-91 working a full patient schedule just days after delivery. And outstanding customer acceptance of the XL-91 — such as at Abington Memorial — is the reason Raytheon has had to expand its sales and service coverage greatly. From coast to coast, wherever you are, Raytheon is now near you.

If you'd like more information on the XL-91, write or phone Raytheon Company, Medical Electronics, 70 Ryan Street, Stamford, CT 06907. Telephone: 800-243-9058. We will put you in touch with your nearest Raytheon sales engineer.

RAYTHEON

The Raytheon XL-91...the 91-tube image maker.

The package is new.
The quality is traditional.

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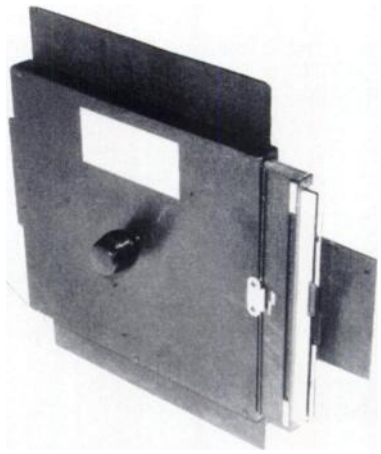
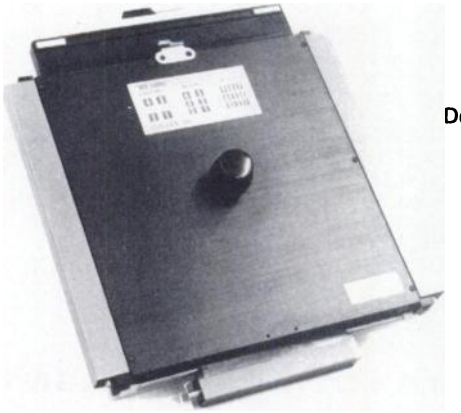


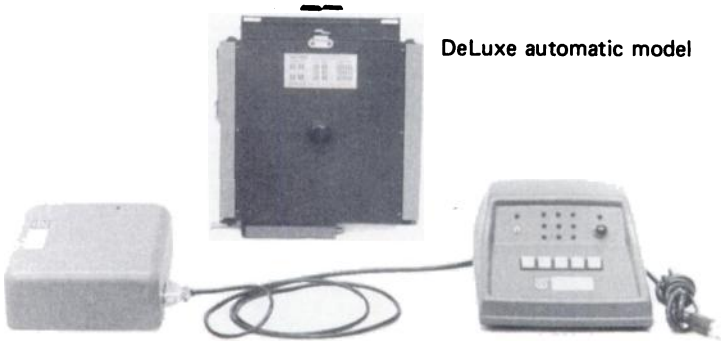
Standard manual model

Now, in addition to our time proven and tested Standard manual versions of "810", we now introduce our DeLuxe models. The two new NISE models are available in either manual or automatic modes and in horizontal or vertical formats.



DeLuxe manual model

Both the DeLuxe manual and automatic models may be ordered to function in Nuclear, C.T. or Ultrasound applications. The NISE automatic version offers the same simplicity, ruggedness and space-saving features as our manual models.



DeLuxe automatic model

In addition to the choice of manual and automatic, and vertical or horizontal, the 8x10 cassette offers positions of 4, 6, and 9 (nuclear only) groups of images in either format. You make your choice based on your operation and we will deliver the system that will meet your needs.

For a brochure, prices, more information or answers to any of your questions, write or contact the NISE represenative nearest you, or write directly to:

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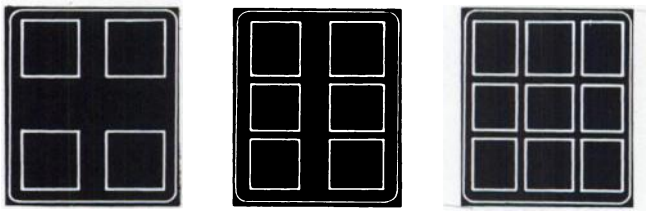

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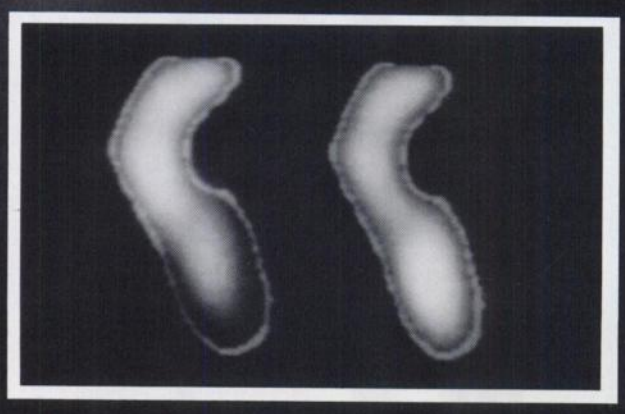
The Evolution of a Unique Gamma Camera



The Baird SYSTEM SEVENTY SEVEN

For the past forty years, Baird-Atomic has set the pace in high-technology instrumentation in a wide variety of disciplines and, most importantly, in nuclear medicine. The accent has always been on innovation — taking a fresh, incisive look at each problem and devising an original way to solve it. In nuclear medicine the critical problem as we initiated development was the necessity of incorporating the means to obtain clinically viable static *and* dynamic studies in the same basic system.

In the earliest stages of the system's design we realized that existing mono-crystal systems had inherent disadvantages which would inhibit their use as clinical studies became more sophisticated and higher count rates became a necessity for statistical accuracy and integrity. *The answer was a multi-crystal detector.* The decision to design and build it — a long, difficult, and expensive process — became the critical step in the evolution of a unique gamma camera system, one *versatile* enough to accommodate future changes in clinical procedures.

Our foresight has been gratifyingly rewarded. System Seventy-Seven is today the *only* gamma camera that has consistently negated obsolescence. Because of the excellence of our original concept, it is inevitable that we remain years ahead of the competition. As clinical needs and capabilities have matured, as professional awareness of the vast new possibilities of dynamic function studies has grown, System Seventy-Seven has easily kept pace — has indeed in many ways *set* the pace. Among the features and options that have kept us in the lead, are: A comprehensive library of nuclear medicine software activated through the innovation of pushbutton computer programming. A minicomputer-based image processing console that analyzes greater than 200,000 observed counts per second at any energy level. The multiposition measurements which virtually eliminate collimator dead space and optimize resolution for uniform, always reproducible imaging. Whole-body imaging capability. A video-to-film organizer for optimal imaging and formatting versatility. CTI, a new continuous tone image system which provides unprecedented resolving detail for gamma camera images.

There are more. And more details about these. Further capabilities will evolve as the dynamics of the new nuclear medicine become manifest. For more information on System Seventy-Seven or if you wish to be put on our mailing list, please get in touch with us. Why not do it today?

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Photo insert: Wall motion of the left ventricle, a typical example of the kind of selective imaging possible with System Seventy Seven's unique data processing capabilities. Zones of interest and histograms of selectively specific target areas can be routinely obtained, and as many as four can be simultaneously manipulated. The operator has total control in determining the shape and size of the region examined, as well as the time/count scale of the histogram. From 10 to 20 cycles of systole and diastole, recorded during the first passage of the radionuclide, may be reformatted into a single representative cardiac cycle of maximum retrievable depth, detail, and accuracy. Study courtesy of Dr. Robert H. Jones, Duke University.

Whatever kind of generator you use,

75-UC
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New England Nuclear

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Squibb

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Mallinckrodt

Now Nuclear Pacific makes a better way to use it.

Our better way is a vial shield made specifically for your generator. Vial shields that give you protection equivalent to 12 HVLs *plus* 360 degrees of visibility.

The secret? A special blend of high density lead glass* we've developed and used in making lead glass radiation shielding systems for nuclear research installations worldwide for nearly 30 years.

Vial shields made by Nuclear Pacific *stop* radiation danger, yet provide crystal clear optical quality visibility so you can see what you're doing. Each shield loads with a twist and centers the vial inside automatically.

Remember, if you want protection and visibility, now there's a better way. Vial shields pictured: 75-S (Squibb), 75-UC (Union Carbide), 75-NEN (New England Nuclear), 75-M (Mallinckrodt). Each: $225.00 F.O.B. Seattle, Washington.

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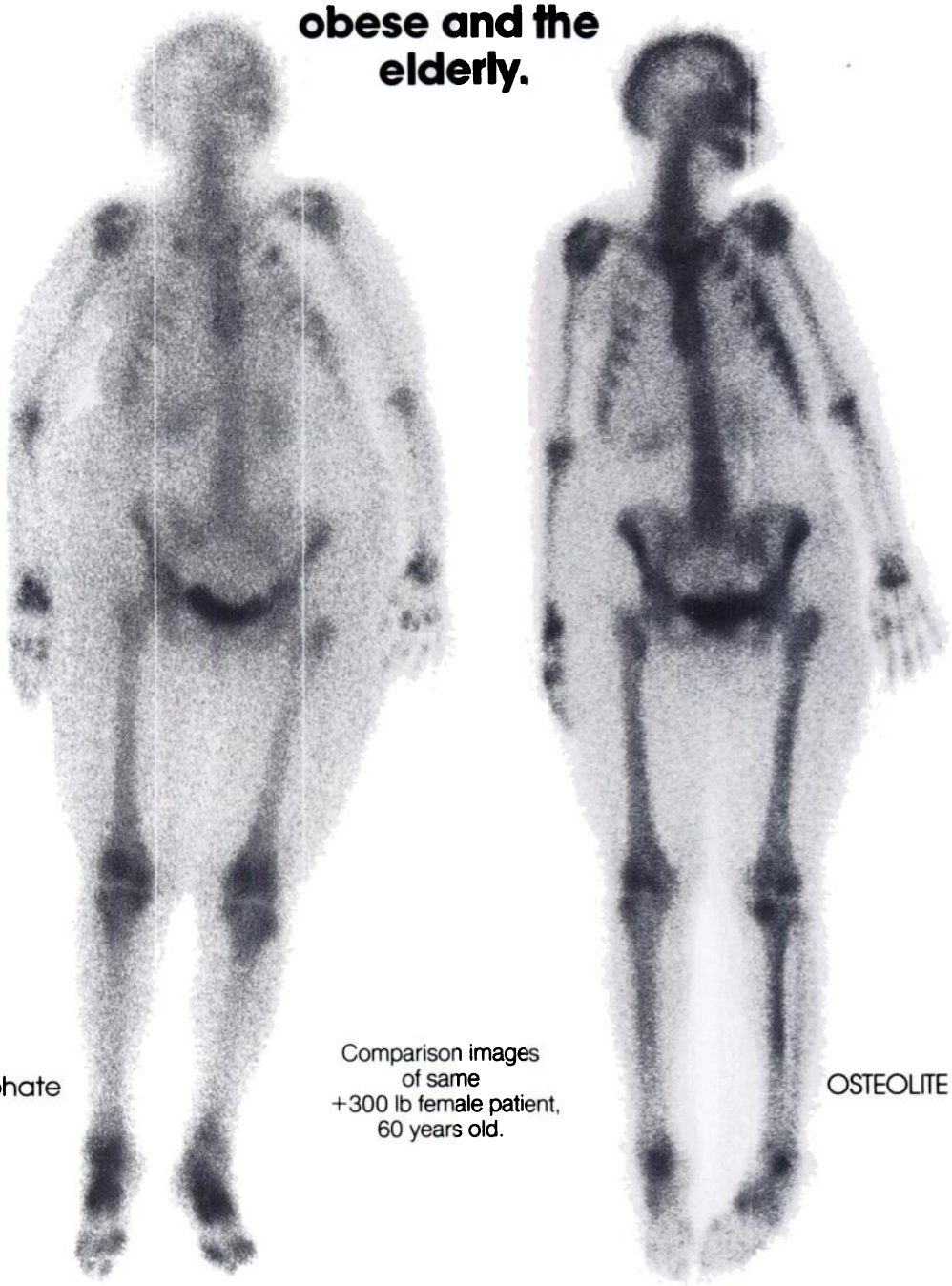
in thin, young patients.

OSTEOLITE provides consistent, high-quality images—even in the obese and the elderly.



Pyrophosphate

Comparison images
of same
+300 lb female patient,
60 years old.

OSTEOLITE

OSTEOLITE

Technetium Tc 99m Medronate Sodium Kit (MDP)

NEN

Whether you perform two bone scans a day or three per hour

Most rapid blood clearance[1]

- Ninety minutes after injection, MDP blood clearance is approximately equal to that of typical pyrophosphate agents at six hours postinjection.
- At three hours, MDP blood levels are considerably less than those of EHDP and pyrophosphate.

Result: low-background studies, whether you must scan early to meet patient-flow demands, or at three hours for more optimal image detail.

Lowest soft tissue activity[1,3]

The "difference in soft tissue activity (highest with polyphosphate and lowest with MDP) is discernible in clinical images."[1] A University of Minnesota study found that only 4% of 175 MDP images showed moderate to marked soft tissue activity, compared to 17% of EHDP images[3]

Result: highest assurance of imaging all skeletal structures.

Highest target-to-background differential[2]

OSTEOLITE's rapid blood clearance and lower soft tissue uptake enable current gamma cameras to routinely resolve radius and ulna, tibia and fibula, phalanges, etc.

Result: confidence of detecting resolution-challenging alterations in osteogenesis...even roentgenographically "invisible" fractures and small metastases near the limits of state-of-art visualization.

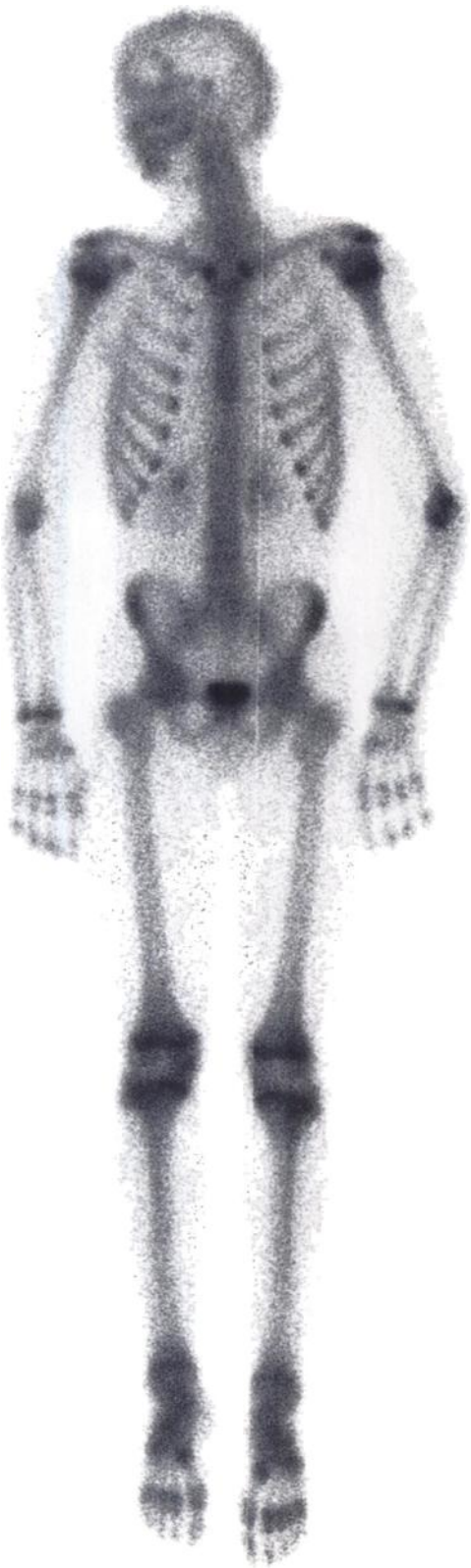
Convenient storage and preparation

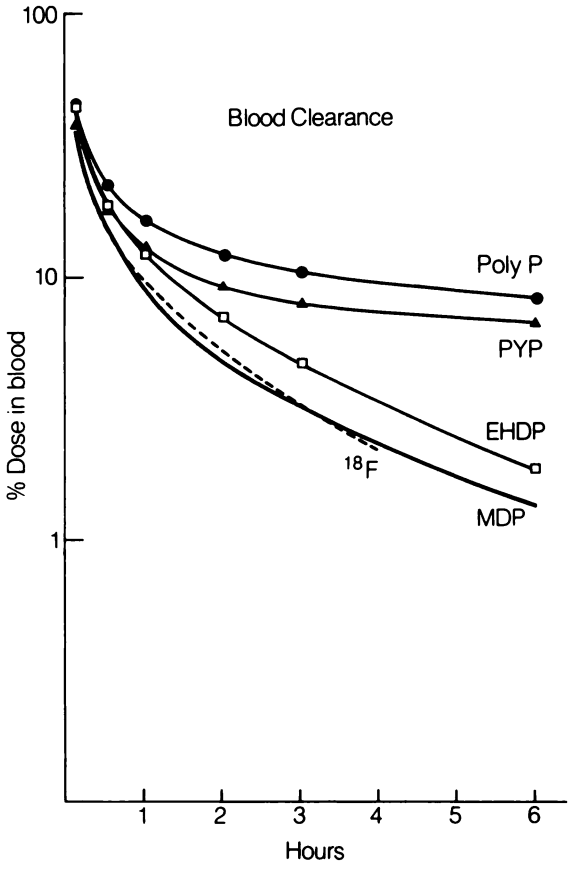
Available in 5-vial or 30-vial "Convenience Packs," OSTEOLITE can be stored and used at room temperature (15-30 C).

1. Subramanian G, McAfee JG, Blair RJ, et al: Technetium-99m-methylene diphosphonate—a superior agent for skeletal imaging: Comparison with other technetium complexes. *J Nucl Med* 16:744, 1975
2. Davis MA, Jones AG: Comparison of ^{99m}Tc-labeled phosphate and phosphonate agents for skeletal imaging. *Sem Nucl Med* 6:19, 1976
3. Forstrom L, et al: Data on file at New England Nuclear, Medical Diagnostics Division, North Billerica, MA

OSTEOLITE™

Technetium Tc 99m Medronate Sodium Kit (MDP)





Blood clearance of MDP in humans, following IV injection, compared to three other ^{99m}Tc complexes and ^{18}F (corrected for physical decay), assuming blood volume was 7% of body weight. PYP indicates pyrophosphate and Poly P denotes polyphosphate. (Adapted with permission from Subramanian G et al: *J Nucl Med* **16**:744, 1975.)

NEN **New England Nuclear**

See following page for full prescribing information.

OSTEOLITE™

Technetium Tc 99m Medronate Sodium Kit (Formerly Known as MDP)

October 1977

DESCRIPTION: New England Nuclear's OSTEOLITE™ Technetium Tc 99m Medronate Sodium Kit (formerly known as MDP), is supplied sterile and non-pyrogenic in lyophilized kit form suitable for reconstitution with sodium pertechnetate Tc 99m to form a diagnostic skeletal imaging agent for intravenous administration. Each vial contains 10mg medronate disodium and 0.85mg stannous chloride dihydrate; pH is adjusted to between 7.0–7.5 with hydrochloric acid and/or sodium hydroxide solution. The contents of the vial are lyophilized and stored under nitrogen.

PHYSICAL CHARACTERISTICS

Technetium Tc 99m decays by isomeric transition with a physical half-life of 6.02 hours. (SOURCE: Martin, M. J. Nuclear Data Project, Oak Ridge National Laboratory, March, 1976.) Photons that are useful for imaging studies are listed in Table 1.

Table 1. Principal Radiation Emission Data—Technetium Tc 99m

Radiation	Mean %/ Disintegration	Mean Energy (keV)
Gamma-2	88.96	140.5

To facilitate correction for physical decay of Technetium Tc 99m, the fractions of initial activity that remain at selected intervals after the time of calibration are shown in Table 2.

Table 2. Physical Decay Chart: Technetium Tc 99m Half-Life 6.02 Hours

Hours	Fraction Remaining	Hours	Fraction Remaining
0*	1.000	8	.398
1	.891	9	.355
2	.794	10	.316
3	.708	11	.282
4	.631	12	.251
5	.562	18	.126
6	.501	24	.063
7	.447		

*Calibration Time

EXTERNAL RADIATION

The specific gamma ray constant for Technetium Tc 99m is 0.8R/mCi-hr. at 1cm. The half value layer is 0.2mm of Pb. To facilitate control of radiation exposure from millicurie amounts of Technetium Tc 99m, the use of a 6.35mm thick standard radiation elution lead shield will attenuate the radiation emitted by a factor greater than 10^4.

Table 3. Radiation Attenuation By Lead Shielding

Shield Thickness (Pb)mm	Coefficient of Attenuation
0.2	0.5
0.95	10^{-1}
1.8	10^{-2}
2.7	10^{-3}
3.6	10^{-4}
4.5	10^{-5}
5.4	10^{-6}
6.3	10^{-7}

CLINICAL PHARMACOLOGY: Upon intravenous injection, Technetium Tc 99m OSTEOLITE exhibits a specific affinity for areas of altered osteogenesis. In humans, blood levels fall to 4-10% of the injected dose by two hours post-injection and to 3-5% by three hours. During the first 24 hours following its administration in patients with normal renal function, 50-75% of the radioactivity is excreted into the urine and less than 2% of the injected dose remains in the vascular system.

Uptake of the Technetium Tc 99m in bone appears to be related to osteogenic activity and to skeletal blood perfusion. The deposition in the skeleton is bilaterally symmetrical, with increased accumulation in the axial structure as compared to the appendicular skeleton. There is increased activity in the distal aspect of long bones as compared to the diaphyses. In pediatric patients, in whom the epiphyseal centers are still open, there is more marked accumulation of the radiopharmaceutical in the distal aspects of long bones than is seen in adults in whom the epiphyseal centers are closed. Localized areas of abnormal accumulation of the radiopharmaceutical may be seen in primary skeletal malignancies, metastatic malignancies to bone, acute or chronic osteomyelitis, arthritides, recent fractures, areas of ectopic calcification, Paget's disease, regional migratory osteoporosis, areas of aseptic necrosis and, in general, any pathological situation involving bone in which there is increased osteogenic activity or localized increased osseous blood perfusion. Since increased osteogenic activity and localized increased osseous blood perfusion are not usually present in chronic bone diseases, bone imaging agents, in general, are not effective in detecting such diseases. Localized areas of decreased accumulation of the radiopharmaceutical may be noted in areas of bone which have received localized fields of external radiation or to which blood flow has been interrupted. OSTEOLITE has also been noted to accumulate in areas of acute myocardial infarction from one to fourteen days after the pathologic event.

INDICATIONS AND USAGE: Technetium Tc 99m OSTEOLITE may be used as a bone imaging agent to delineate areas of altered osteogenesis.

CONTRAINDICATIONS: None known.

WARNINGS: The contents of the OSTEOLITE vial are intended only for use in the preparation of Technetium Tc 99m medronate sodium and are NOT to be directly administered to the patient.

Ideally, examinations using radiopharmaceuticals—especially those elective in nature—of women of childbearing capability should be performed during the first ten days following the onset of menses.

PRECAUTIONS: A thorough knowledge of the normal distribution of intravenously administered Technetium Tc 99m medronate sodium is essential in order to accurately interpret pathologic studies.

Technetium Tc 99m medronate sodium, 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.

The Technetium Tc 99m labeling reaction involved in preparing Technetium Tc 99m medronate sodium depends on the maintenance of tin in the divalent state. Any oxidant present in the sodium pertechnetate Tc 99m employed may adversely affect the quality of the prepared agent. Thus, sodium pertechnetate Tc 99m containing oxidants should not be used without first demonstrating that it is without adverse effect on the properties of the resulting agent.

The use of bacteriostatic sodium chloride as a diluent for sodium pertechnetate Tc 99m may adversely affect the biologic distribution of the prepared agent, and its use is not recommended.

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 medronate sodium 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: None reported.

DOSAGE AND ADMINISTRATION: The recommended dose for the average 70kg adult patient is 15mCi with a range of 10-20mCi. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

Optimal imaging results are obtained within one to four hours after administration.

OSTEOLITE should be used within six hours after aseptic reconstitution with sodium pertechnetate Tc 99m. For optimum results this time should be minimized.

The vial contains no bacteriostat.

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 governmental agencies authorized to license the use of radionuclides.

RADIATION DOSIMETRY

The estimated absorbed radiation dose to an average patient (70kg) from an intravenous injection of a maximum dose of 20 millicuries of Technetium Tc 99m OSTEOLITE is shown in Table 4.

Table 4. Absorbed Radiation Dose

Technetium Tc 99m Medronate Sodium Organ		(rads/20mCi)
Total Body		0.13
Bone Total		0.70
Red Marrow		0.56
Kidneys		0.62
Liver		0.16
Bladder Wall	2 hr void	2.60
	4.8 hr void	6.20
Ovaries	2 hr void	0.24
	4.8 hr void	0.34
Testes	2 hr void	0.16
	4.8 hr void	0.22

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

HOW SUPPLIED: NEN's OSTEOLITE™ Technetium Tc 99m Medronate Sodium Kit is supplied as a set of five or thirty vials, sterile and non-pyrogenic. Each nitrogen-flushed vial contains in lyophilized form:

Medronate Disodium—10mg
Stannous Chloride Dihydrate—0.85mg

The pH is adjusted to between 7.0–7.5 with hydrochloric acid and/or sodium hydroxide solution. The contents of the vial were lyophilized under nitrogen. Store at room temperature (15°-30° 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.

INSTRUCTIONS FOR PREPARATION OF TECHNETIUM Tc 99m OSTEOLITE: Aseptically inject 2 to 8ml of sodium pertechnetate Tc 99m (pertechnetate in isotonic saline without a bacteriostat) into the supplied vial of OSTEOLITE enclosed by a radiation shield. Swirl for at least ten seconds to dissolve completely. Label appropriately. Suitable labels have been supplied with each OSTEOLITE Kit. Use within six hours after reconstitution. For optimum results, this time should be minimized.

Using proper shielding, the vial containing the reconstituted solution should be visually inspected to insure that it is clear and free of particulate matter.

The contents of the kit vials are not radioactive; however, **after reconstitution with sodium pertechnetate Tc 99m the contents are radioactive and adequate shielding and handling precautions must be maintained.**

Do not use if there is a vacuum in the immediate drug container or if air is injected into the container when the dose is withdrawn.

Catalog Number NRP-420 (5 vial kit)
Catalog Number NRP-420C (30 vial kit)

New England Nuclear
Medical Diagnostics Division
601 Treble Cove Rd., North Billerica, MA 01862
Call toll-free: 800-225-1572 Telex: 94-0996
(In Massachusetts and International: 617-482-9595)

Los Angeles: NEN West, 17210 South Gramercy Place, Gardena, California 90247 Tel: 213-321-3311
Canada: NEN Canada, 2453 46th Avenue, Lachine, Que. H8T 3C9 Tel: 514-636-4971
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Scintadren is a unique new agent for adrenal scintigraphy. Based on a cholesterol derivative substituted at the C_6 position with selenium-75, Scintadren has a higher uptake in the adrenals than 19-[^{131}I] iodocholesterol, and gives clearer imaging. The result is more reliable diagnostic information, as our clinical trials have proved.

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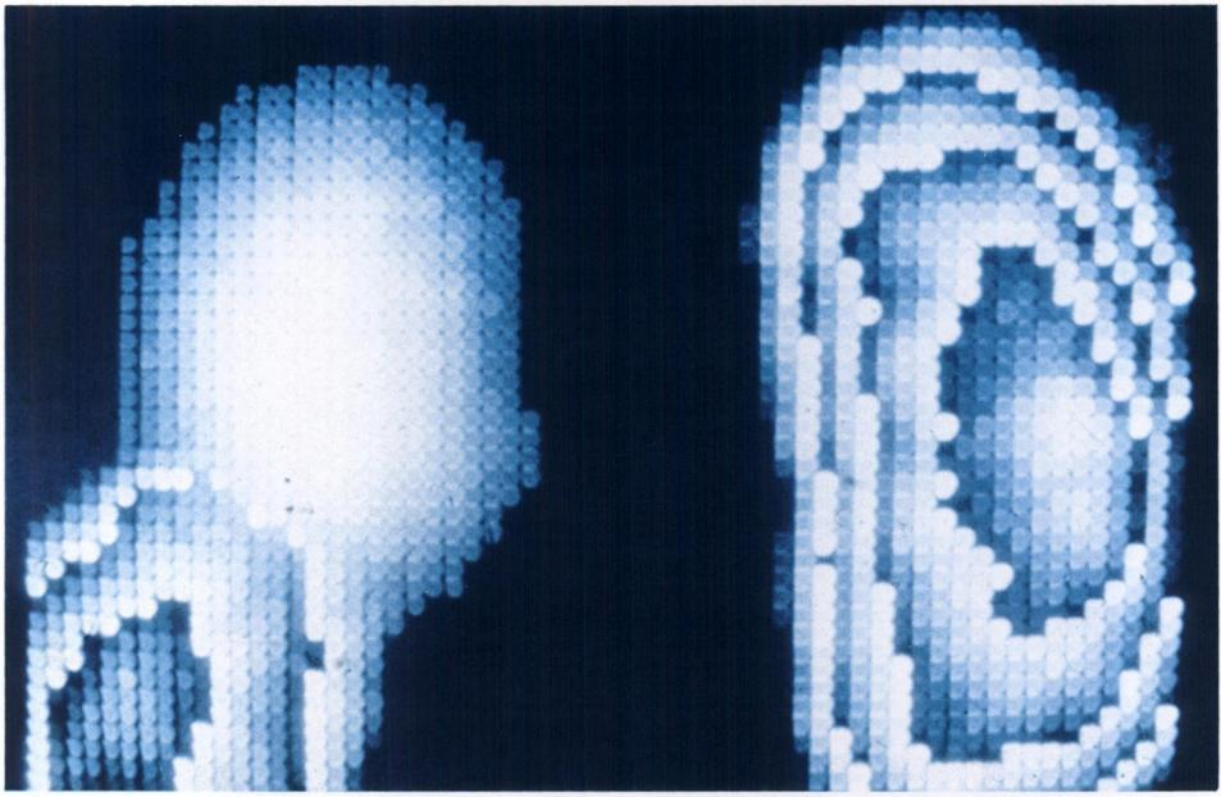

Computer enhanced scintigram of left adrenal adenoma in Cushings Syndrome. Nuclear Enterprises Mk 3 γ-camera 2.6 day post injection of Scintadren (kidneys localized with 5mCi ^{99m}Tc DTPA) R Montz, Department of Nuclear Medicine, University Hospital, Hamburg, FDR.

Scintadren*

reliable adrenal scintigraphy

Full information is available on request.
The Radiochemical Centre Limited, Amersham, England.
Telephone: 024 04-4444.
In W. Germany: Amersham Buchler GmbH & Co KG, Braunschweig.
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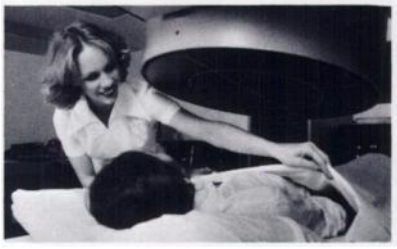

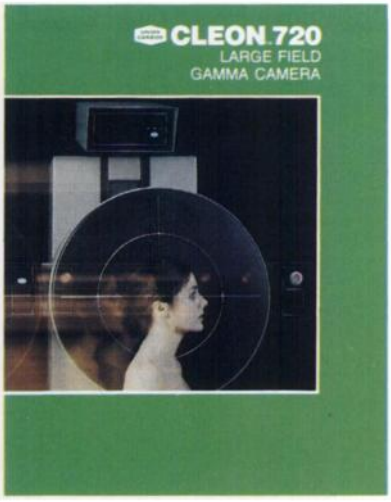

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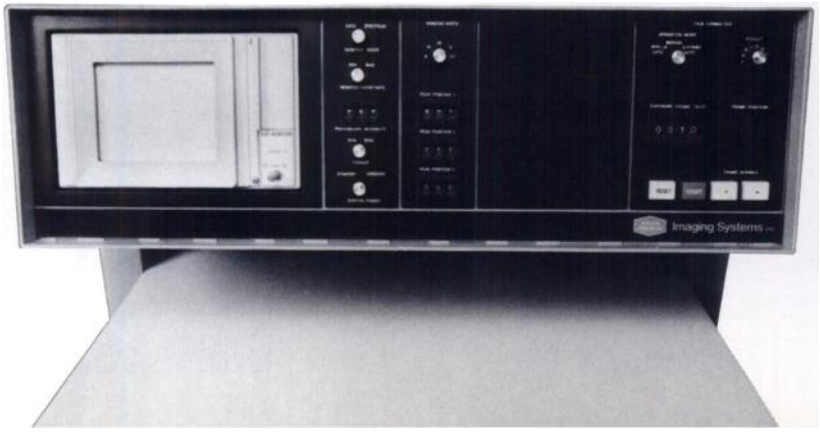

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UNION CARBIDE

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Norwood, Massachusetts 02062
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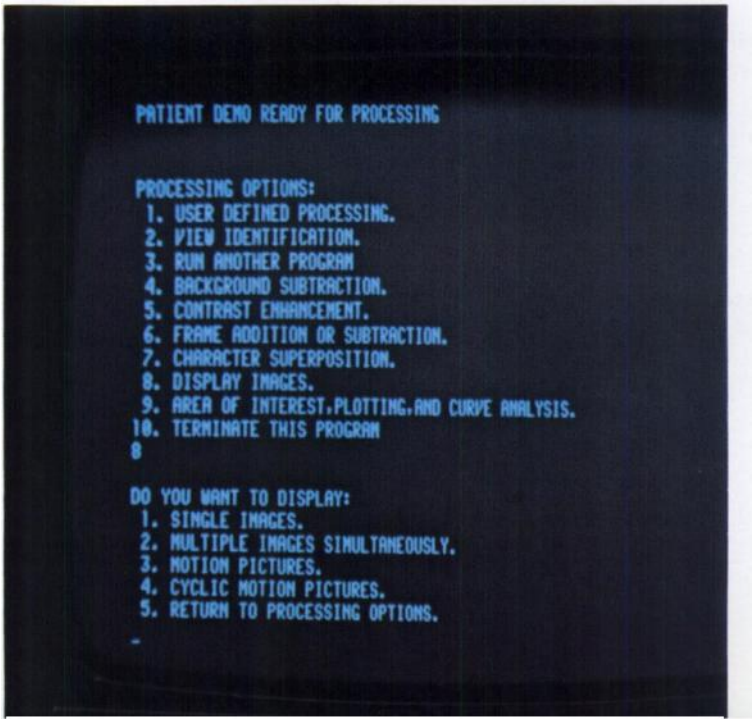
It speaks plain English.



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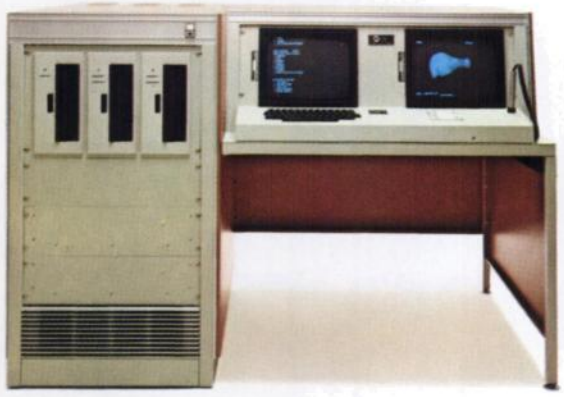
ADAC. Analytical Development Associates Corporation.
255 San Geronimo Way, Sunnyvale, California 94086.
Phone: (408) 736-1101.



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When Toshiba gave nuclear medicine the world's first jumbo gammacamera in 1973, the medical community was very impressed. But we were dedicated to giving you more, so we introduced the world's first jumbo gammacamera with high resolution, fine diagnostic detail over a large area. That was important, but we knew it still wasn't enough.

Now, we are introducing the latest in the state-of-the-art, the GCA-402. The world's first Super High Resolution, Large Field Gammacamera combining stability and exceptional workload capability in one instrument. Frankly, we're pleased.

Toshiba's system approach allows for no compromise where clinical diagnostic values are concerned. The GCA-402 is a prime example. High resolution is the basis for obtaining useful diagnostic images. The intrinsic resolution and linearity of the GCA-402, combined with its range of ten collimators provides unsurpassed images of exceptional diagnostic value. The GCA-402 incorporates 61 photo-multiplier tubes to electronically smooth the image and eliminate the high-energy collimator hole patterns unavoidable in conventional systems. Its 35cm field of view combined with 17 preselected isotope ranges allows unobstructed views of large organs, or groups of organs, as well as whole body scanning.

Toshiba's patented* delay line system and modern IC-technology provide long term stability, trouble free performance, and ease of operation.

Of course, the GCA-402 has a wide range of accessories including special collimators, whole body scanning bed, video tape and film recorders, plus, the GCA-402 may be interfaced to any computer.

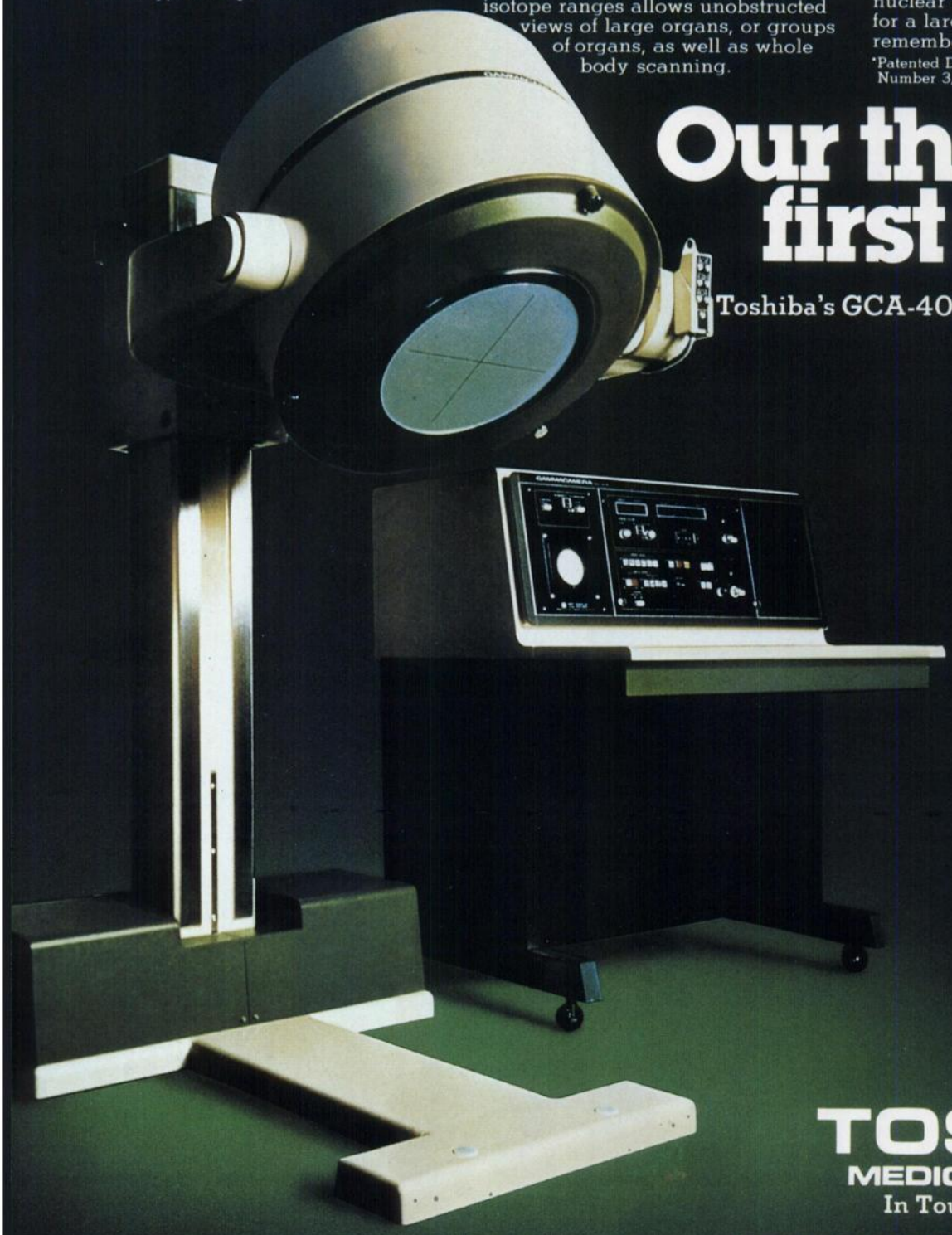
This combination of human engineering, fail-proof auto exposure and easy collimator changeover provides the highest efficiency while minimizing patient discomforture.

When you're ready to fill your nuclear medicine department's need for a large field gammacamera, remember Toshiba. We're the first.

*Patented Delay Line, U.S. Patent Number 3,717,763

Our third is first again

Toshiba's GCA-402 Jumbo Gammacamera



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TechneColl® Sulfur Colloid Kit

for the preparation of Technetium Tc99m Sulfur Colloid

*Based on an estimated average of two patients dosed per vial.

See next page for brief summary.

Mallinckrodt
NUCLEAR

Mallinckrodt, Inc.
P. O. Box 5840
St. Louis, MO 63134

TechneColl®

Kit for the Preparation of Technetium Tc-99m Sulfur Colloid

DESCRIPTION

The kit contains all of the non-radioactive reagents required to prepare a sterile, non-pyrogenic preparation of Technetium Tc 99m Sulfur Colloid suitable for direct intravenous injection. When sterile, pyrogen-free Sodium Pertechnetate Tc 99m is added to the reaction vial, Technetium Tc 99m Sulfur Colloid is formed with the non-radioactive reagents.

ACTIONS

Following intravenous administration, Technetium Tc 99m Sulfur Colloid is rapidly cleared by the reticuloendothelial system from the blood with a nominal clearance half-time of approximately 2½ minutes. Uptake of the radioactive colloid by organs of the reticuloendothelial system is dependent upon both their relative blood flow rates and the functional capacity of the phagocytic cells. In the average normal patient 80 to 90% of the injected colloidal particles are phagocytized by the Kupffer cells of the liver, 5 to 10% by the spleen and the balance by the bone marrow.

INDICATIONS

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

CONTRAINDICATIONS

None.

WARNINGS

The contents of the double-compartment dose syringes are intended **only** for use in the preparation of Technetium Tc 99m Sulfur Colloid and **are not to be directly administered to the patient.**

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.

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.

This radiopharmaceutical preparation 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.

PRECAUTIONS

The components of the kit are sterile and nonpyrogenic. It is essential that the user follow the directions carefully and adhere 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.

It is recommended that pertechnetate solutions containing more than 10 micrograms/ml of aluminum ion not be used for formation of the Technetium Tc 99m Sulfur Colloid.

Technetium Tc 99m Sulfur Colloid is physically unstable and as such the particles will settle with time. Failure to agitate the vial 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 Sulfur Colloid not be used after six 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 preparation. Although rare, pyrogen reactions have been reported following the administration of the drug stabilized with gelatin. Arm pain following injection has been reported.

DIRECTIONS FOR PREPARATION

Note: Read complete directions thoroughly before starting preparation procedure.

PROCEDURAL PRECAUTIONS

1. All transfer and vial stopper entries must be done using aseptic technique.
2. The **TechneColl** Kit should be stored at room temperature (approximately 25°C).
3. All **TechneColl** Kit reagents must be at room temperature before use. At lower temperatures, there may be evidence of undissolved gelatin in the double-compartment syringes. The syringes should be allowed to stand at room temperature (approximately 25°C) until the gelatin returns to solution. **Do not warm the syringes in water bath or incubator.**
4. The water bath used for heating the contents of the Reaction Vial must be at a continuous **rolling** boil during the two heating steps of the preparation procedure. The Reaction Vial should be in direct contact with the rolling boil water of the bath, and the level of the bath must be at least even with the level of the contents of the Reaction Vial.
5. If the Reaction Vial is incubated in a lead safe, the temperature of the safe should be allowed to reach the temperature of the water bath before incubating the Reaction Vial.
6. **As a result of heating the contents of the closed Reaction Vial, internal pressure will be created causing some resistance when injecting the contents of Syringe II into the Reaction Vial. The resistance may be minimized either by employing a syringe to evacuate approximately 20 ml of air from the Reaction Vial before the additio.ı of the generator eluate (Step 3) or by venting the Reaction Vial with a sterile needle prior to injecting the contents of Syringe II into the Reaction Vial (Step 7). If venting is used, remove vent needle before returning Reaction Vial to water bath.**
7. When attaching the disposable needles to the double-compartment syringes, care must be taken to insure that the needles are firmly attached to the syringes.

PROCEDURE: for preparing Technetium Tc 99m Sulfur Colloid

Note: The radioactive material should be shielded at all times during preparation.

1. Prepare a **rolling** boil water bath.
2. Fill in the necessary information on the "Caution: Radioactive Material" label and place directly over the yellow area provided on the Reaction Vial label. Attach the string tag to the neck of the Reaction Vial. **Place the Reaction Vial in a lead Dispensing Shield fitted with a lid and with a minimum wall thickness of ⅛ inch.**
3. After swabbing the rubber stopper of the Reaction Vial with an appropriate antiseptic, aseptically inject a calculated volume of technetium-99m generator eluate or prepackaged sodium pertechnetate Tc-99m into the Reaction Vial. The volume of pertechnetate solution used must be between 0.1 and 5.0 ml. (Withdraw a 5 ml or greater volume of air to relieve pressure.)
4. Aseptically assemble Syringe I* and aseptically inject the contents into the Reaction Vial.
5. Invert the Reaction Vial several times to obtain complete mixing.

*Place the disposable needle on the syringe by pressing on firmly with a slight twisting motion.

6. Immediately transfer the Reaction Vial to a lead (minimum wall thickness of ⅛ inch) Boiling Shield which has been equilibrated to the temperature of the **rolling** boil water bath. This may be accomplished by placing the shield in the rolling boil bath a few minutes prior to transferring the Reaction Vial. The level of the water bath must be even with or above the contents of the Reaction Vial. Allow the Reaction Vial to incubate for 8 minutes.
7. Aseptically assemble Syringe II.* Immediately after the incubation period (Step 6) remove the Reaction Vial from the Boiling Shield and place in the Dispensing Shield. Swab the vial stopper with an appropriate antiseptic and aseptically inject the contents of the Syringe II into the Reaction Vial.
8. **Immediately** return the Reaction Vial to the Boiling Shield and incubate for 2 minutes.
9. Remove the Reaction Vial from the Boiling Shield and place in the Dispensing Shield. Allow the contents of the Reaction Vial to cool for approximately 15 minutes to reach body temperature. The final Technetium Tc 99m Sulfur Colloid preparation should be clear to slightly hazy in appearance, but there should be no flocculent present. If a precipitate is visible, the preparation should not be used.
10. Calculate the radioactivity concentration of the Technetium Tc 99m Sulfur Colloid and fill in the appropriate information on the string tag. **Do not use this material after 6 hours from time of preparation.**

Calculation of Radioactivity Concentration

$$\text{mCi/ml of colloid} = \frac{\text{mCi of Tc99m added}}{\text{ml of Tc99m added} + 5\ \text{ml}^{**}}$$

**The total delivered non-radioactive reagent volume employed in the preparation is 5 ml.

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.

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

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

HOW SUPPLIED

Catalog Number	TechneColl Kit
090	Package contains—5 Preparation Units for the preparation of Technetium Tc 99m Sulfur Colloid.

Each Preparation Unit Contains:

1—Reaction Vial. Contents 2.0 ml; each ml contains 50 mg phosphoric acid.

1—Syringe I (2-compartment disposable syringe)—Compartment A, 1.1 ml. Each ml contains 12 mg gelatin and 9 mg sodium chloride. Compartment B, 0.55 ml. Each ml contains 12 mg sodium thiosulfate.

1—Syringe II (2-compartment disposable syringe)—Compartment A, 0.6 ml. Each ml contains 36 mg gelatin and 9 mg sodium chloride. Compartment B, 1.0 ml. Each ml contains 544 mg sodium acetate and 4 mg disodium edetate.

2—Disposable needles.

1—Pressure-sensitive "Caution—Radioactive Material" label.

1—Radioassay information string tag.

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To sharpen your images even more, the Pho/Gamma LFOV offers a large assortment of converging and parallel hole collimators designed and developed by Searle Radiographics. There is a significant improvement in the resolution of deep-seated structures with converging collimation. In renal studies, for example, the images possess such clarity that it is possible to obtain even *oblique* views of diagnostic quality. Converging collimation also brings enhanced sensitivity to the imaging of small organs.

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EASE OF OPERATION

The Pho/Gamma LFOV has eleven factory pre-set isotope windows for operator convenience. Automatic peaking assures remarkable reproducibility from study to study and from day to day.

IMPROVED ELECTRONIC DESIGN

New ratio correction circuitry allows wider window widths, shortens study times, reduces motion artifact and increases patient throughput. Other electronic innovations include pulse-pair pile-up rejection and event buffering circuitry. As a result, the Pho/Gamma LFOV is capable of count rates up to 200,000 cps, which is sufficient for even highly specialized techniques such as dynamic cardiac studies.

The introduction of the Pho/Gamma LFOV in 1975 was a milestone in nuclear imaging. Since then, this advanced instrument has earned a reputation as the finest, most versatile scintillation camera you can buy. Today, clinicians rely on the Pho/Gamma LFOV for improved diagnostic clarity, shortened study times and greater patient comfort in lung, brain, whole body bone, renal and abdominal (liver) blood flow studies.

INSTRUMENTATION BACKED BY SUPERIOR SERVICE

Searle Service is one of the largest, highly trained Service Organizations in the nation. This trained and knowledgeable group is dedicated to maintaining highest quality instrument performance in your laboratory.

For more information about the Pho/Gamma LFOV system, including the unique Micro Dot™ Imager and Scintiscan™ Whole Body Table, call your Searle representative or write: Searle Radiographics, Inc., 2000 Nuclear Drive, Des Plaines, IL 60018. Telephone: (312) 298-6600.

SEARLE

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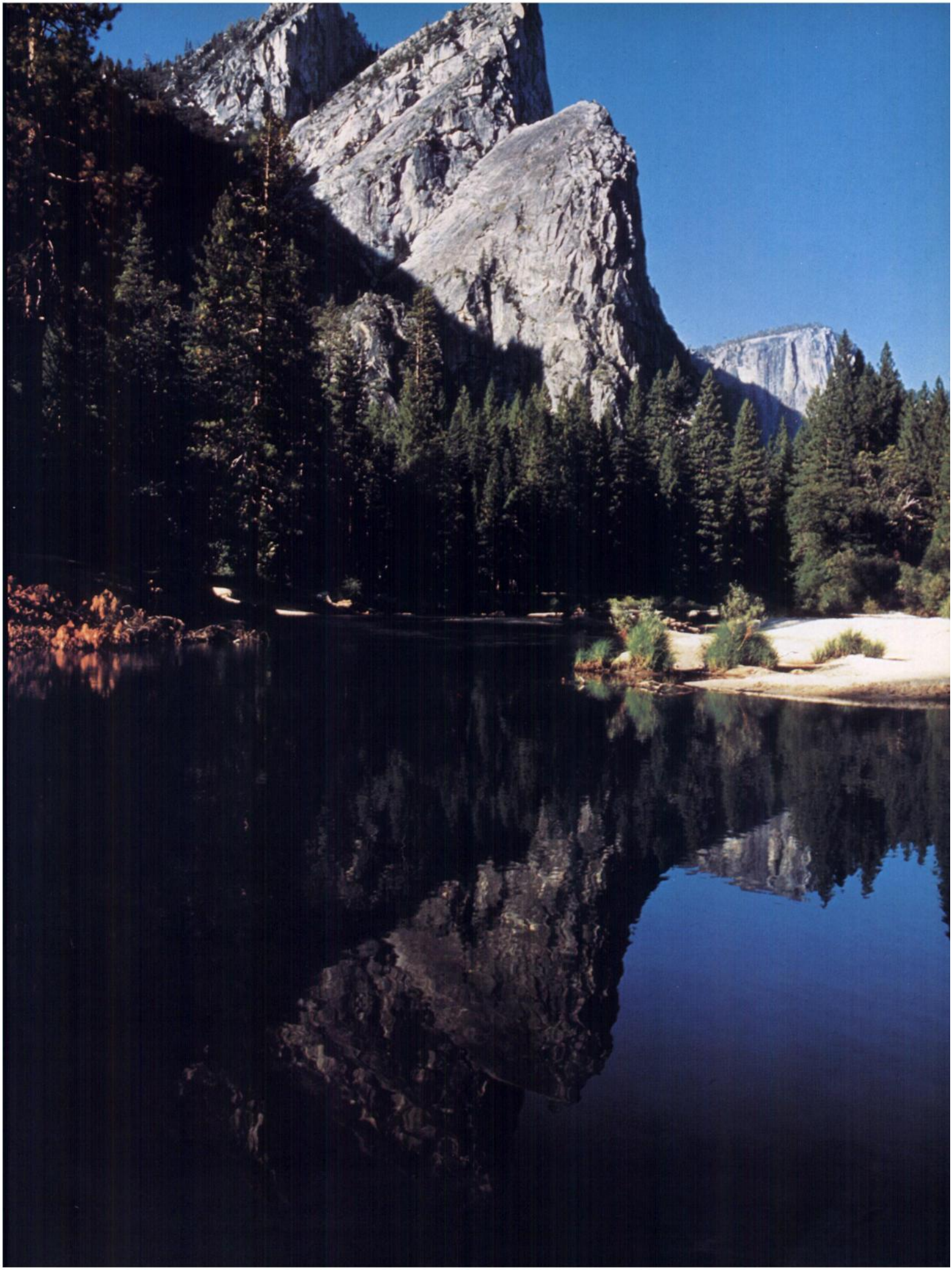
IMAGING:
The Living Art

SR 535

Photo by Milton Goldstein
From the book MAGNIFICENT WEST: Yosemite



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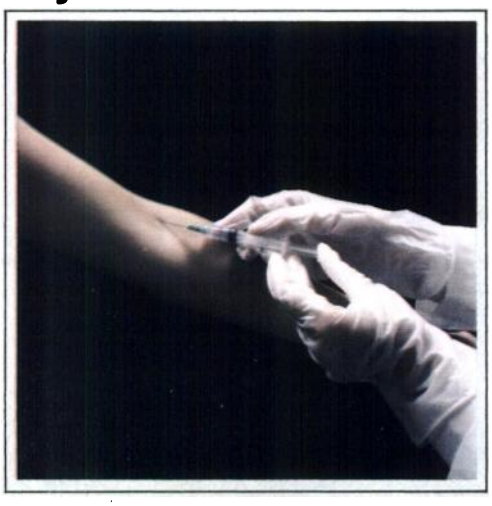
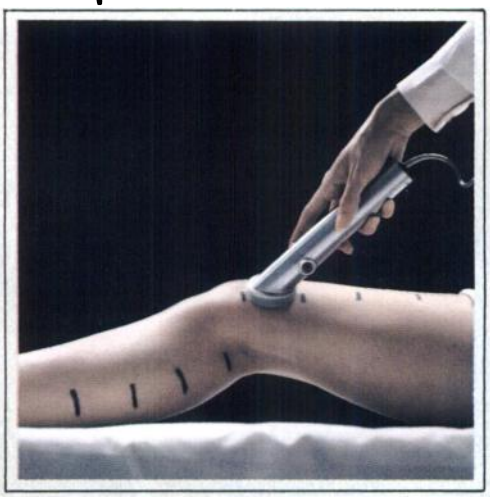
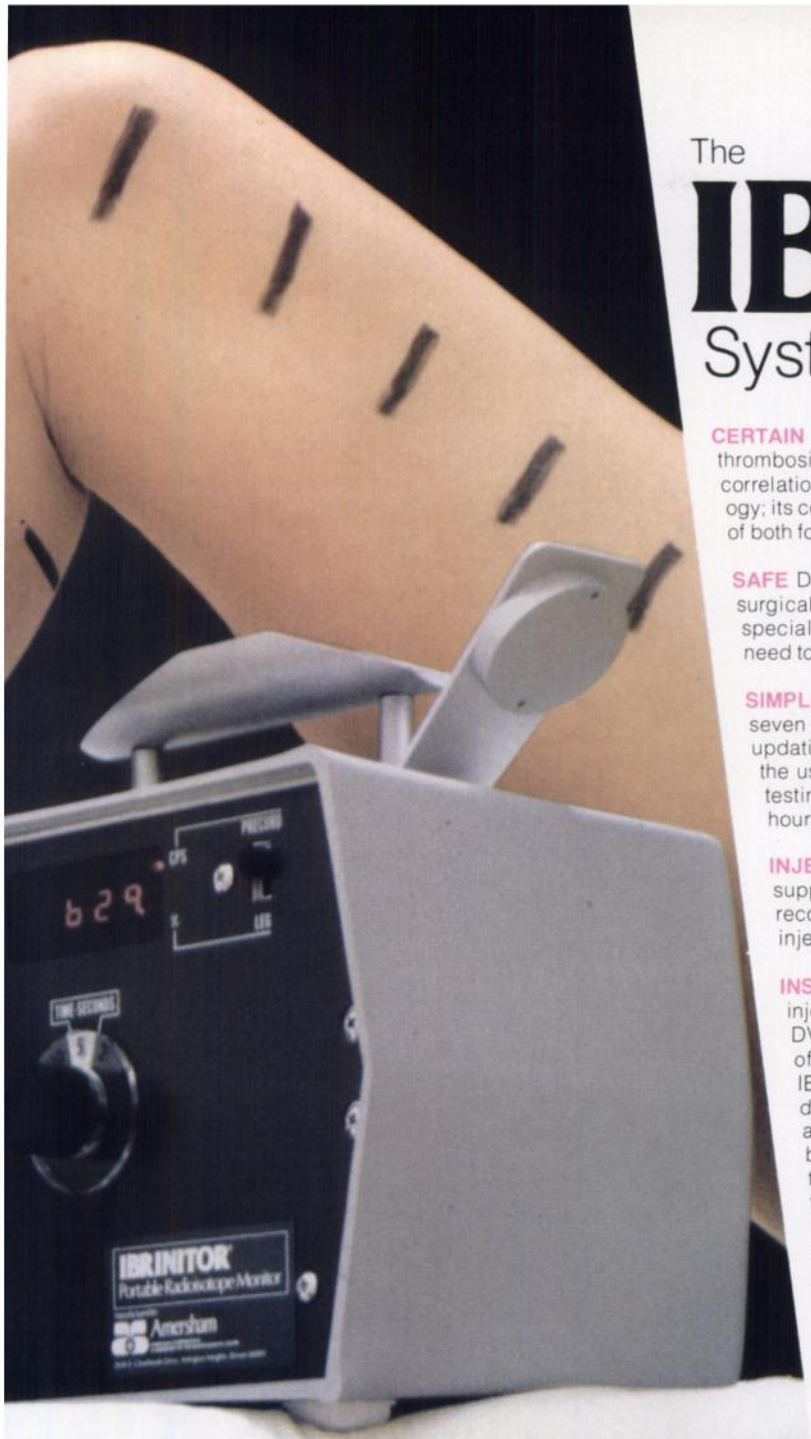


Inspect





The IBRIN System

IBRIN®
Radionuclide-Labeled
(^{125}I) Fibrinogen (Human)
IBRINITOR™
Portable Radioisotope Monitor

CERTAIN The diagnostic accuracy of IBRIN for the detection of deep-vein thrombosis (DVT) has been confirmed in over 100 studies which show a 92% correlation with venography. IBRIN actively participates in thrombus physiology; its consistent clottability insures bioactivity and allows accurate detection of both forming and established thrombi.

SAFE DVT monitoring with the IBRIN System can be performed on medical, surgical and orthopedic patients. There is no need to move the patient to a special procedure area. The IBRIN System of DVT detection reduces the need to subject the patient to radiopaque venography.

SIMPLE IBRIN has a long *in-vivo* half-life, permitting monitoring for up to seven days without additional injections. Serial monitoring allows constant updating of the patient's status. IBRIN emits low energy radiation enabling the use of a lightweight isotope monitor such as the IBRINITOR for rapid testing of a large number of patients. Monitoring can begin within three hours after injection and results can be confirmed within twenty-four hours.

INJECT IBRIN, a Radionuclide-Labeled (^{125}I) Fibrinogen (Human), is supplied freeze-dried for convenient storage and extended stability. It is reconstituted immediately prior to injection. The patient is intravenously injected with 100μCi of IBRIN prior to testing.

INSPECT Initial monitoring can be performed three hours after the IBRIN injection. The IBRINITOR is specifically designed and built for detecting DVT. Sophisticated electronic design assures reliable accumulation of statistically valid data and eliminates most operator error. The IBRINITOR has a continuous stage design that requires all the correct data in the correct order before giving results. A digital data display and built-in printout insure ease and accuracy of data collection. Push button controls on the detector probe are provided for quick, accurate testing. The probe design includes an angled detector head to facilitate positioning for maximum operator convenience and patient comfort. The IBRINITOR is powered by rechargable Ni-Cd batteries. A source is provided for calibration convenience and the complete unit weighs less than eight pounds.

DETECT The IBRIN System includes a patient data sheet which provides a convenient display of printout tape and graphical representation of data for the physician's interpretation and diagnosis.

We will be glad to help you explain the benefits of the IBRIN System to your surgical staff. Write or phone Amersham for complete details.

See following page for brief summary of package insert.

Detect

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416/842-2720 or 800/261-5061 (Toll free)

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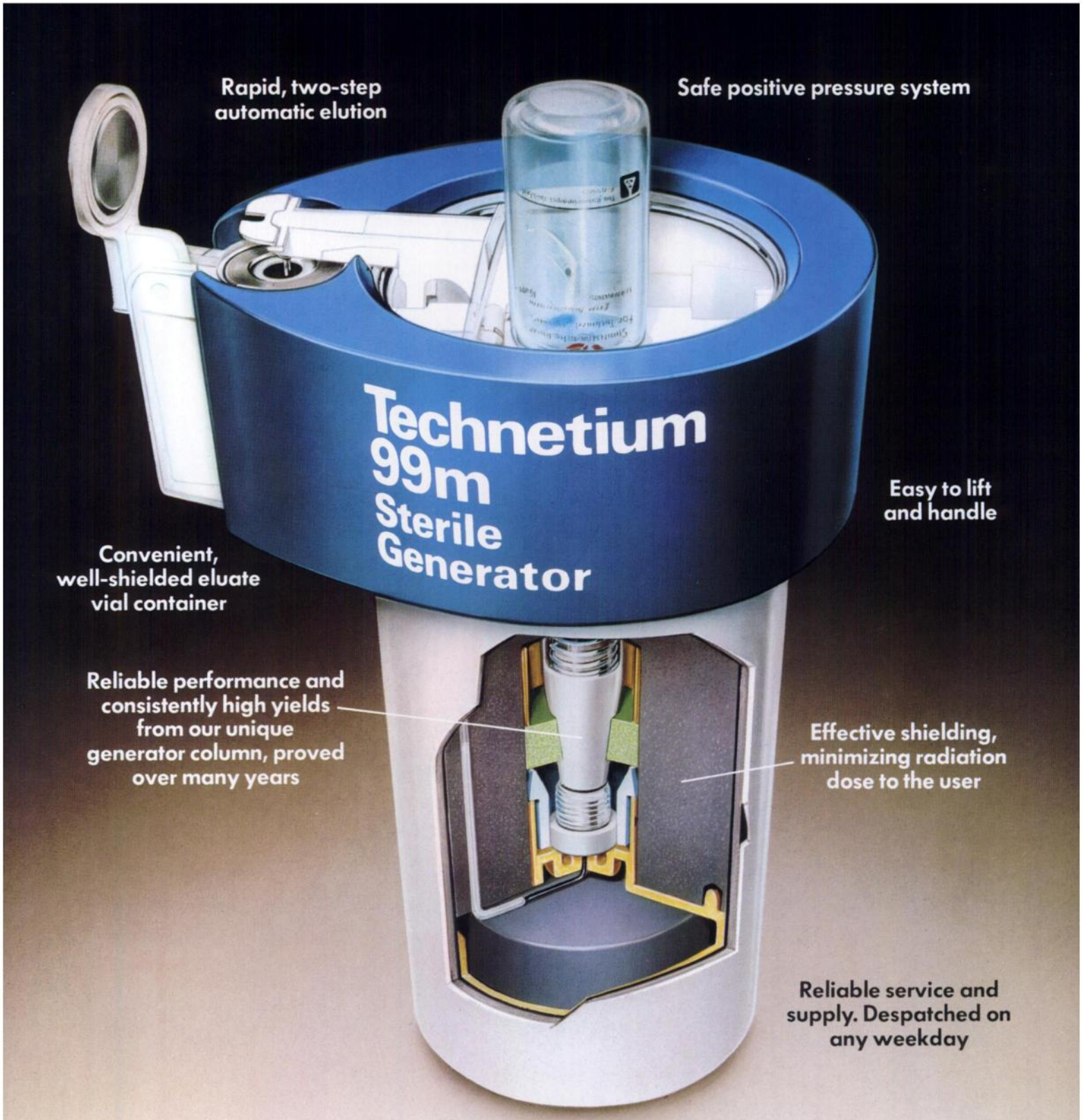

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The extras. CENTRIA diagnostic kits now cover two thirds of current RIA assay types, with more under development. Training is included. Technical and field engineering support are available. When you're using CENTRIA, we won't love you and leave you.

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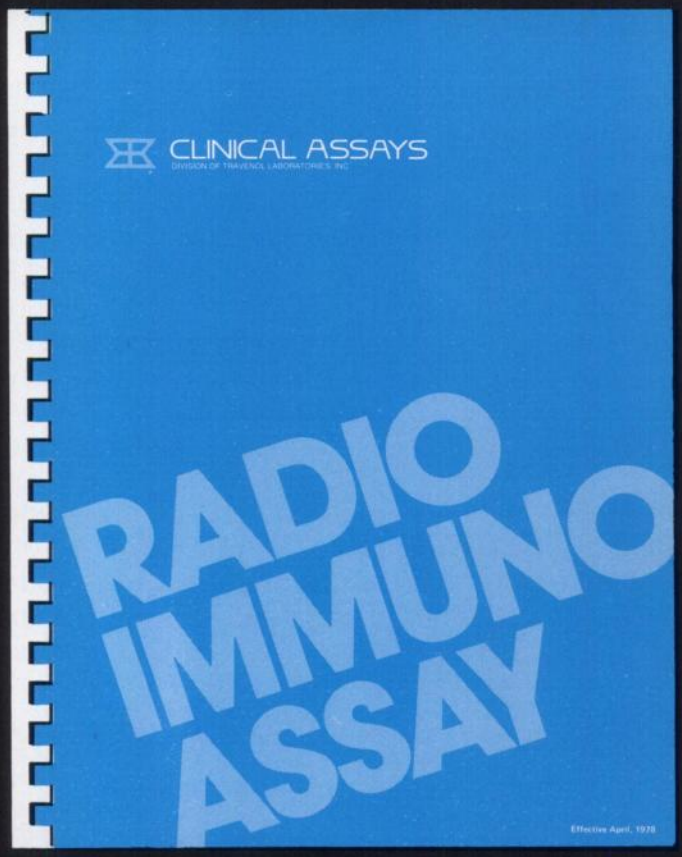
*Customer will be obligated for freight and removal charges. Reagents not included.

Remedial Reading



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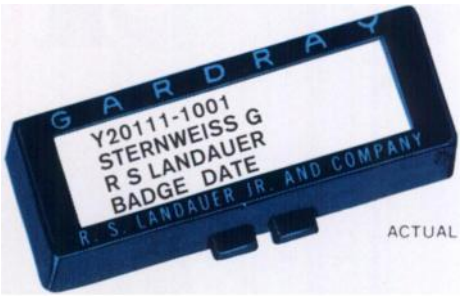

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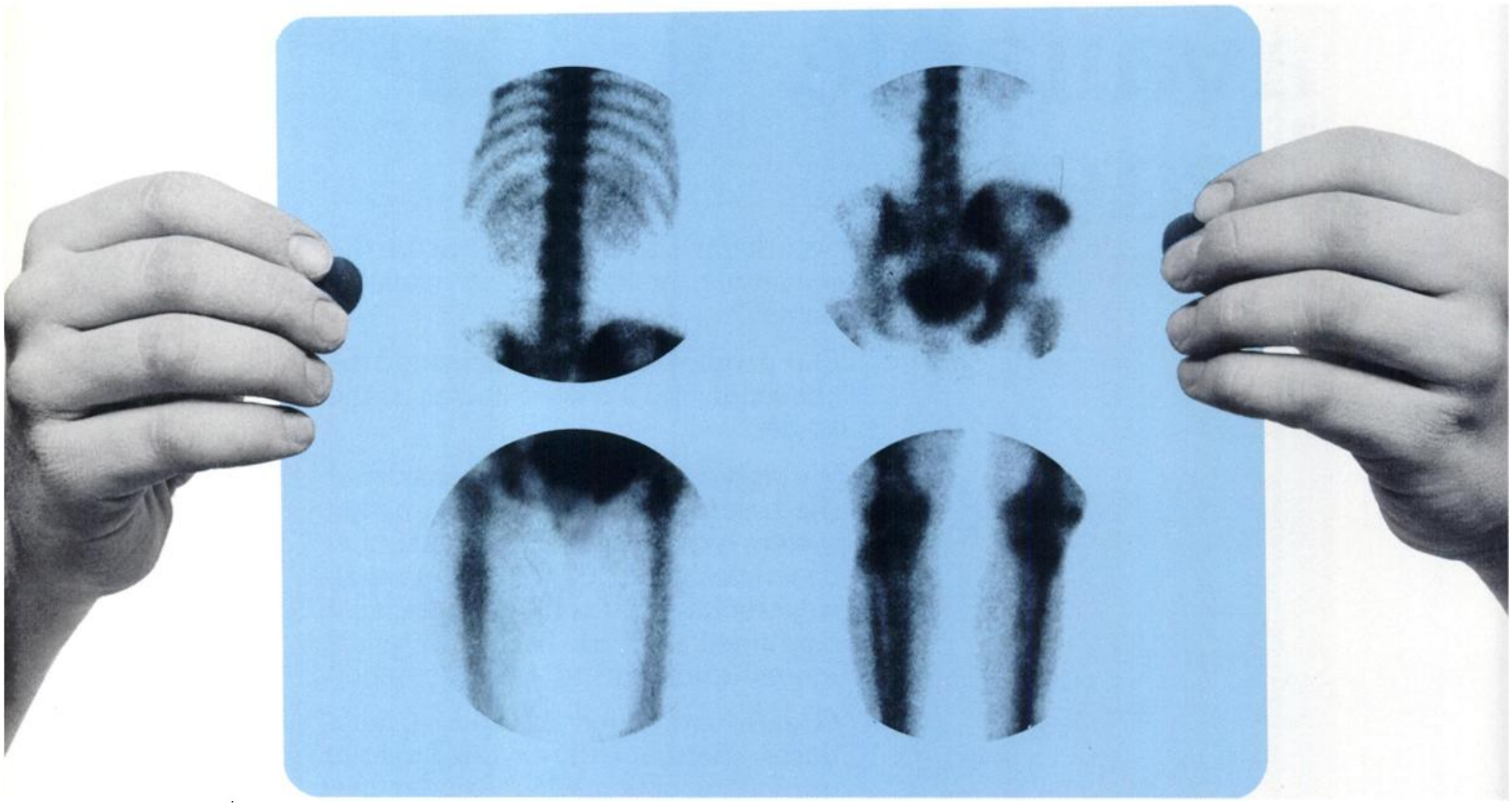

Dymax gives you what you want: unexcelled images! But the Dymax has *not* been designed for everyone. It is manufactured to serve the needs of those individuals who demand only the finest quality and performance.

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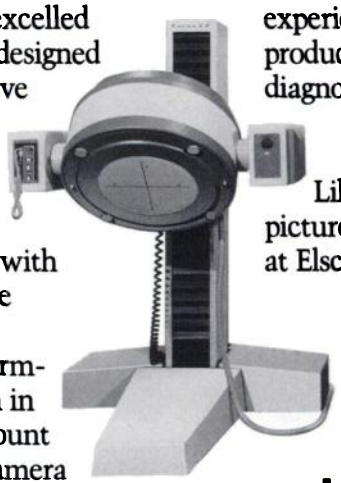

Like to see more scans or get the total picture on the Dymax LF? Contact us today at Elscint Inc., 138-160 Johnson Avenue, Hackensack, NJ 07602. Telephone: (201) 487-5885

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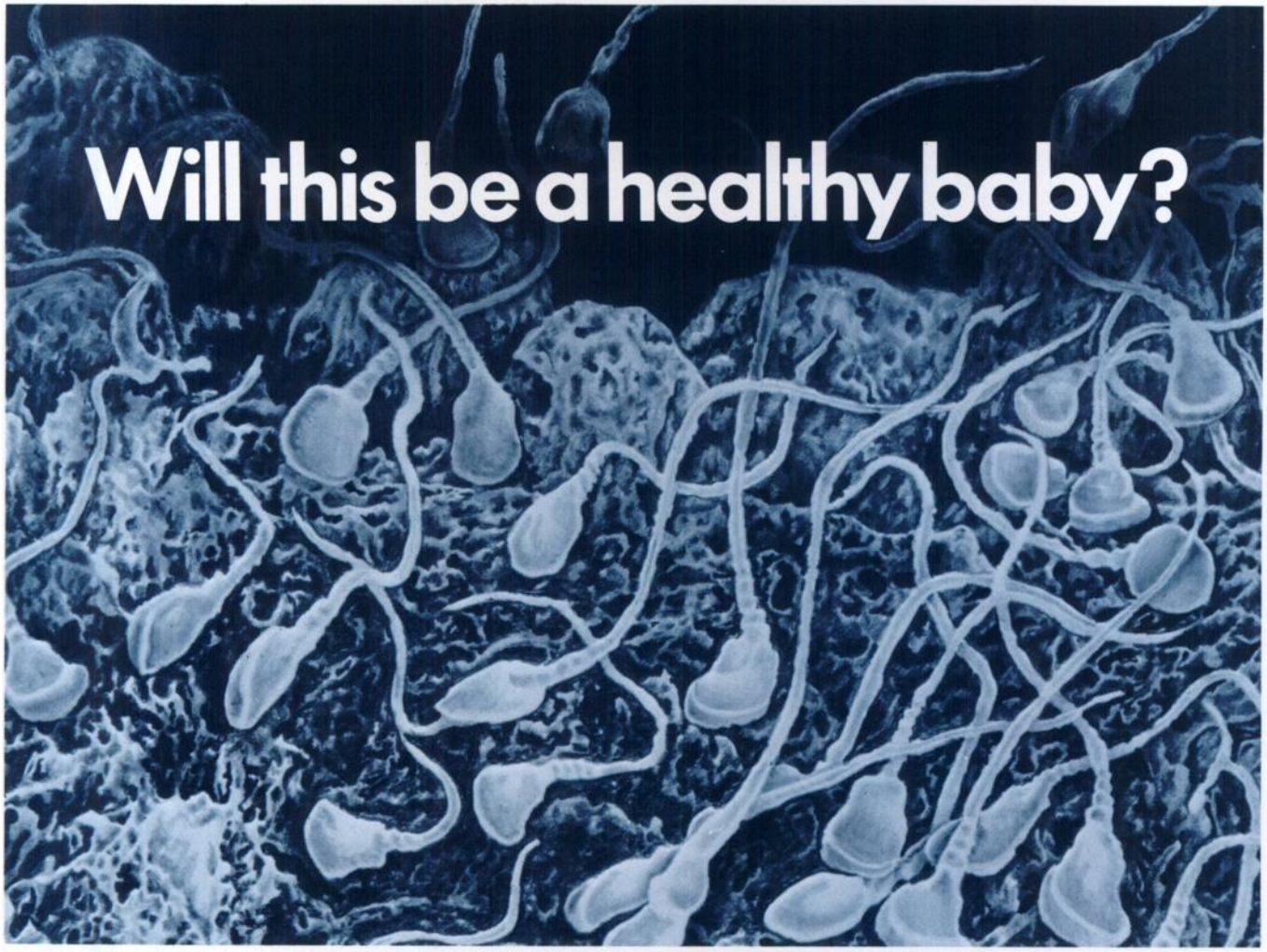

Representation of Spermatozoa at the surface of an ovum magnified approximately 2000 times.

Yes, if everything goes well. Even so, it needs all the skills of the gynaecologist and obstetrician to monitor progress and take action when complications arise. To support clinical judgement we offer four simple quantitative tests.

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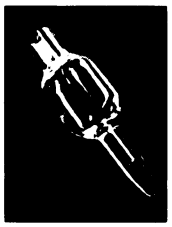

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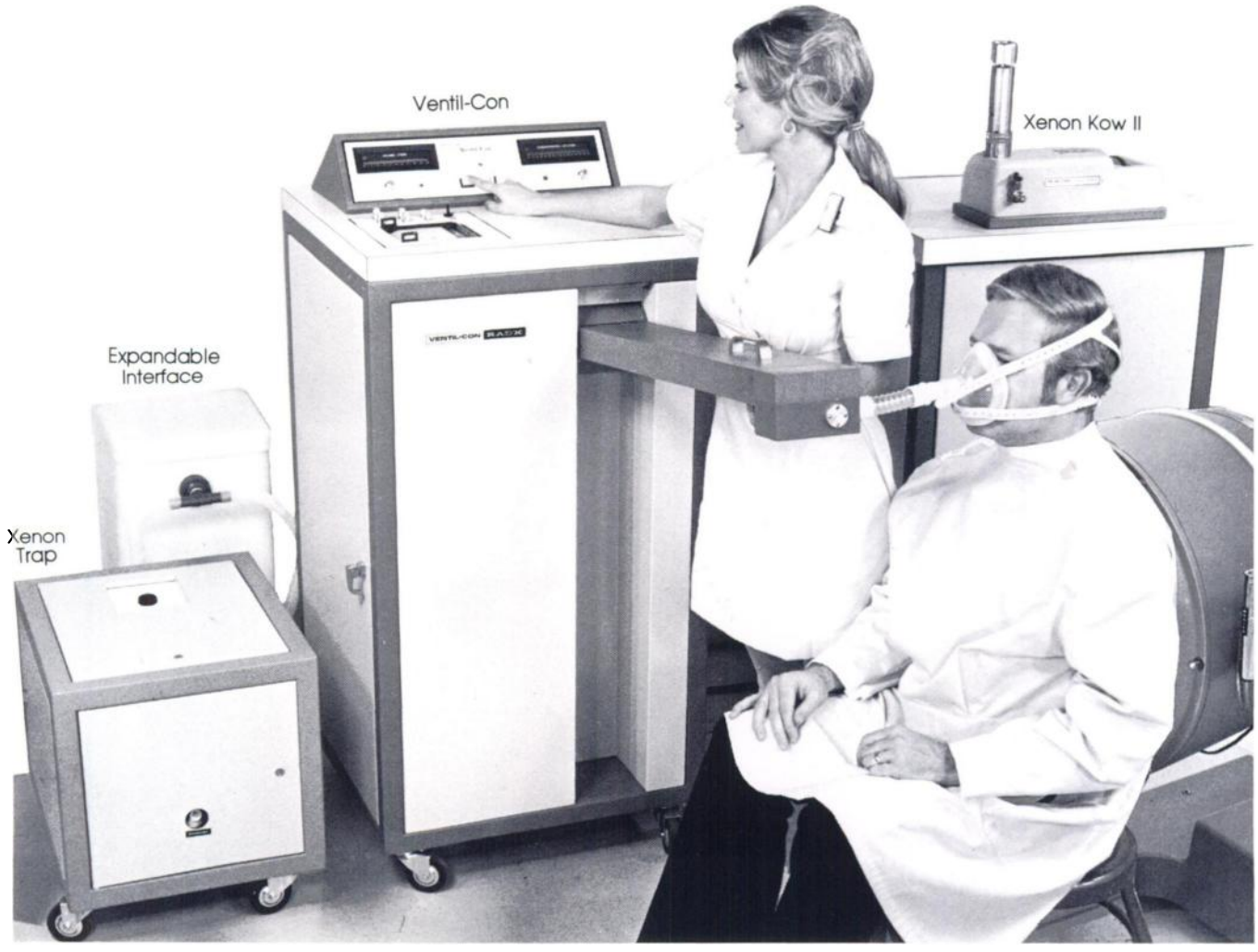

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THE ORTEC ECAT™

Emission Computerized Axial Tomographic

SCANNER

featuring

- **The production of whole-body emission and transmission, tomographic and rectilinear images.**
- **A completely self-contained user-oriented operation.**
- **The use of positron-emitting radiopharmaceuticals.**
- **Modular electronics, designed for ease of service and high reliability.**
- **Rapid, flexible scan capabilities, automatic bed indexing, high-resolution display, and adaptable data processing.**

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:
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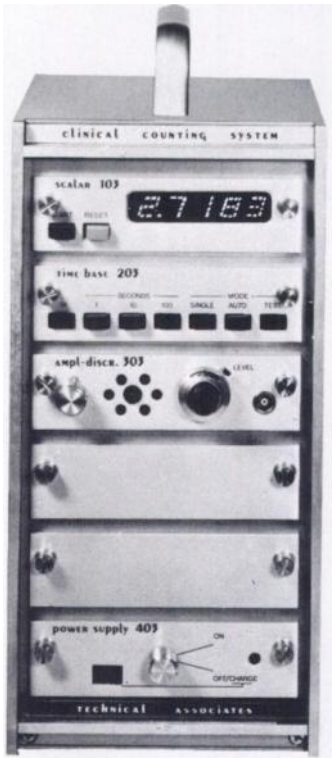
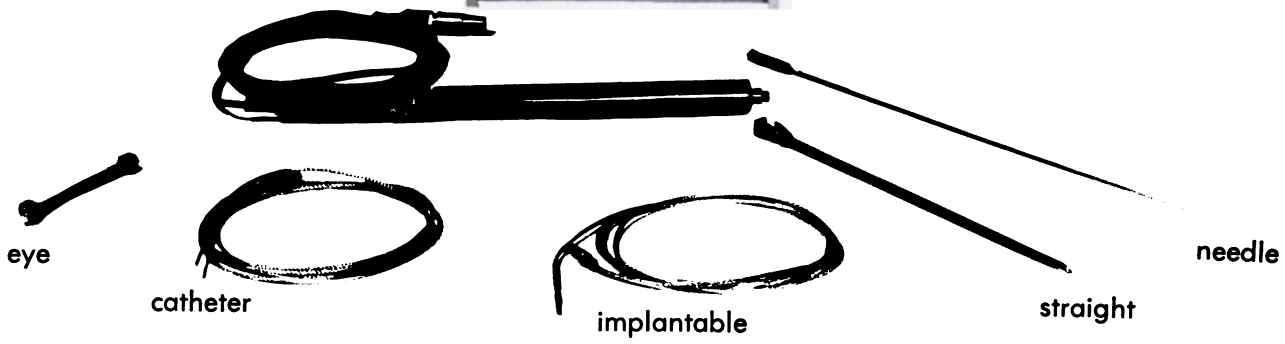
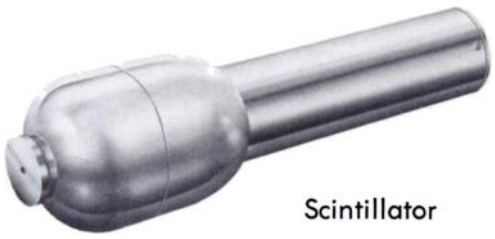




Solid State Probes

G.I.



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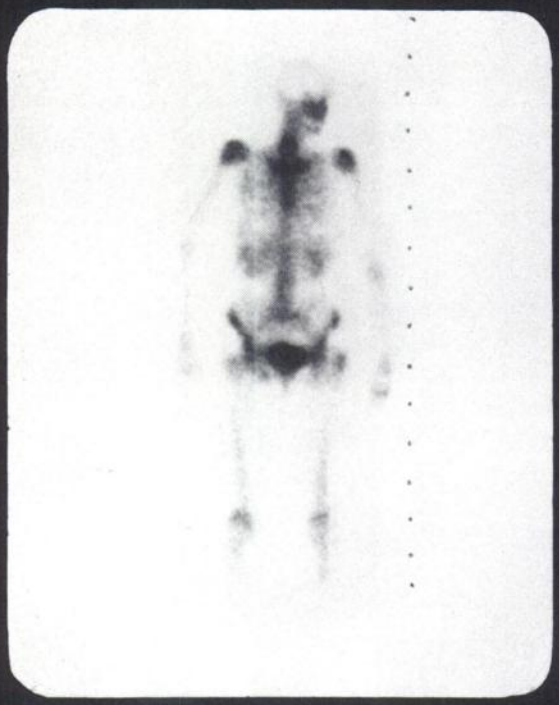
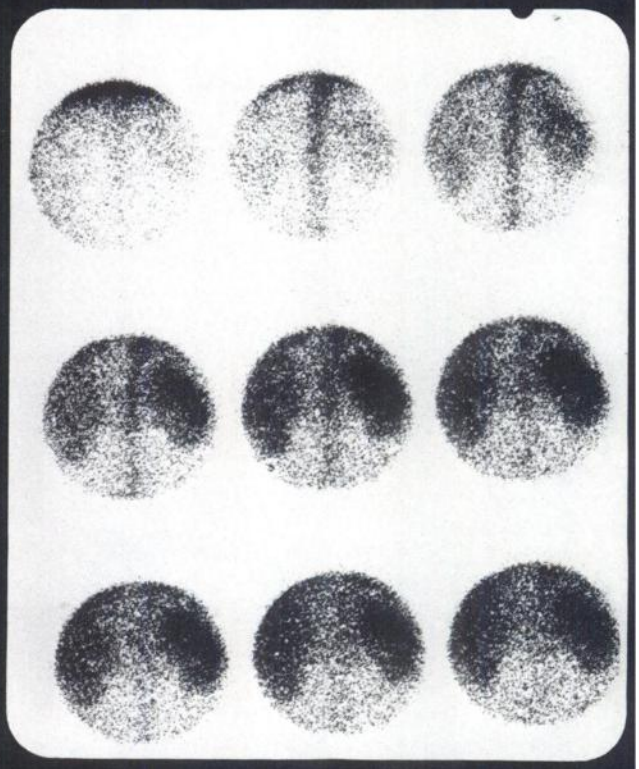
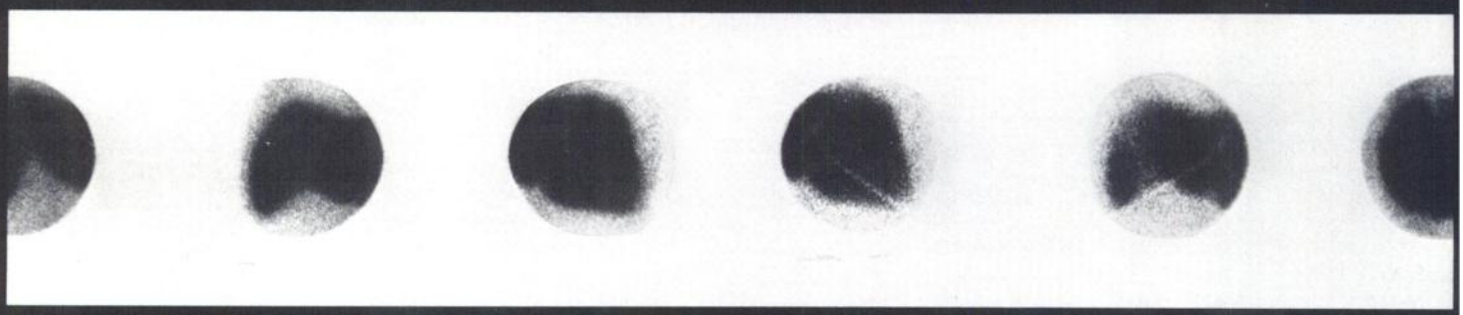
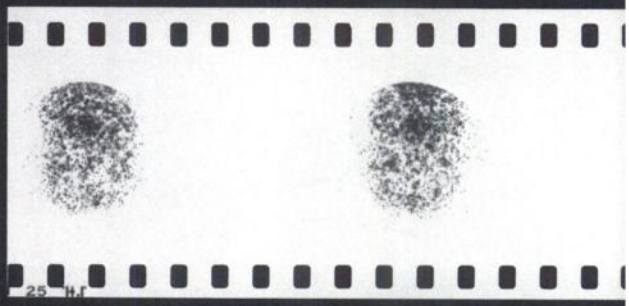
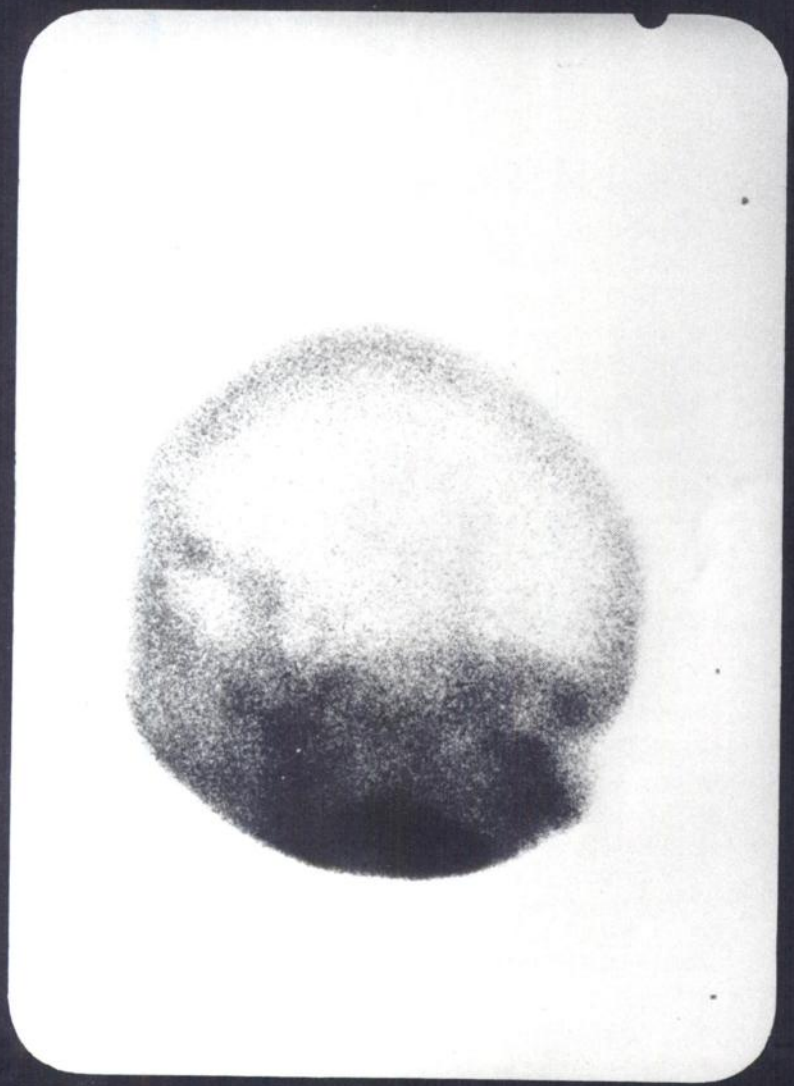








AT LOWER COST



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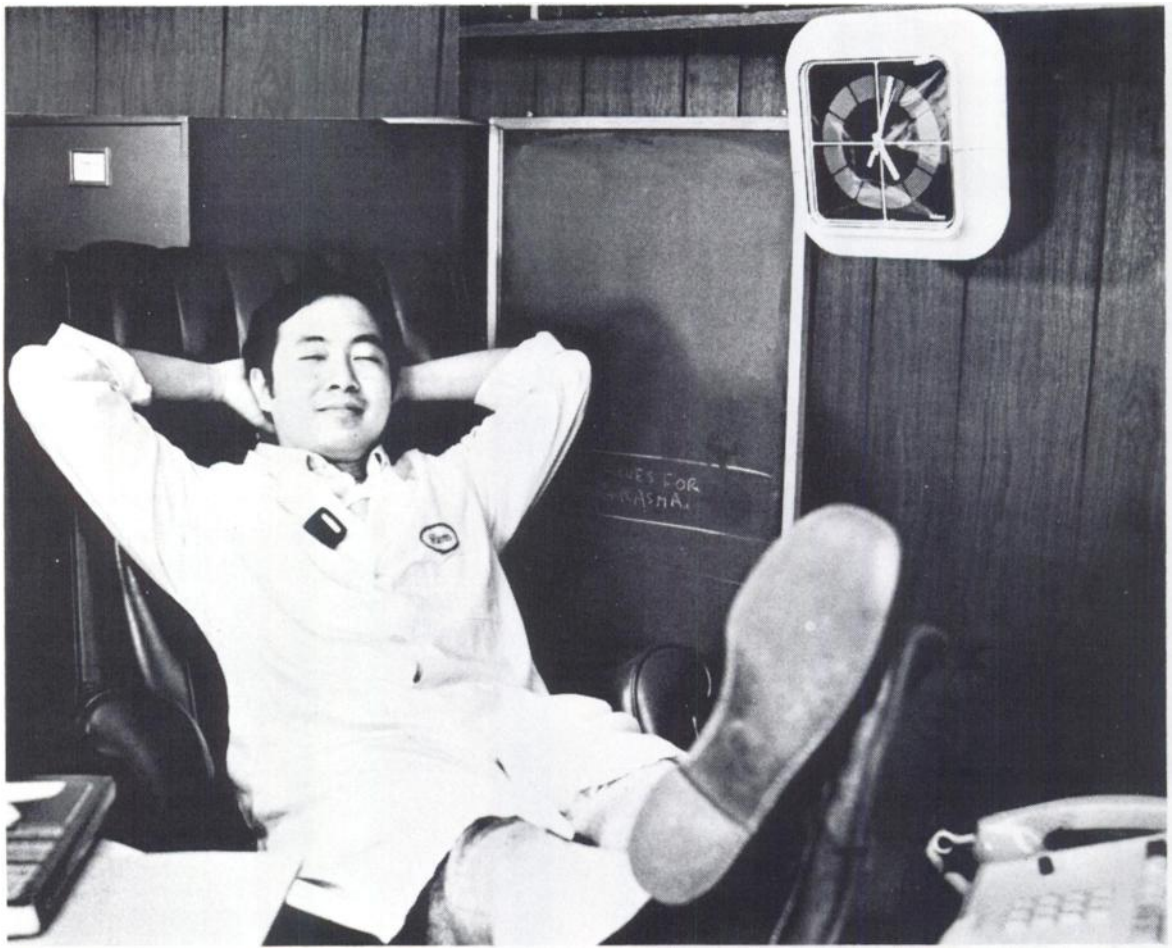

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- ^{125}I Digoxin
- ^{125}I Folic Acid
- ^{3}H Folic Acid
- ^{125}I Gentamicin
- ^{125}I Neonatal T-4
- ^{125}I Neonatal TSH
- ^{125}I T-3 RIA
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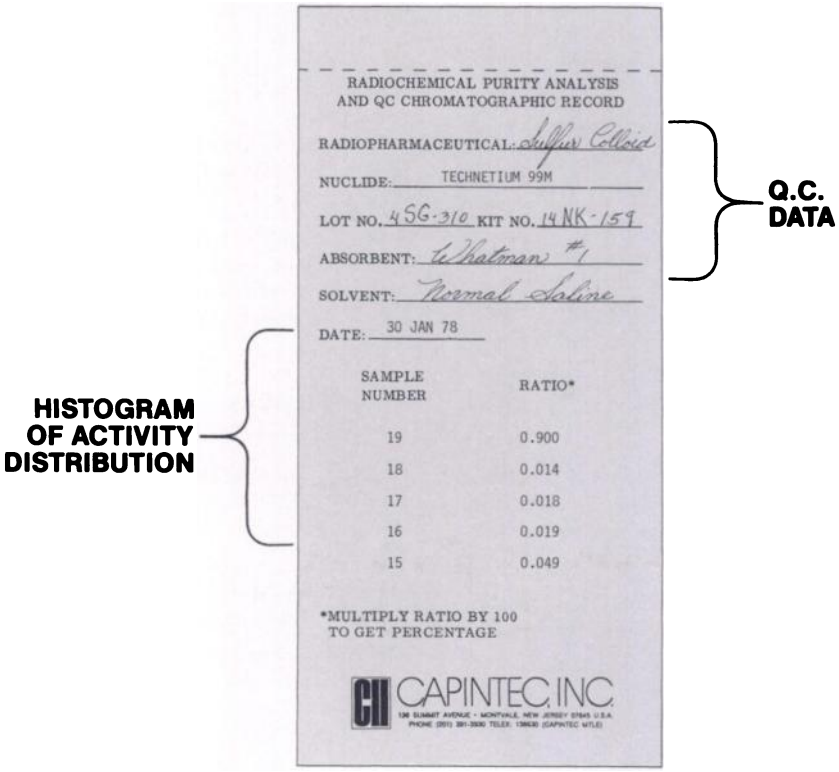

RADIOCHEMICAL PURITY ANALYSIS
AND QC CHROMATOGRAPHIC RECORD

RADIOPHARMACEUTICAL: Sulfur Colloid
NUCLIDE: TECHNETIUM 99M
LOT NO. 4SG-310 KIT NO. 14NK-159
ABSORBENT: Whatman #1
SOLVENT: Normal Saline
DATE: 30 JAN 78

SAMPLE NUMBER	RATIO*
19	0.900
18	0.014
17	0.018
16	0.019
15	0.049

*MULTIPLY RATIO BY 100
TO GET PERCENTAGE

CAPINTEC, INC.

Q.C. DATA

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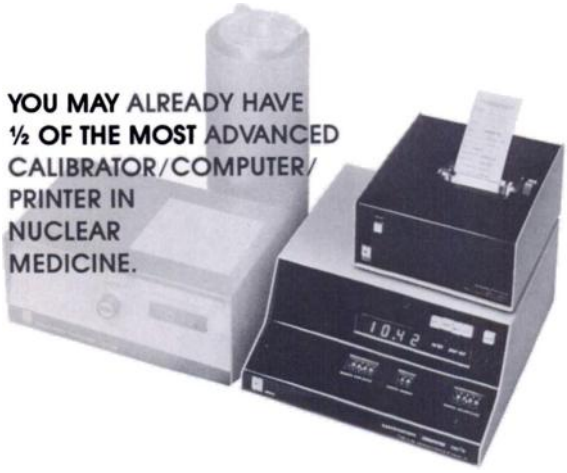

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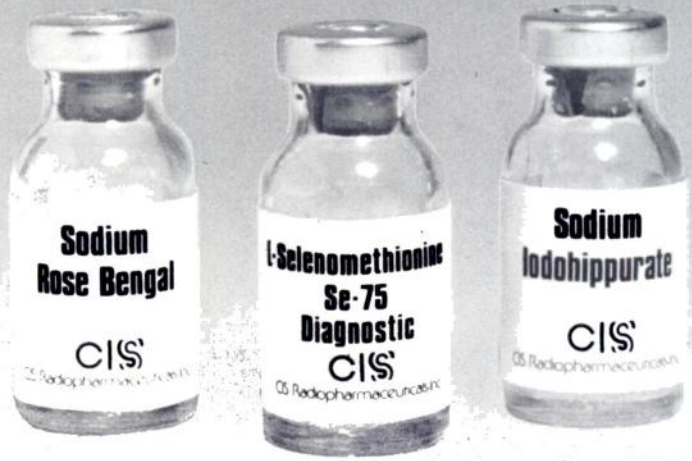

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^{131}I Sodium Rose Bengal
^{131}I Sodium Iodohippurate
^{131}I Sodium Iodide Oral Therapeutic
^{131}I Sodium Iodide Capsule [Diagnostic]
Oral Iodine Administration Kit

Send for our literature on radiopharmaceuticals or call us toll free (800-225-1145). We are pleased to discuss your requirements and answer questions about our products and applications.

CIS Radiopharmaceuticals, Inc.
5 DeAngelo Drive/Bedford, Ma. 01730/Telephone: (617) 275-7120;
outside Massachusetts (800) 225-1145/TELEX 94-9465

ONE 5-MINUTE BOIL. AND COOL IT.

Cool rapidly in ice water or refrigerator while observing proper radiation safety measures. Refer to package insert for full preparation instructions.

New! TSC preparation now takes less time.

The CINTICHEM® TSC reagent kit for imaging of functioning reticuloendothelial cells in the liver, spleen and bone marrow requires less of your time to prepare than any other sulfur colloid kit available.

- Needs boiling only once for 5 minutes. Other kits can demand 2 boilings plus cooling period.
- Buffer is injected into the reaction vial immediately after removal from the boiling water bath.
- Dose vial is then rapidly cooled in an ice-water bath or similar cold environment.

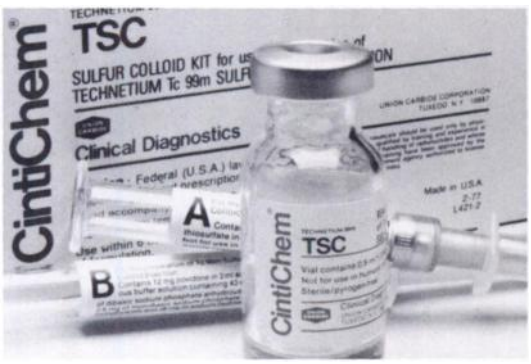
Take advantage of our other CINTICHEM products for nuclear medicine:

- Technetium 99m HEDSPA (Etidronate Disodium[1] Tin Kit for use in preparation of Technetium Tc 99m Etidronate Tin Complex)
- Technetium 99m DTPA (DTPA Tin Kit for use in preparation of Technetium Tc 99m DTPA Tin Chelate)
- Technetium 99m MAA (Technetium Tc 99m Aggregated Albumin)
- Technetium 99m HSA (Technetium Tc 99m Human Serum Albumin)

All of the above are available in multidose and unit dose kits.

- Technetium Tc 99m Generator for the production of Sodium Pertechnetate Tc 99m, available in 500, 1000, 1500, or 2000 millicuries.

For ordering or additional information
Call toll-free: (800) 431-1146
In New York State call: (914) 351-2131



[1]USAN designation for 1-hydroxy-ethylidene-1,1-disodium phosphonate HEDSPA.

Indications and usage
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
None known.

warnings
The contents of the two syringes, one syringe containing the sodium thiosulfate solution and the second syringe containing the appropriate buffer solution, are intended ***only*** for use in the preparation of the Technetium Tc 99m Sulfur Colloid Injection and ***are not to be directly administered to the patient.***

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.

This radiopharmaceutical preparation should not be administered to children or to patients who are pregnant or during lactation unless the expected 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.

precautions
The components of the kit are sterile and pyrogen-free. 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.

It is recommended that Sodium Pertechnetate Tc 99m solutions containing more than 10 micrograms/ml of aluminum ion not be used for formation of the Technetium Tc 99m Sulfur Colloid Injection. The Sodium Pertechnetate Tc 99m solution must also be free of any traces of oxidizing agents such as peroxides and hypochlorites.

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 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 Sulfur Colloid Injection not be used after six hours from the time of formulation.

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 Sulfur Colloid Injection 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.

Technetium Tc 99m Sulfur Colloid Injection, as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize external radiation exposure to clinical personnel. Also, care should be taken to minimize radiation exposure to patients, consistent with proper patient management.

adverse reactions
Hypersensitivity reactions, including anaphylaxis, have been reported in patients receiving sulfur colloid preparations.

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 absorbed from the G.I. tract.

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

Radiopharmaceuticals should be used only by physicians who are qualified by 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.

how supplied kit contents

5 STERILE REACTION VIALS, each containing 0.5 ml 1.0 N hydrochloric acid in water.
5 STERILE SYRINGES, (labeled "A"), each containing 1.7 mg anhydrous sodium thiosulfate in 1 ml aqueous solution.
5 STERILE SYRINGES, (labeled "B"), each containing 12 mg povidone in 2 ml aqueous buffer solution containing 43 mg of dibasic sodium phosphate anhydrous, 2.6 mg of monobasic sodium phosphate monohydrate, and 16 mg of sodium hydroxide.
5 RADIOACTIVE SYMBOL LABELS.
10 PRESSURE-SENSITIVE LABELS for final Technetium Tc 99m Sulfur Colloid Injection preparation.
1 PACKAGE INSERT.

storage

Store kit contents at room temperature (18-25° C).

preparation

The following directions must be carefully followed for optimum preparation of the Technetium Tc 99m Sulfur Colloid Injection.

1. Affix radioactive symbol label to reaction vial.
2. Aseptically inject 0.1-5.0 ml of sterile Sodium Pertechnetate Tc 99m, up to 75 millicuries which must contain less than 10 micrograms of aluminum, into the reaction vial. Relieve the excess pressure in the vial by withdrawing an equal volume of air. Mix the solution.
3. Assemble the thiosulfate syringe (labeled "A") and inject the total contents into the reaction vial with gentle agitation. Relieve the excess pressure by withdrawing an equal volume of air and remove the needle.
4. Immediately immerse the reaction vial in a vigorously boiling water bath, deep enough to cover the entire liquid contents of the vial. Keep the vial in the water bath for 5 minutes plus or minus 30 seconds.
5. During heating step, assemble buffer syringe cartridge (labeled "B").
6. Remove vial from water bath, place in lead shield, and vent using 20 gauge, disposable needle.
7. Immediately inject contents of syringe B into reaction vial.
8. Remove vent and shake gently for a few seconds.
9. Rapidly cool to room temperature (note: rapid cooling in an ice bath is preferable) before use and then affix the descriptive label to the dose vial shield. Maintain adequate shielding of the radioactive colloid preparation. Do not use the preparation after six hours from the time of formulation.

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Technetium 99m

TSC

Sulfur Colloid Kit for Use in Preparation of Technetium Tc 99m Sulfur Colloid Injection

Union Carbide Corporation • Medical Products Division
Nuclear Medicine Products • Tuxedo, New York 10987

PLACEMENT

POSITIONS OPEN

RADIOPHARMACIST. THE SCHOOL of Pharmacy at the University of Maryland is seeking an experienced radiopharmacist to supervise its central nuclear pharmacy program. The position will involve administration of its central nuclear pharmacy, teaching at the graduate and undergraduate levels, and research in radiopharmaceutical development. Salary and academic rank will be commensurate with experience. Please direct reply along with a curriculum vitae to Michael D. Loberg, Ph.D., University of Maryland, 636 W. Lombard St., Baltimore, Md. 21201. An Equal Opportunity—Affirmative Action Employer.

CHIEF NUCLEAR MEDICINE TECHnologist: Full-time position for qualified individual in hospital and outpatient nuclear medicine laboratory. Minimal requirements include: greater than five years general nuclear medicine experience, operational familiarity with programmable data processing systems ASCP or equivalent with experience in radioimmunoassay procedures, expertise in Nuclear Cardiology, demonstrated administrative ability, ultrasound experience (optional), M.S. or B.S. degree (optional). Salary commensurate with experience and ability. Send resume, salary requirements and availability date to: Edward W. Gotti, M.D., Director, Department of Nuclear Medicine, Diagnostic Clinic, 1551 West Bay Drive, Largo, Florida 33540.

NUCLEAR MEDICINE RESIDENT Training Program. Health Sciences Division, Virginia Commonwealth University, Medical College of Virginia, McGuire Veterans Hospital, Richmond, Virginia. Approved resident positions will be available beginning July 1, 1978 in a two year Nuclear Medicine Training Program. This is an affiliated program utilizing the facilities of the Division of Nuclear Medicine at the Medical College of Virginia and the McGuire Veterans Hospital. For further information direct inquiries to: Alton R. Sharpe, Jr., M.D., Director, Affiliated Program in Nuclear Medicine, Health Sciences Division, Virginia Commonwealth University, Medical College of Virginia, MCV Station, Box 1, Richmond, Virginia 23298.

CONFIDENTIAL SERVICE NATIONwide. We are a search firm dealing nationwide in the Health Care Industry. All fees paid by employer. Forward resume with salary requirements and location preferences to BMI, Health Care Division, P.O. Box 6457, Columbia, S.C. 29260, (803) 787-8710.

NUCLEAR MEDICINE PHYSICIAN (Full Time). Experineced nuclear medicine physician required to assume charge of an enlarged Department of Nuclear Medicine located in a new building. The physician must be fully qualified in Nuclear Medicine with experience in all related fields including Cardiology. The candidate must either have or be capable of obtaining his or her Fellowship (Nuclear Medicine) from the Royal College of Physicians and Surgeons of Canada and be eligible for full registration with the College of Physicians and Surgeons of Ontario. Suitable candidates will be eligible for a teaching appointment—Faculty of Medicine, University of Ottawa. Fluency in French would be an asset. Further particulars and application forms may be obtained from: Director, Ottawa Clinic Ontario Cancer Foundation, Ottawa Civic Hospital, 1053 Carling Avenue, Ottawa, Ontario K1Y 4E9, Canada.

ULTRASOUND TECHNICIAN. FULLtime opening for registered or registry eligible Ultrasound Technician in 260-bed community hospital of Western Massachusetts. Position offers excellent salary and benefits. Send resume to: The Personnel Department, The Cooley Dickinson Hospital, 30 Locust St., Northampton, Mass. 01060. An equal opportunity employer.

CHIEF NUCLEAR MEDICINE TECHnologist—Division of Nuclear Medicine, Georgetown University Hospital, Washington, D.C. 20007. Position requires 6 years experience. Contact: John C. Harbert, M.D. (202) 625-7492.

NUCLEAR MEDICINE TECHNOLOgist. Immediate, full time day position available in our 600-bed general hospital, with an expanding and progressive Nuclear Medicine department that includes an ultrasound unit. Some of our present equipment now includes a dual-probe rectilinear scanner, PHO-CON Tomographic Scanner, and Searle HP camera. Good departmental layout. We offer you opportunities for advancement, along with an excellent starting salary commensurate with your experience and ability. Tuition reimbursement and hospitalization insurance are just a part of a superior and generous benefit package. Send us your resume and salary requirements in complete confidence to, or contact: Personnel Department, Lutheran Hospital, 3024 Fairfield Ave., Fort Wayne, Indiana 46807. Phone (219) 458-2221. An equal opportunity employer, including nondiscrimination on the basis of handicaps.

REGISTERED NUCLEAR MEDICINE technologist. Full-time day position now available within expanding department of Nuclear Medicine. Position requires knowledge of Invitro procedures, usage of Gamma Camera System and Dual Probe Rectilinear Scanner. Excellent starting salary with exceptional employee benefits. Apply Personnel Department, Good Samaritan Hospital, 2222 Philadelphia Drive, Dayton, Ohio 45406.

AUSTRALIA, QUEENSLAND RADIUM Institute. Full time medical staff, physician, Department of Nuclear Medicine. Applications for the position of Physician in Nuclear Medicine are invited from Medical Practitioners who are eligible for registration with the Medical Board of Queensland. The successful applicant should have an appropriate post-graduate qualification, F.R.A.C.P., M.R.C.P., M.D., etc.) and should be eligible for membership of the Australian and New Zealand Association of Physicians in Nuclear Medicine. The Department undertakes nuclear medicine services for the major hospitals of Brisbane. The Department has a full range of imaging equipment including a large-field gamma camera. The majority of in vivo investigations are performed and excellent radiopharmaceutical, physics, and electronics sections are located close to the department. Ample opportunities exist to develop areas of investigative interest. Generous conference and study leave are available. Salary classification for the position is A$25,871 to A$31,584 per annum, depending upon the experience of the appointee. The successful applicant will be required to contribute to the State Service Superannuation Fund. Further information and application forms may be obtained from the Director, Queensland Radium Institute. Applications closing on 2nd June 1978 should be forwarded to the Executive Director Medical Services, North Brisbane Hospitals Board. Base Hospitals Post Office, Brisbane, 4029 Australia. (4501)

NUCLEAR MEDICINE. OUR RADIOLogy Department has a full time position available for a Nuclear Medicine Technologist. Requires graduation from an AMA approved school and ARRT registry. We will provide assistance with interview expense and relocation. Please call collect (405) 233-6100, extension 581 for more information. St. Mary's Hospital, P.O. Box 232, Enid, Oklahoma 73701. An Equal Opportunity Employer M/F.

NUCLEAR MEDICINE RESIDENCY: Applications are now being accepted for two-year AMA approved residency program beginning July, 1979. The program includes the George Washington University Hospital, Wash. Hosp. Center, and Wash. VA Hosp. Comprehensive training in basic science, computers, in-vivo and in-vitro nuclear medicine, including RIA and clinical patient services are provided. Resident participation in the on-going research program is encouraged. Contact: Richard C. Reba, M.D., Dir., Div. Nuc. Med., GWUMC, 901 - 23rd St., N.W., Wash., D.C., 20037. Phone 202-676-3458.

AUSTRALIA, QUEENSLAND RADIUM Institute, Department of Nuclear Medicine. Trainee Physician in Nuclear Medicine (full time position). Applications for the position of a Trainee in Nuclear Medicine are invited from medical practitioners registrable with the Medical Board of Queensland, and desirous of a career in this specialty. Candidates should have the F.R.A.C.P. (Part I), M.R.C.P. (U.K.) or other suitable post-graduate qualification. The Department undertakes the total spectrum of nuclear medicine services including diagnostic imaging and thyroid investigations. The Department is accredited by the Royal Australasian College of Physicians for advanced training in nuclear medicine. Experience in nuclear medicine will be an asset, but is not essential as the successful applicant will be trained while working in the Department. Salary classification for the postion is A$20,021 to A$22,283 per annum. The successful applicant will be required to contribute to the State Service Superannuation Fund. Further information and application forms may be obtained from the Director, Queensland Radium Institute. Applications should be forwarded to the Executive Director Medical Services, the North Brisbane Hospitals Board, Base Hospitals Post Office, Brisbane, 4029, Australia by 2nd June 1978. (4500)

THE GREENVILLE HOSPITAL, A progressive 200-bed JCAH approved Hospital, is seeking a full time Nuclear Medicine Technologist, to join our staff of six registered Nuclear Medicine Technologists. The expanding department serves as an area referral center using two gamma cameras, adac computer and Dual Probe Magna Scanner for a large volume of inpatient and outpatient services. The current $10.1 million building/renovation project will offer an opportunity for future expansion of the Department when it is completed in the Spring of 1979. Greenville is a college community located in Northwestern Pennsylvania and is easily accessible to recreational facilities and the Youngstown, Cleveland, Erie and Pittsburgh metropolitan areas. Send Resume: Personnel Department, The Greenville Hospital, 110 N. Main Street, Greenville, Pa. 16125. We are an Equal Opportunity Employer.

REGISTERED NUCLEAR MEDICINE Technologist. Enjoy year-round, outdoor living in sunny Florida and have the challenge of being with an unusually progressive department in a modern 550/plus bed hospital. This is a permanent, full-time position and will provide excellent experience and opportunity for continued learning in all phases of in vivo and in vitro procedures, including computer applications. Requests for further information should be directed to: Virginia Paine (or call her collect at) Holy Cross Hospital, 4725 North Federal Highway, Fort Lauderdale, Florida 33308. (305) 771-8000 Ex. 7592.

NUCLEAR MEDICINE TECHNOLOgist. 500-bed teaching hospital in Phoenix, Arizona, offers a challenging position, in vivo applications, in our large Nuclear Medicine Department. Candidates must be registered or be eligible for registration. Direct inquiries and resumes to: Ilse Robbins, 906 N. 24th Street, Phoenix, Arizona 85008. 602/267-5506.

CHIEF OF NUCLEAR MEDICINE. Challenging opportunity for M.D. (certified or board eligible in Nuclear Medicine) to join the staff of voluntary hospital in Manhattan. Candidate must be thoroughly experienced in nuclear medicine. Responsibilities will include directing the functions of the department as well as medical responsibility for all patients having radionuclide procedures. Excellent benefit program. Please send curriculum vitae, including salary requirements to: Box 500, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016. An equal opportunity employer. All replies held in strict confidence.

NUCLEAR MEDICINE OR ULTRASOUND Technicians. Nuclear Medicine and Ultrasound firm has openings for qualified technologists. Must be willing to relocate—Texas, Louisiana, Mississippi. Competitive salary. Excellent advancement opportunities. Send resume with salary history to: Nuclear Diagnostic Laboratories, Inc., 950 W. Mockingbird Lane, Dallas, Texas 75247.

IMMEDIATE OPENING FOR FULL-time Nuclear Medicine Technologist for a 350 bed Community Health Center with opportunity for continued learning. Registered or Certified in Nuclear Medicine. Several cameras including portable, with future in computer interfacing. Excellent Salary and Benefits. Please write or call: Presbyterian Intercommunity Hospital 12441 East Washington Blvd., Whittier, Ca. 90602, (213) 698-0811 ext. 482.

ELECTRONIC TECHNICIAN. EXPERIenced in Gamma Camera or Diagnostic Ultrasound equipment repairs. Send resume with salary history to Nuclear Diagnostic Laboratories, 950 W. Mockingbird Lane, Dallas, Texas 75247.

POSITIONS WANTED

CHIEF NUCLEAR MEDICINE TECHnologist, ARRT registered, 10 years experience. Capabilities include in vivo and in vitro applications. Expert with most equipment and procedures. Interested in supervising, organizing and planning established or new facilities. Reply to Box 501, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

NUCLEAR RADIOLOGIST — SEVEN years experience teaching in a university, five of those years as director, plus four years in private practice. Would like full time nuclear medicine position, can cover diagnostic radiology. Prefer southeast. Experienced in IND investigation, cardiac scans, EF and gated blood pool studies. Diplomat ABR, ABNM. CV available. Reply: Box 502, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

NUCLEAR MEDICINE/ULTRASOUND: Internist, certified ABNM, completing university training program, desires full-time, private practice of nuclear medicine and ultrasound, preferably in Southeastern U.S. Special interest is nuclear cardiology. Available September, 1978. Reply: Box 503, Society of Nuclear Medicine, 475 Park Ave. So., New York, N.Y. 10016.

RECENT Ph.D. IN NUCLEAR CHEMistry. Experienced in radiochemistry, handling radioisotopes and radiation measurements. Research experience includes nuclear instrumentation development and trace element analysis using neutrol activation, X-ray fluorescence, and atomic absorption. Thirteen publications. Desire challenging position in research and/or clinical support. Prefer western U.S. Reply: Box 504, Society of Nuclear Medicine, 475 Park Ave. So., New York, N.Y. 10016.

BOARD CERTIFIED RADIOLOGIST, completing 2 additional years of training in Nuclear Medicine. Experience in computer work and cardiovascular studies. Desires full or major time position in Nuclear Medicine. Private practice preferred. South or west U.S.—Dr. Gerscovich, evenings: 213-781-9241—7300 Lennox Ave., # A 8, Van Nuys, California 91405.

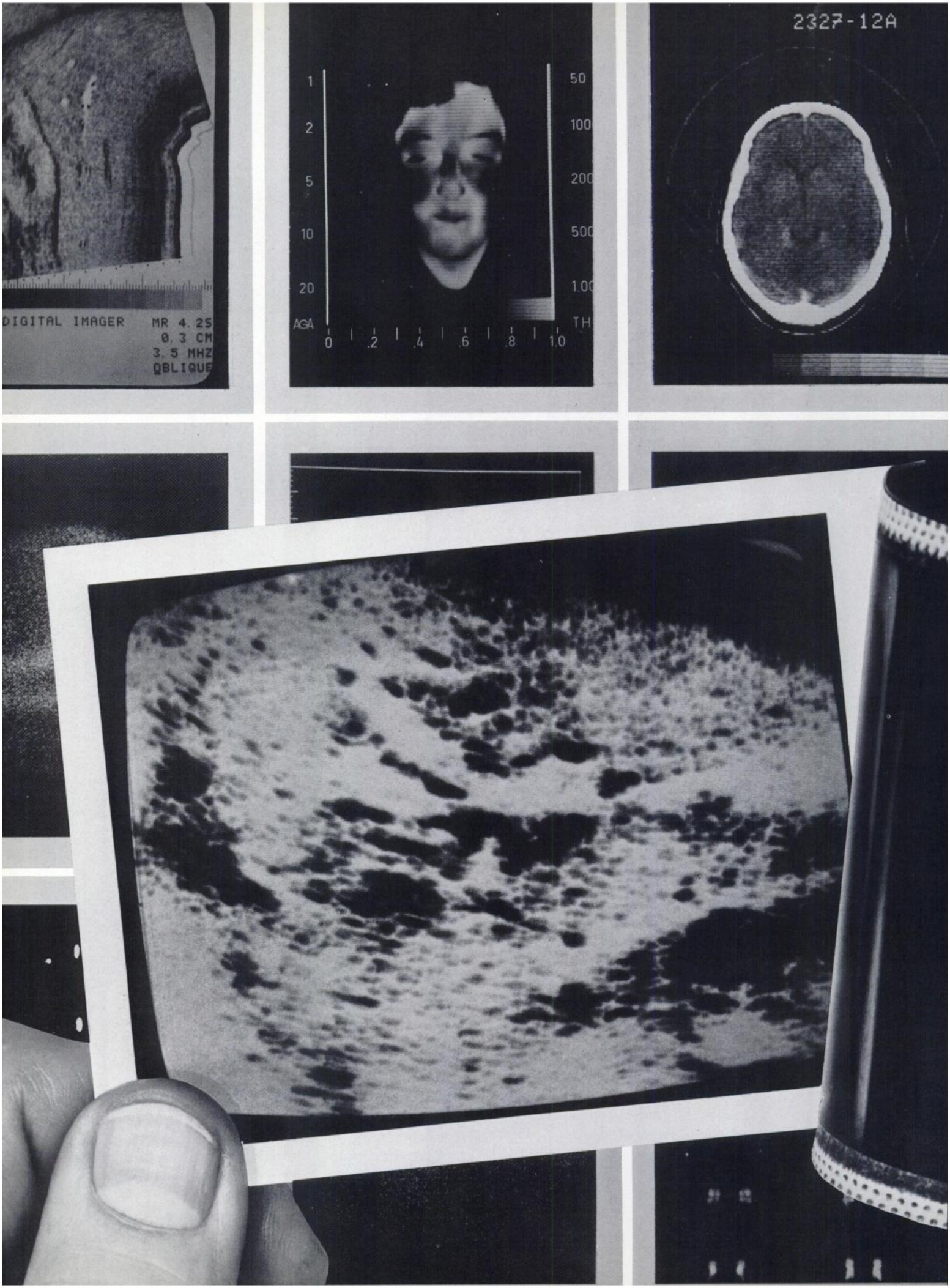
NUCLEAR MEDICINE PHYSICIAN, ABIM, ABNM eligible, university trained with experience in Diagnostic Ultrasound, desires academic and/or service oriented practice in nuclear medicine with or without ultra sound. Reply Box 505, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

ABNM, ABIM SEEKING POSITION IN Nuclear Medicine or combined with Internal Medicine from July, 1978. Well trained in imaging, in vitro studies, ultrasound and nuclear cardiology. Reply Box 506, Society of Nuclear Medicine, 475 Park Ave. South, New York, New York 10016.

FOR SALE

OHIO/NUCLEAR DUAL PROBE FIVE inch rectilinear scanner. Excellent working condition. Six sets of collimators, 4 cassettes. Contact Touro Infirmary, Nuclear Medicine Department, 1401 Foucher St., New Orleans, La. 70115 or call: 504-897-8317.

NORLAND-CAMERON 178 BONE MINeral Analyzer for I-125 source. Excellent working condition. Contact Touro Infirmary, Nuclear Medicine Department, 1401 Foucher Street, New Orleans, La. 70115 or call 504-897-8317.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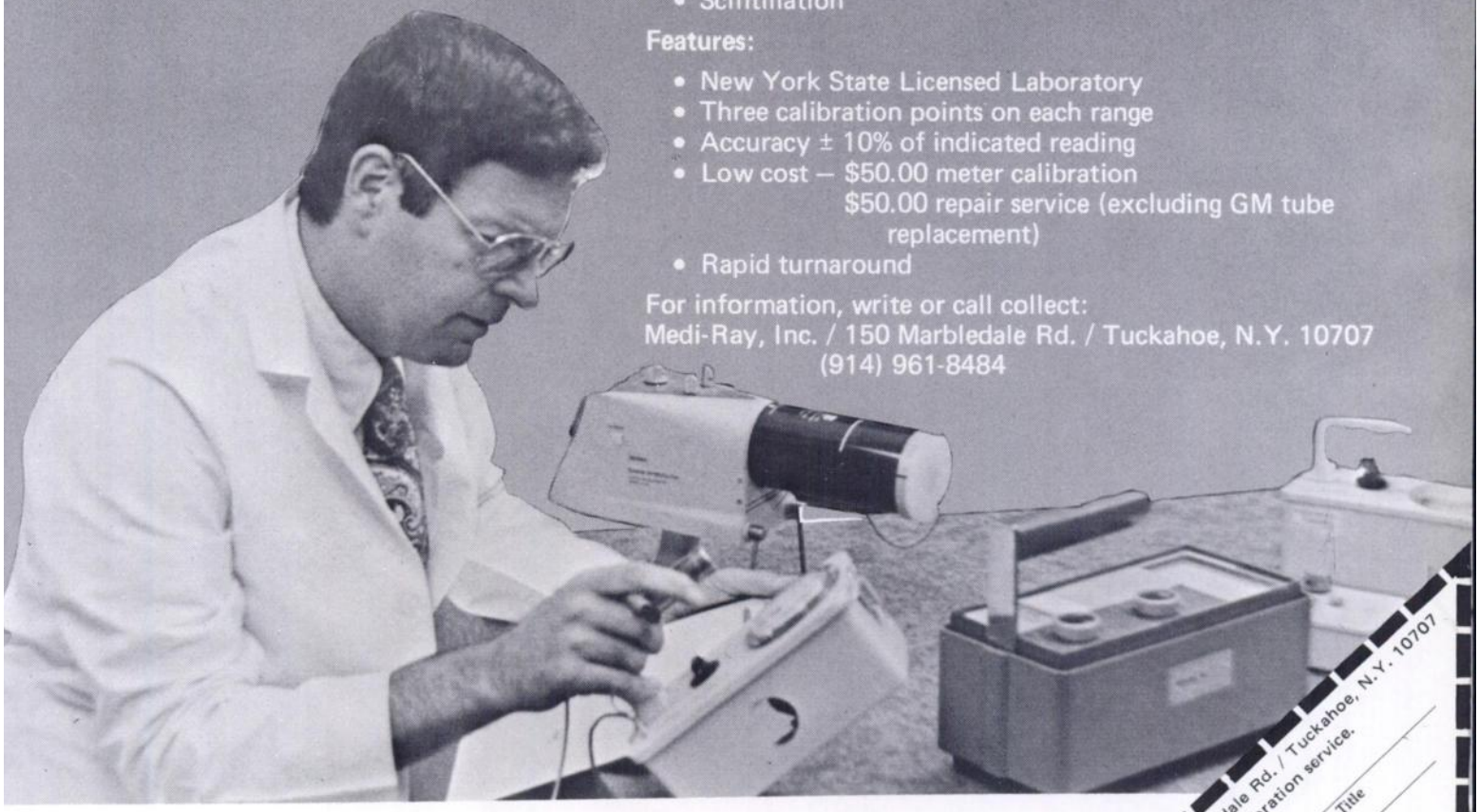

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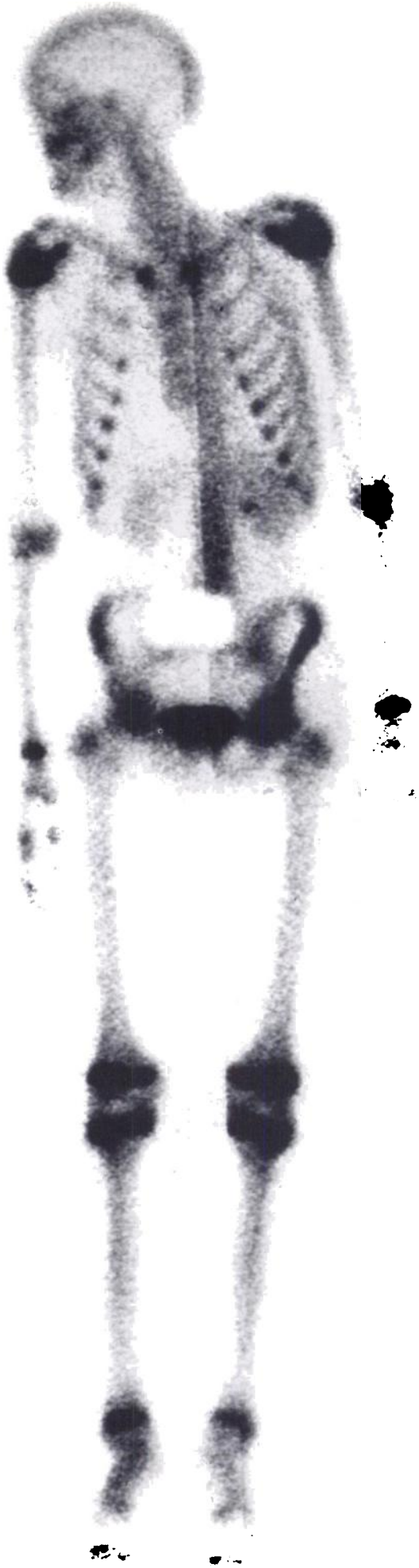

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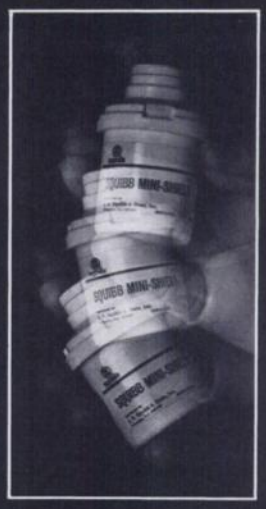
Technetium Tc 99m-Pyrophosphate-Tin Kit

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).
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- 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.

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time-saving can be life-saving

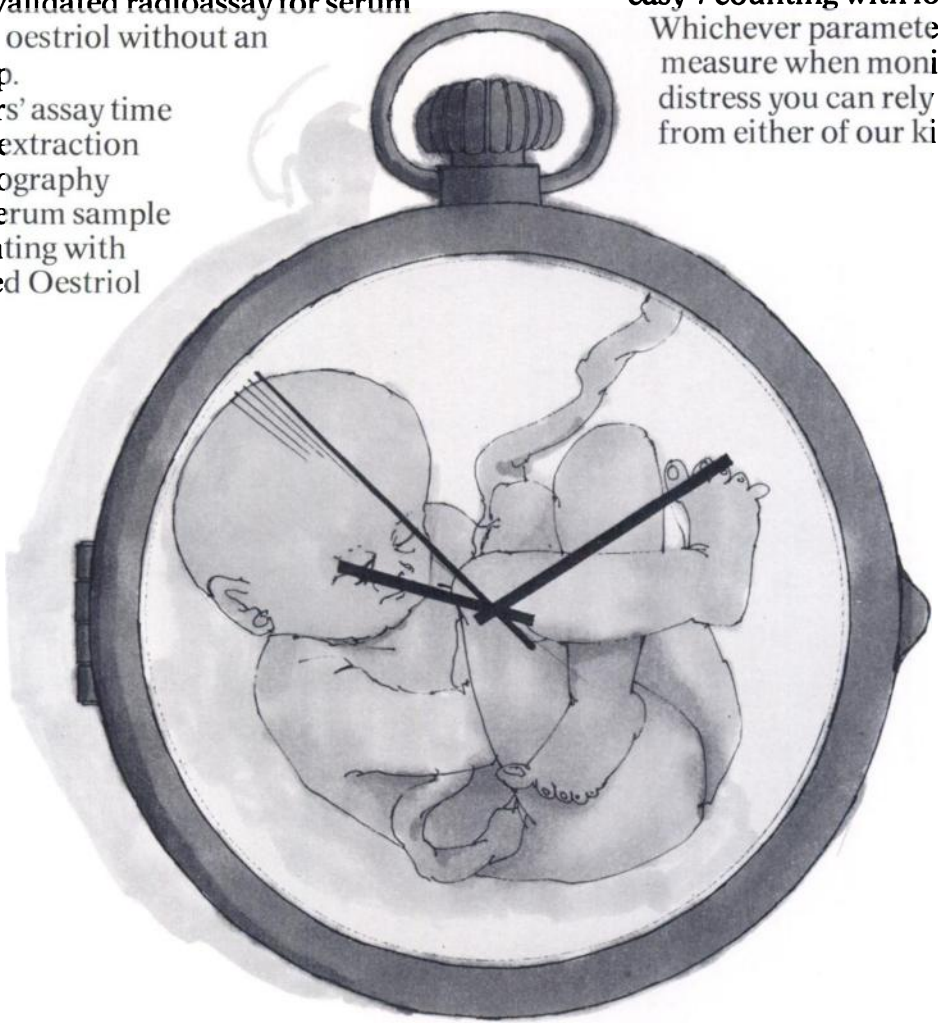
Both our serum oestriol radioimmunoassay kits give rapid and reliable results. And both assay methods save valuable time by eliminating urine collection.

Our new Oestriol (Unconjugated) RIA Kit is the first fully validated radioassay for serum unconjugated oestriol without an extraction step.

* Only 2 hours' assay time
* No solvent extraction or chromatography
* Only 20μl serum sample
* Easy γ-counting with 125 I-labelled Oestriol

Alternatively, you can use our well-established Oestriol (Total) RIA Kit. This assay is simple too, and highly reproducible; no solvent extraction or chromatography; only 50μl serum sample; assay time of 3 to 4 hours; easy γ-counting with iodine-125 label.

Whichever parameter you decide to measure when monitoring foetal distress you can rely on the results from either of our kits.



Serum oestriol RIA kits-unconjugated or total

The Radiochemical Centre Amersham

Full information and validation are available on request.
The Radiochemical Centre, Limited, Amersham, England. Telephone 024-04-4444
In the Americas: Amersham Corporation, Illinois 60005. Telephone 312-593-6300
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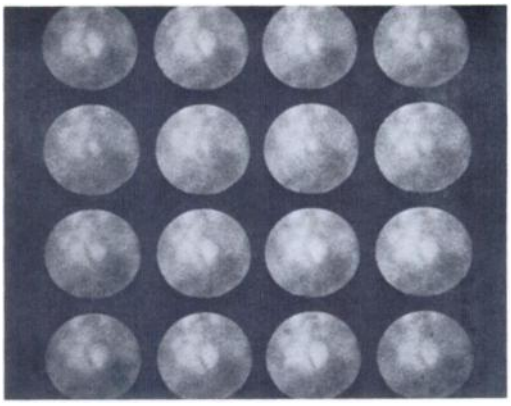
Real time diagnostics at a realistic price. Computing cardiac ejection fraction is a vital job. But, it's also an expensive and complicated one. Most hospitals cannot afford the luxury of a nuclear medicine system and the computer-trained personnel required to accomplish this time-consuming technical task. But, they can afford the efficiency of a Picker Nuclear Cardiology Module, which can quickly determine ejection fraction at a fraction of the cost of a computer.

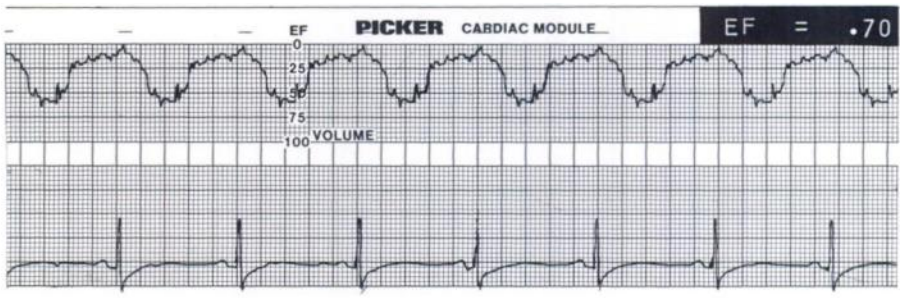
Complex cardiac assignments, simply performed. Picker's new Cardiac Module, the first of its kind in the marketplace, is an easy, uncomplicated way to produce meaningful left ventricular function data. Now, without the services of a computer-trained technologist, you can obtain instant on-line, 30-second sequential ejection fraction, indicated on an LED display, with corroborative hard copy strip chart recordings. The Picker Cardiac Module, used with our Dyna® Camera, will

cardiac ejection fraction nuclear computer.

produce the ejection fraction value six times faster than the first pass probe method at a third the cost.

In less than one minute after patient input has been completed, the Picker Cardiac Module will interrogate its own memory and calculate and display the on-line ejection fraction. It will print the left ventricular gated time ejection cycle images on 8 x 10" (20 x 25 cm) film, showing 12, 24, or 48-time integrated frames and print the left ventricle integrated time activity curve and its associated ECG on a strip chart at the same time. Not only will it perform these tasks in less than a minute, but it will take up a fraction of the space required for a nuclear medicine computer, without the complexities that call for elaborate training.





Opening a new world for nuclear medicine. Our new Cardiac Module means the radiologist can now provide prophylactic nuclear medicine. He can screen patients prior to surgery with real-time results in 30 seconds, at a reasonable cost to hospital and patient. He can help forestall problems arising from insufficient pre-operative input and provide significant postoperative patient management. He can begin to minimize the need for cardiac catheterization. The Picker Cardiac Module: another indication of Picker's leadership in supplying state-of-art equipment for Nuclear Cardiology. For additional information, contact your Picker representative, write Picker Corporation, 12 Clintonville Road, Northford, CT 06472 (203/484-2711), or Picker International, 595 Miner Road, Cleveland, OH 44143.

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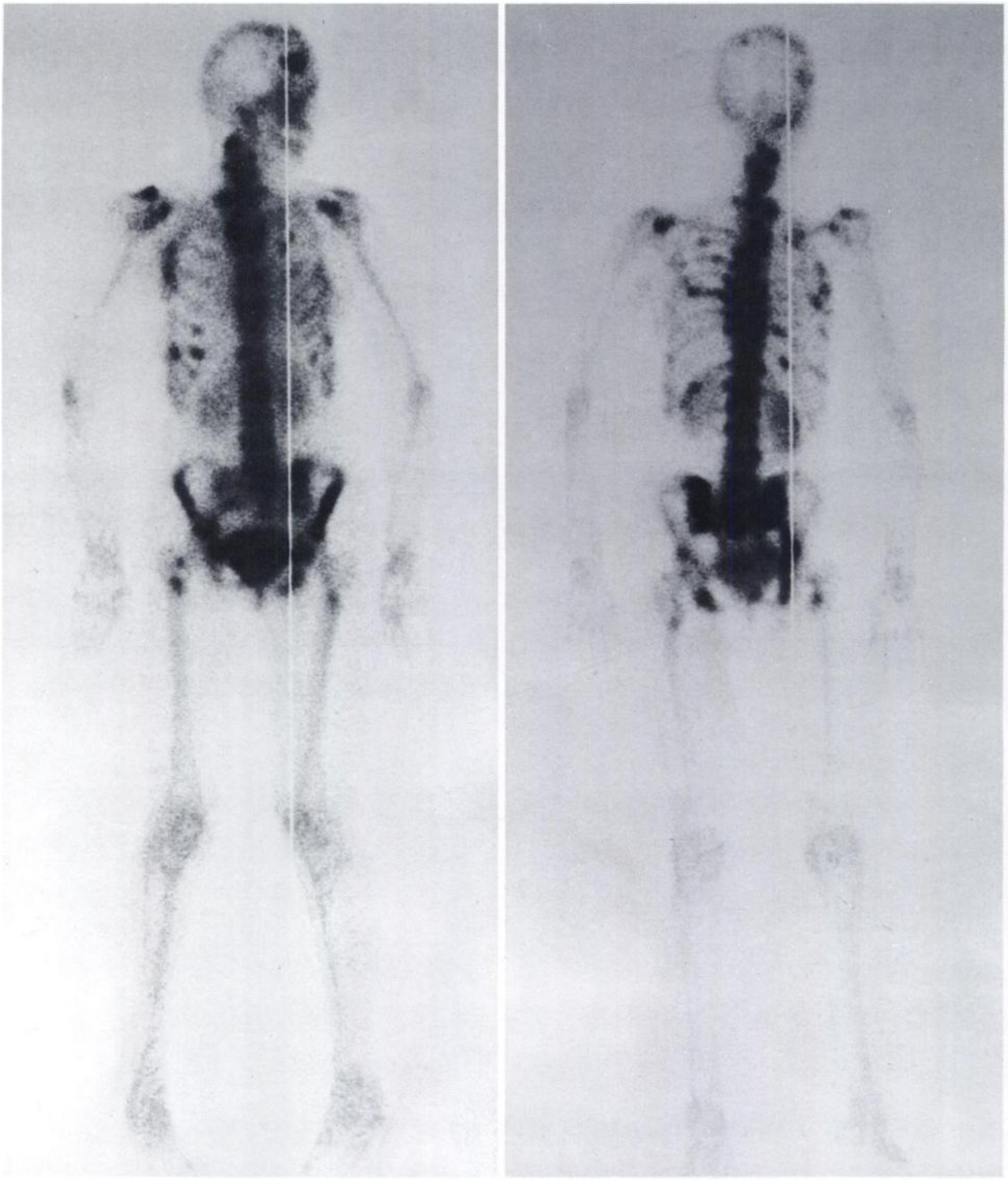
Dependable bone



Anterior
R. L.

Posterior
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lesion detection

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SKELETAL IMAGING AGENT

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

Compatible with all types of technetium

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

Plus these other Osteoscan benefits

- very low tin level to minimize potential for liver visualization and for interference with subsequent brain scans
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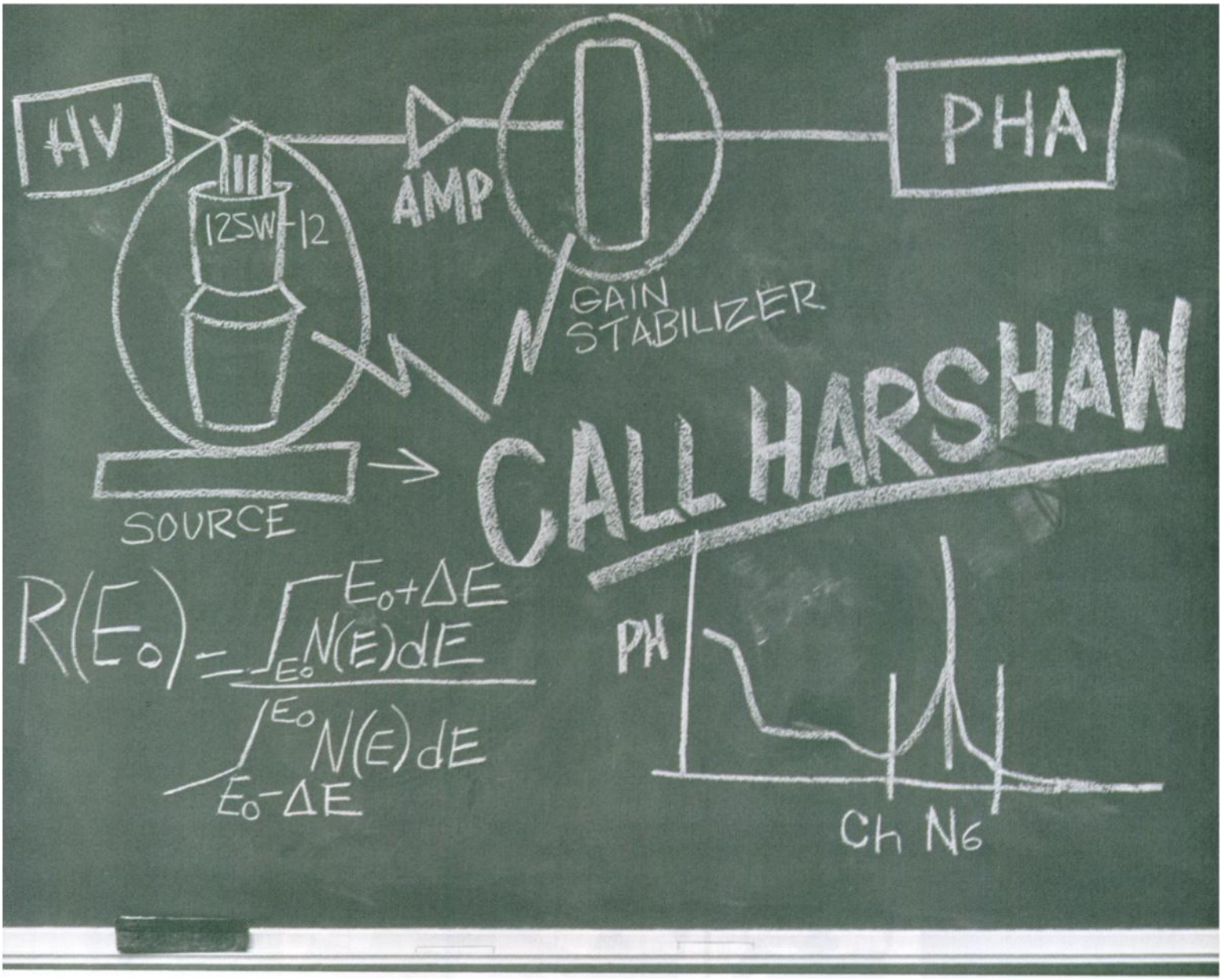
For further information about Osteoscan, please contact: Arnold Austin, Technical Manager, Professional Services Division, Procter & Gamble (513) 977-5547.

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

See following page for a brief summary of package insert.



When your plans call for a new scintillation detector design — call Harshaw.

Every Harshaw scintillation detector represents the solution to a specific application problem. Our innovative designs have helped to advance nuclear medical technology in many areas, including gamma cameras, computerized axial tomographic scanners, and positron emission tomography systems.

Harshaw's partnership with nuclear medicine spans 25 years. Our commitment to excellence in service, innovative design, and materials research is more important today than ever before.

Experienced physicists, engineers and design teams are constantly prepared to serve you. We can help you translate today's ideas into proven detectors for tomorrow's systems. Call us! The Harshaw Chemical Company, Crystal & Electronic Products, 6801 Cochran Road, Solon, Ohio 44139, (216) 248-7400.

HARSHAW

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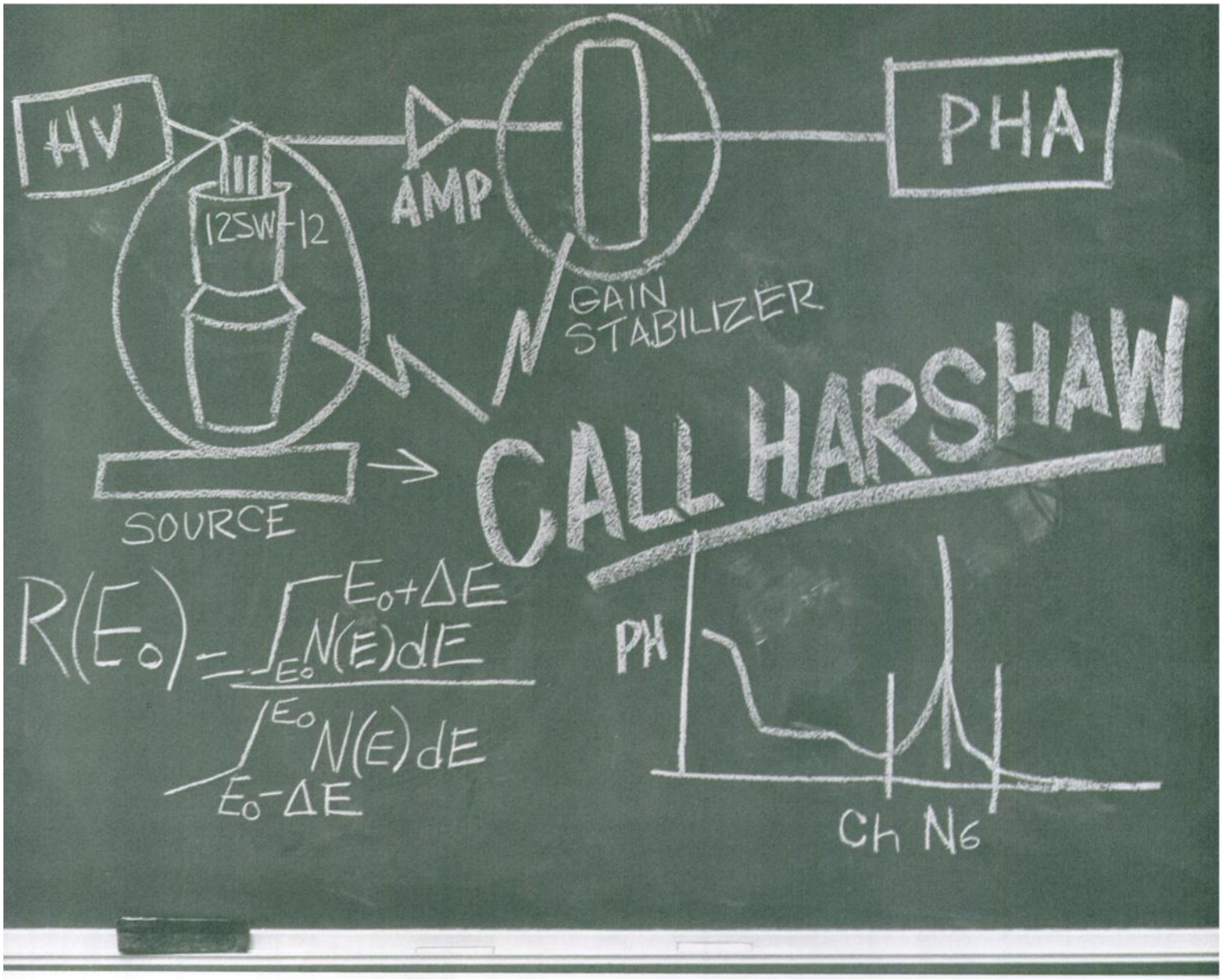

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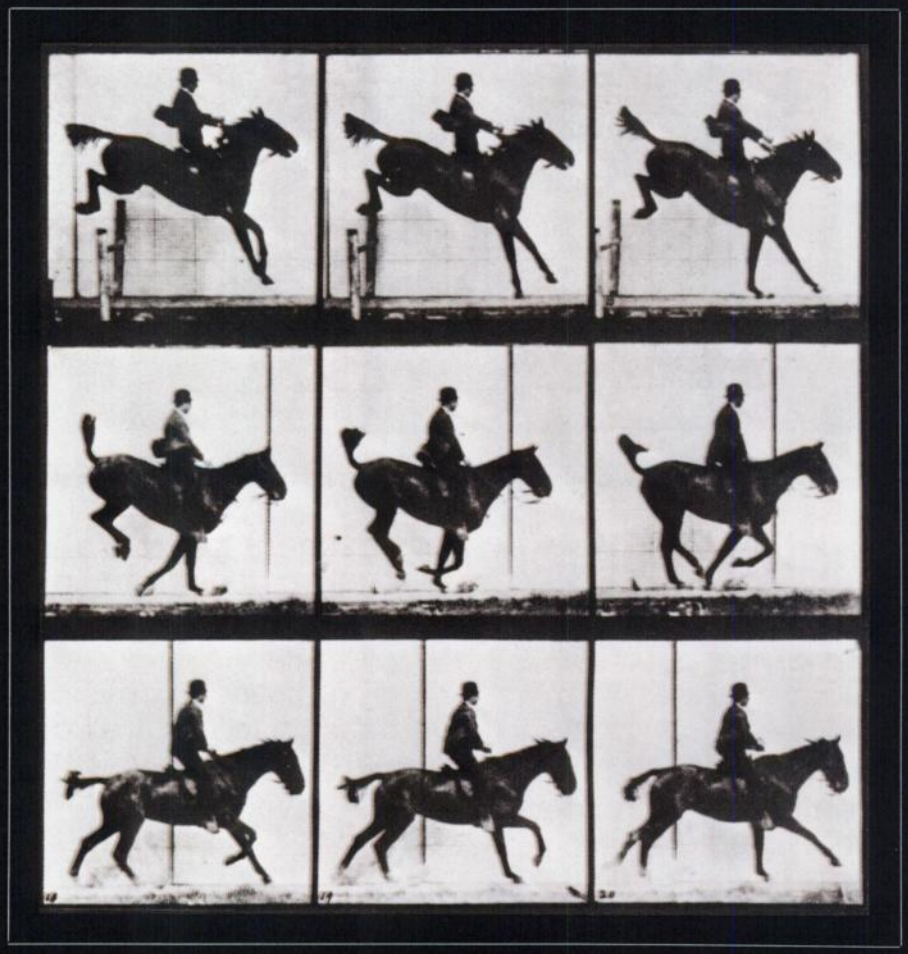
A CENTURY OF SYNCHRONIZED IMAGING... FROM EADWEARD MUYBRIDGE



TO DUNN INSTRUMENTS' MODEL 210

FOR NUCLEAR CARDIOLOGY

The Model 210 is the most sophisticated image synchronizer at any price for doing gated equilibrium blood pool studies.

Exactly one hundred years ago, San Francisco photographer-inventor Eadweard Muybridge, under the patronage of rail magnate Leland Stanford, Jr. (later Governor of California and founder of Stanford University) made his first experiments in synchronized motion photography. Undertaken originally to win a bet for Stanford (that a galloping horse at some point has all four feet off the ground), the work eventuated in Muybridge's classic *Animal Locomotion* studies, and laid the groundwork for many technical innovations in science photography and motion pictures.

The challenge of synchronizing physiological activity to a picture-recording apparatus is still with us. In the field of non-invasive nuclear heart imaging, the Dunn Instruments Model 210 Image Synchronizer is bringing modern digital microprocessor electronics to bear on the problem. Among its many features:

- It samples the EEG signal every two milliseconds and computes a continually updated average of the R-R and the R-T duration. Imaging can be governed according to either interval.
- If the T-wave is suppressed (as often happens when the heart is stressed), it can compute the T-wave occurrence from an accepted formula.
- This ability to track the R-T interval independently, or use the R-T formula, enables the Model 210 to produce the most accurate end-systolic image integrated over many hundreds of exposures. New, higher levels of accuracy are thereby introduced into assessment of left ventricular function and ejection fraction calculation.
- The Model 210's unique capability to follow the changing heart rate accurately and adjust the imaging cycle accordingly makes it invaluable for exercise-stress studies, which are the focus of promise in nuclear cardiology.
- Other features include the ability to detect and reject arrhythmic contractions which should be excluded from representative heartbeat imaging and analysis; the ability to synchronize any number of images from two on up; the ability to store and display or print out a wide range of data on the study in progress, and more.

Less is more

Best news of all: the Model 210 is compatible with any scintillation camera, any ECG source, any computer system, any multi-format imager. And you can add its sophisticated capabilities to your present equipment for an astonishingly low investment. (Later, if you wish, you can have the option of adding other components of the Dunn Instruments Heartimage System to make cine-motion heart studies on film.)

The Model 210 is making possible the very best nuclear heart imaging being done today. Find out how you can get into the picture-taking by writing or calling Dunn Instruments today.

P.O. Box 77172, San Francisco, CA 94107.
Telephone (415) 957-1600.

DUNN
INSTRUMENTS

Veterans Administration Hospital
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NUCLEAR MEDICINE RESIDENCY PROGRAM

Residency positions are available in an AMA approved two-year training program beginning in July 1978. New facilities include computerized nuclear cardiology and active automated radioimmunoassay laboratory. The combined University of Minnesota—VA Hospital program includes active *clinical*, as well as *research* opportunities.

An Equal Opportunity Employer

For further information, contact:

Rex B. Shafer, M.D., Chief, Nuclear Medicine Service (115), Veterans Administration Hospital, 54th St. & 48th Ave. So., Minneapolis, MN 55417

OR

Merle K. Loken, M.D., Ph.D., Director, Division of Nuclear Medicine, University of Minnesota Hospitals, Box 382, Mayo Memorial Building, Minneapolis, MN 55455

NUCLEAR MEDICINE TECHNOLOGIST

Veterans Administration Hospital has an immediate full-time opening for Nuclear Medicine Technologist in large teaching hospital, with emphasis on nuclear imaging, including cardiovascular studies. No radioimmunoassay procedures. Certification as Nuclear Medicine Technologist desirable. Applicant must possess bachelor's degree and two (2) years professional experience or three (3) years academic study, plus one (1) year technology course and two (2) years experience to qualify for a beginning salary of $15,090 per annum. Fringe benefits include regular pay increases, 13 days sick leave each year which may be accrued without limit, 13–26 days annual vacation, generous retirement plan, and low-cost life and health insurance. Must be a U.S. Citizen. For more information, contact:

Robert N. Class, M.D.
Chief, Nuclear Medicine Service
Veterans Administration Hospital
10701 East Boulevard
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PHONE: (216) 791-3800, ext. 7511 or 7512

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NUCLEAR MEDICINE PHYSICIAN

Immediate Opening

University of Illinois Medical Center, Section of Nuclear Medicine, Department of Radiology.

ABNM Certified or Eligible Clinical & Research Competency Sought. Send C.V. to:

Dan G. Pavel, M.D.
Nuclear Medicine Section
University of Illinois Medical Center
Chicago, Illinois 60612

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NUCLEAR MEDICINE RESIDENCIES

Position available July 1978 for first year resident in AMA approved program. Professional staff includes, radiopharmacist and physicist offering broad opportunity for clinical and research experience. Long Beach facility largest in VA with 1591 acute beds and extensive outpatient program. Equal apportunity employer. English language proficiency required (PL 95-201).

Kenneth P. Lyons, M. D. Chief
Nuclear Medicine Service (115)
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A reference is only as good as its source

Our sources have an excellent reputation for safety and convenience; they offer you references you can trust.

Sealed flood sources

Supplied as ^{57}Co (2 and 3mCi) and ^{133}Ba (0.5 and 1.0mCi) in two sizes, to check the uniformity and resolution of conventional and wide field-of-view gamma cameras, and for transmission imaging. The maximum acceptable variation in activity over the entire active area, is ±1% of the mean value. Each uniformly active plastic component is surrounded by inactive plastic and enclosed in an anodized aluminium casing. A shielded storage case is supplied with each source.

Anatomical marker sources

Spot sources are available as a 1mm bead of ^{57}Co or ^{133}Ba (10 and 100μCi). Features include a welded plastic capsule, point source geometry with a visible active bead, and colour coding for quick identification of nuclide and activity. They are packed in sets of three in shielded boxes; replacements are available separately.

Pen point tracers have a 1mm diameter bead of ^{57}Co (100μCi) sealed in the tip of a ball-point pen shaped holder with a brass shield for the active end.

Flexible sources are 50cm x 4mm diameter; ^{57}Co (100μCi) is dispersed in an inner core of active plastic, sealed in an inactive PVC tube, and closed by aluminium caps.

^{129}I rod sources for γ counters

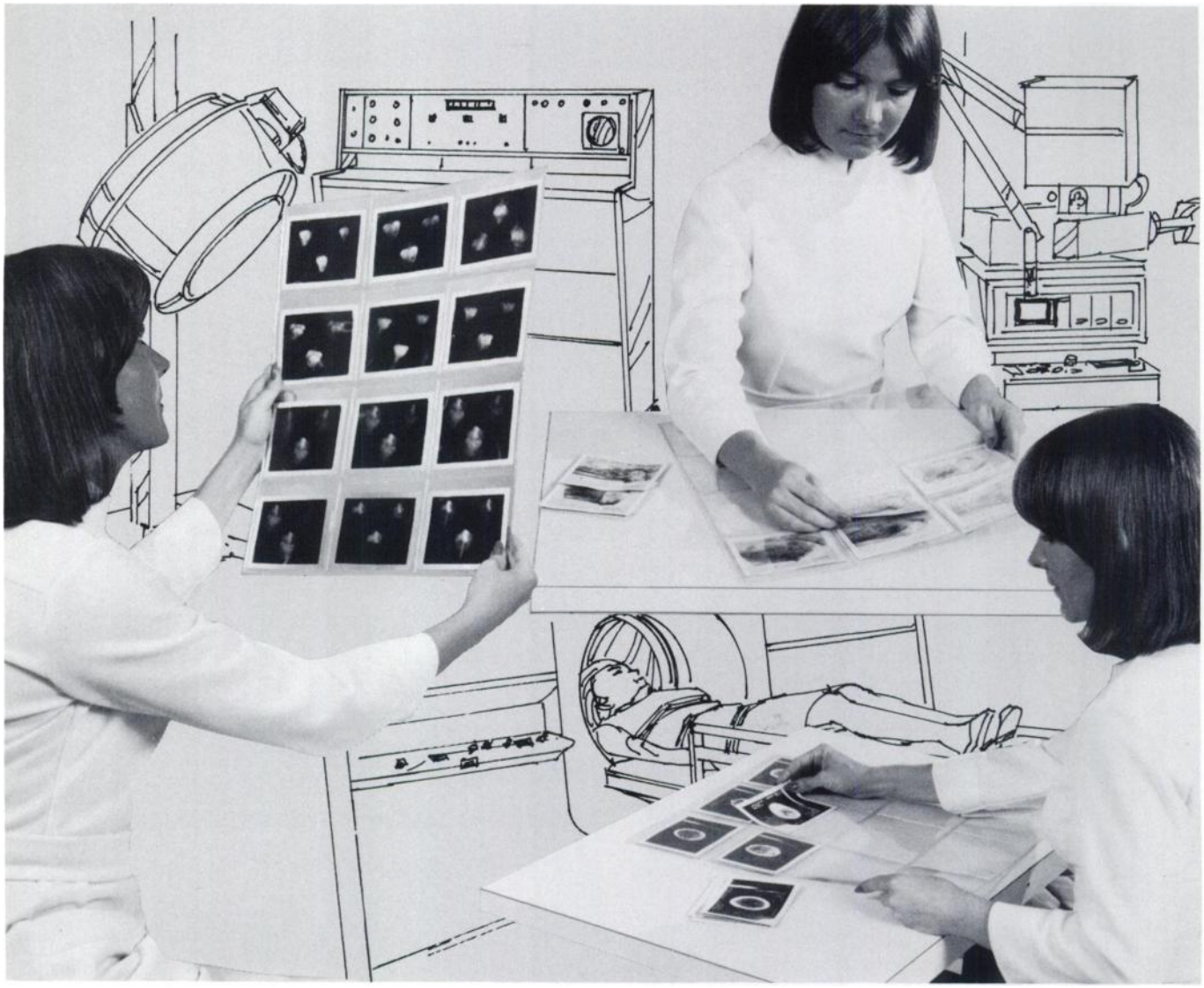
^{129}I (0.1μCi) gamma/X-ray spectrum is virtually identical to ^{125}I, and has a half-life of 1.57×10^7 years. Calibration in terms of ^{125}I is available. The length is 100mm, maximum diameter 15mm—suitable for most manual and automatic counters. Active material is sealed in a plastic capsule attached to a handling rod. Other nuclides ^{241}Am, ^{133}Ba, ^{57}Co, ^{60}Co, ^{137}Cs, ^{54}Mn, ^{22}Na, ^{75}Se, ^{123m}Te, ^{88}Y and mock ^{131}I.

The Radiochemical Centre Amersham

For further information please write or phone
The Radiochemical Centre Limited, Amersham, England. Telephone: 024-04-4444
In the Americas: Amersham Corporation, Illinois 60005. Telephone: 312-593-6300
In W. Germany: Amersham Buchler GmbH & Co KG, Braunschweig. Telephone: 05307-4693-97

0353

Millions for CT, Ultrasound, and Nuclear Medicine Systems! Why not a few cents for Viewing and Filing?



Use Radx's NEW plastic film holder to organize, view and file Polaroid/100 mm images

Many CT, Ultrasound and Nuclear Medicine imaging devices use a Polaroid format for image reproduction. These images are the end result of a very significant investment of both time and money by the medical community, yet they present an interesting problem in viewing and storage.

Radx has developed a pocketed (4 rows of 3 pockets per row) plastic film holder in a 14" × 17" format to provide you with a means of organizing, viewing and filing your Polaroids. The holder may be divided between rows to allow you to file 3, 6, 9, or 12 films per holder without wasting the remaining. The cost??? As little as 6¢ per image.

For maximum protection and the highest in optical clarity, specify Radx, the leader in quality film holders.

Other sizes available:

Polaroid	14 × 17 (pocketed)
105 mm	14 × 17
100 mm	14 × 17 (pocketed)
90 mm	14 × 17
70 mm	14 × 17
70 mm	$8\frac{1}{2} \times 12\frac{1}{2}$
35 mm	5 × 8

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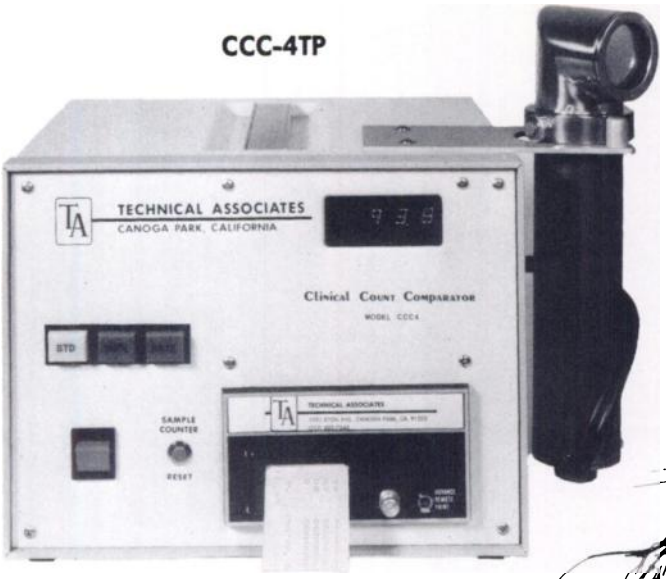
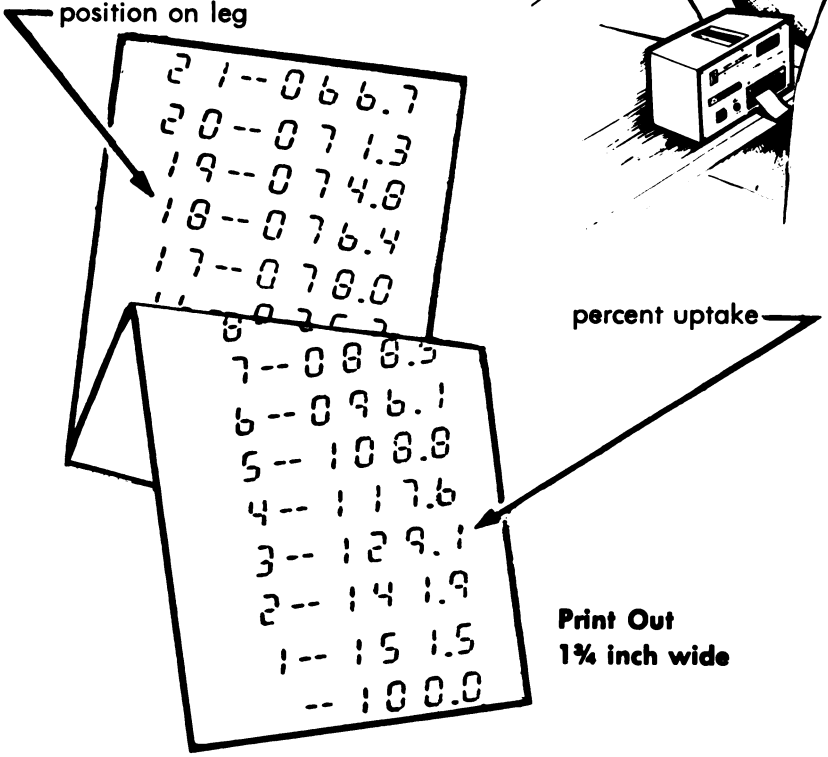
thrombosis

detection of DVT using I-125 fibrinogen

CCC-4TP





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- Printout **saves time**
- Bedside operation
- Right angle probe minimizes patient disturbance
- Controls are on probe
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- Versatile — settable for other isotopes

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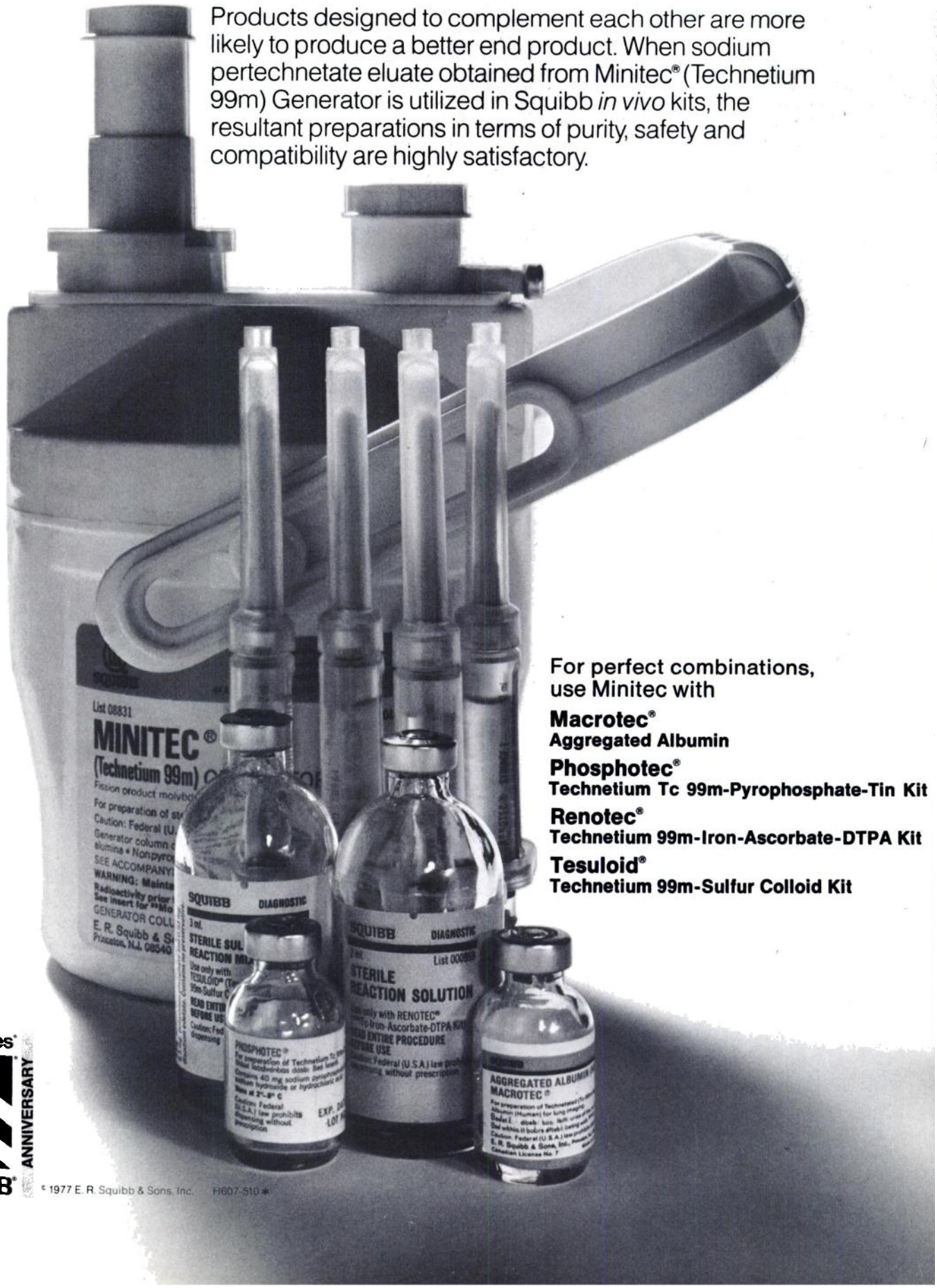

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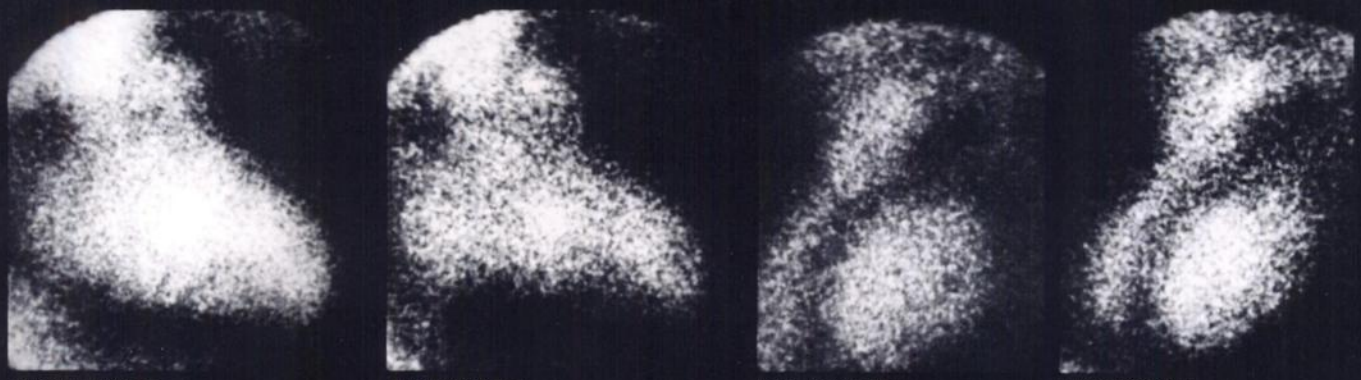
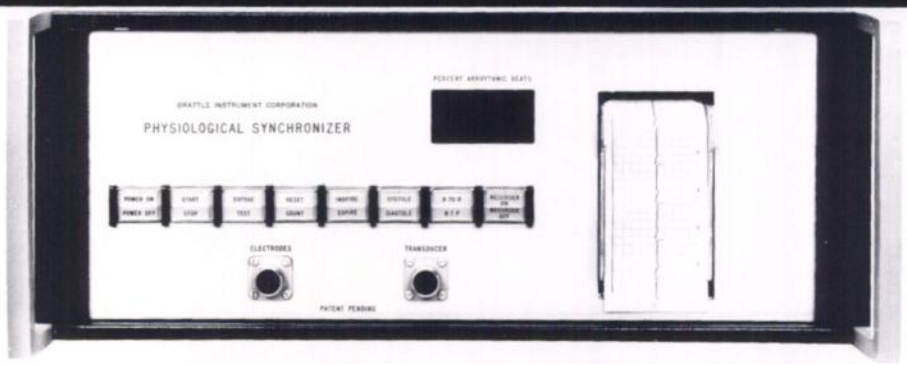


RAO, DIASTOLE | RAO, SYSTOLE | LAO, DIASTOLE | LAO, SYSTOLE

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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NUCLEAR CARDIOLOGY DATA WITH SCINTISTORE™

Time-compression data storage/retrieval system

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

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

"A new dimension in nuclear imaging"

Clinical utility is provided by these features:

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

Cardiac Gating

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

SEARLE

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