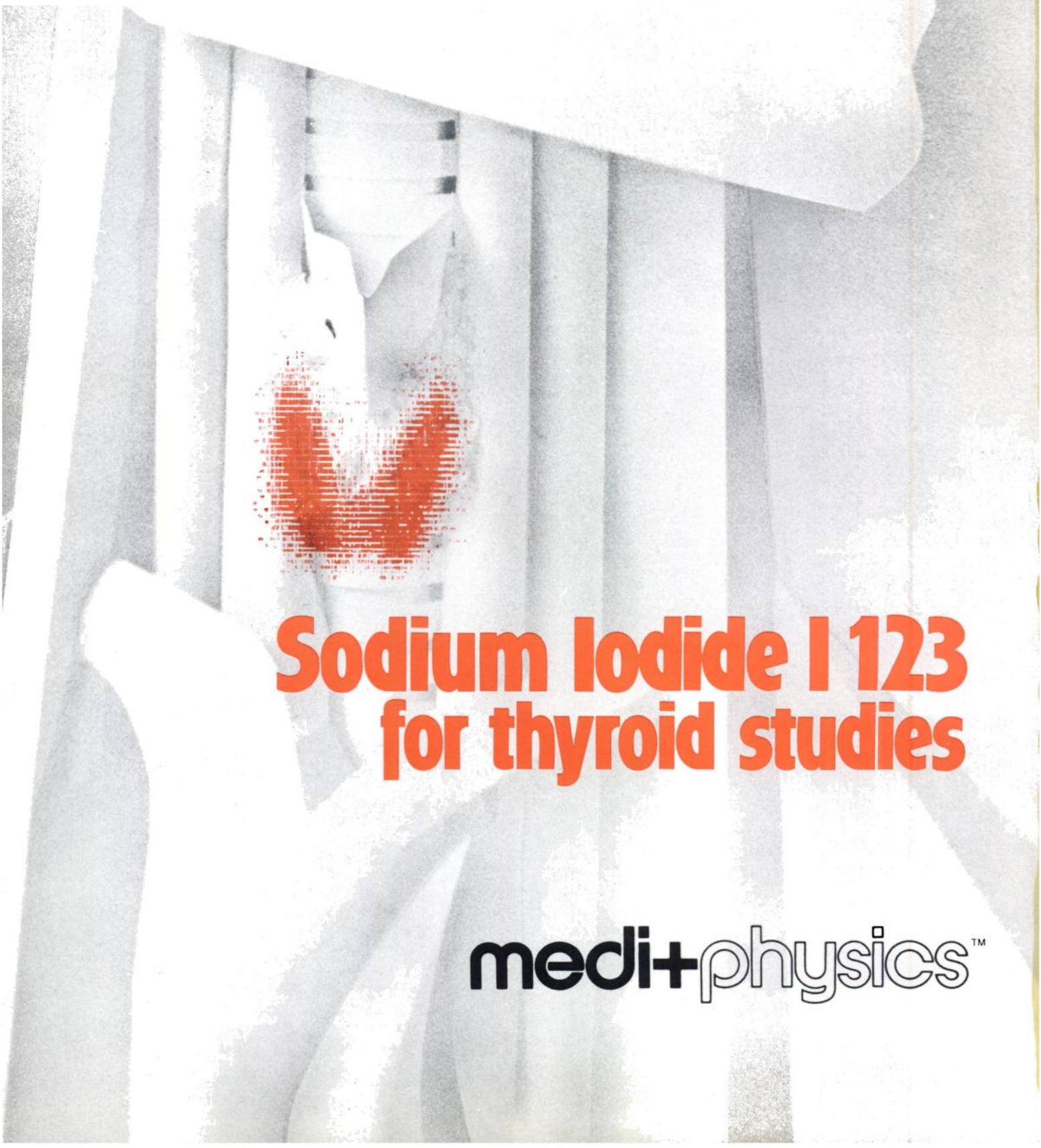
# Announcing...



# Sodium Iodide I 123 for thyroid studies

medi+physics™

# One of the safest decisions you'll ever have to make ... and as easy as 1,2,3.

Consider the benefits of MPI-Iodine-123 and your course of action becomes clear. Don't you and your patients deserve these important benefits?

**Greater patient safety because of reduced radiation absorbed dose.** Substitution of I 131 with MPI-Iodine-123 reduces the absorbed radiation dose more than 24 times to the thyroid gland. Compare.

| Maximal Thyroid Uptake % | Rads/100μCi MPI-Iodine-123 | Rads/100μCi I 131 |
|---|---|---|
| 5 | 1.05 | 26.0 |
| 15 | 3.19 | 80.0 |
| 25 | 5.36 | 130.0 |

**High counting statistics.** MPI-Iodine-123 159 keV gamma rays are detected more than 3 times as efficiently on Anger-type cameras as the 364 keV gamma rays emitted by I 131. You get a higher count rate with MPI-Iodine-123 than with equivalent amounts of I 131 on gamma cameras. Therefore, scintiphotos can be obtained more rapidly.

**Images that demonstrate true thyroid function.** MPI-Iodine-123 is organified by the thyroid so images obtained will depict total thyroid function – not the trapping mechanism alone.

**You save money** when MPI-Iodine-123 is delivered with other Medi-Physics products. Your Medi-Physics representative will be glad to show you how you can receive MPI-Iodine-123 without delivery charges in certain areas. For full information about MPI-Iodine-123, our reliable shipping procedures and other products you can receive along with MPI-Iodine-123, please use the appropriate toll-free number: Outside California 800-227-0483; Inside California 800-772-2446.

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

**SODIUM IODIDE I 123**
**CAPSULES AND SOLUTION FOR ORAL ADMINISTRATION**
**DIAGNOSTIC**

**DESCRIPTION:** Sodium iodide I 123 for diagnostic use is supplied as capsules and in vials as an aqueous solution for oral administration. At calibration time each capsule has an activity of 100 microcuries and each vial contains solution with a total specific concentration of 2 millicuries per ml at calibration time.

**INDICATIONS:** Sodium iodide I 123 is indicated for use in the diagnosis of thyroid function and imaging.

**CONTRAINDICATIONS:** None known.

**WARNINGS:** This radiopharmaceutical should not be administered to children or to patients who are pregnant or to nursing mothers unless the information to be gained outweighs the potential hazards. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, in women of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses. However, when studies of thyroid function are clinically indicated for members of these special population groups, use of I 123 would be preferable to the use of I 131 in order to minimize radiation dosage.

**PRECAUTIONS:** Sodium iodide I 123 as well as other radioactive drugs must by handled with care, and appropriate safety measures should be taken to minimize radiation exposure to the patient consistent with proper patient management. The prescribed I 123 dose should be administered as soon as practicable in order to minimize the fraction of radiation exposure due to relative increase of radionuclidic contaminants with time. The uptake of I 123 may be decreased by recent administration of iodinated contrast materials, by intake of stable iodine in any form, or by thyroid, anti-thyroid and certain other drugs. Accordingly, the patient should be questioned carefully regarding diet, previous medication, and procedures involving radiographic contrast media.

**ADVERSE REACTIONS:** There were nine adverse reactions reported in a series of 1,393 administrations. None of these were attributed to I 123. Five adverse reactions, consisting of gastric upset and vomiting, were attributed to a filler in the capsule. Two cases of headache and a case of nausea and weakness were attributed to the fasting state. One case of garlic odor in the breath was presumed to be attributable to the presence of tellurium.

**DOSAGE AND ADMINISTRATION:** The recommended oral dose range for diagnostic studies of thyroid function in the average adult patient (70 kg) is from 100 to 400 microcuries. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration. Concentration of I 123 in the thyroid gland should be measured in accordance with standardized procedures.

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

**HOW SUPPLIED:** Sodium iodide I 123 for oral administration is supplied in glass vials and in capsules.

# Pho/Gamma® L.E.M.

Low Energy Mobile Scintillation Camera

# Designed for a new environment

**MOBILITY AND FLEXIBILITY**
When movement of a critically ill patient is risky... but the diagnostic support of nuclear imaging is indicated, consider Searle's new Pho/Gamma L.E.M. Compact and maneuverable, the L.E.M. can easily be moved to the patient's environment in the emergency room, ICU or CCU where heart, lung, brain and renal studies can be done without compromising patient comfort and safety.

**PROVEN ELECTRONICS**
The L.E.M. has the same high-speed electronics as Searle's proven Pho/Gamma LFOV. It has six factory pre-set isotope windows for operator convenience. Automatic peaking assures remarkable reproducibility from study to study and from day to day. Window width and energy level can be set independently on 2 analyzers for dual-peak isotopes and special studies.

**INCREASED PATIENT THROUGHPUT**
New ratio correction circuitry allows wider window widths, shortens study times and increases patient throughput. Other electronic innovations include pulse-pair pile-up rejection and event buffering circuitry. As a result, the L.E.M. is capable of count rates up to 200,000 cps.

**CHOICE OF COLLIMATORS**
The L.E.M. offers a wide selection of lightweight collimators for optimum resolution under any conditions. With its converging collimation capabilities, it offers significant improvement in resolution of deep-seated structures. Renal studies, for example, yield images of such clarity that it is possible to obtain even oblique views of diagnostic quality.

**TAILORED FOR SPECIAL APPLICATIONS**
In heart imaging, the L.E.M. can be "gated" for systolic or diastolic studies, and the high count rate capability makes it suitable for advanced techniques such as dynamic cardiac imaging. The L.E.M. reveals midline brain lesions with unequalled clarity in static studies with the converging collimator. Parallel-hole and diverging collimation is used for large-area studies, such as lung imaging for pulmonary emboli.

IMAGING:
The Living Art

**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 L.E.M., including sample studies, call your Searle representative or write: Searle Radiographics, Inc., 2000 Nuclear Drive, Des Plaines, IL 60018. Telephone: (312) 298-6600.*

SEARLE

**Searle Radiographics, Inc.**
A Subsidiary of G. D. Searle & Co.

SR-537

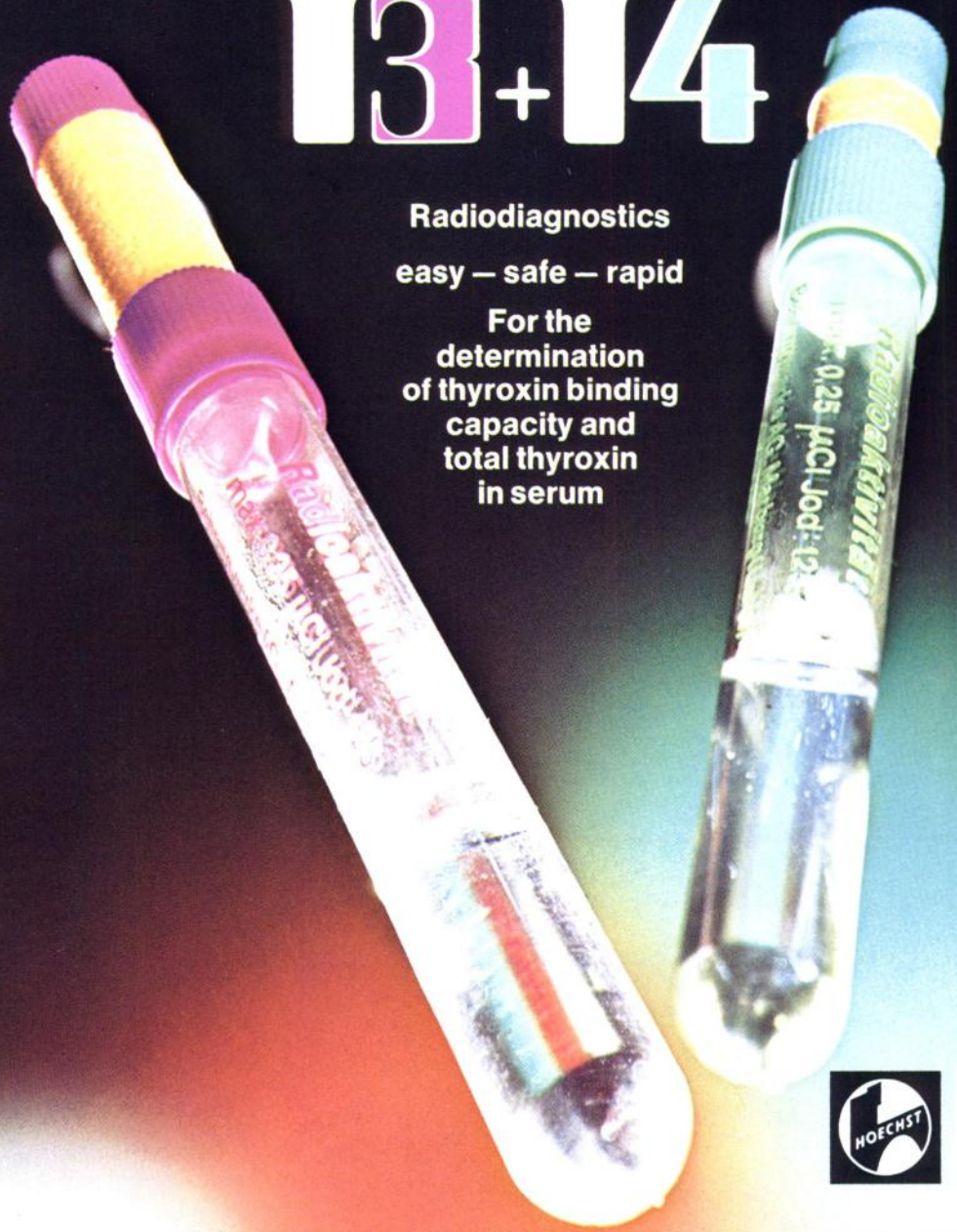
# Ultragnost®

# T3+T4

**Radiodiagnostics**

**easy – safe – rapid**

**For the determination of thyroxin binding capacity and total thyroxin in serum**



**Two time-saving tests for your lab.: pipette once, incubate for one hour, automatic phase separation, measure.**

**Contents T 3 kit:** 12 calibrating tubes with 3.5 ml thybon® (J-125)-solution each • total activity: 3 µCi J-125 • preservative: 0,02 % sodium azide • 12 adsorption tubes • 1 ml standard serum of defined TBG capacity •

**Contents T 4 kit:** 12 calibrating tubes with 3.3 ml TBG-T 4-(J-125)- solution each • total activity: 1 µCi J-125 • preservative: 0,02 % sodium azide • 12 adsorption tubes • 1 standard serum of defined T 4-concentration •

**Storage:** store protected from light in the refrigerator at +4° to +6° C
**Stability:** 8 weeks at proper storage. The expiry date is indicated on the package.

| | | | |
|---|---|---|---|
| Order No.: for T 3 | J 5113 1 package 12 tests | Order No.: for T 4 | J 5114 1 package 12 tests |

Lh 82159

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

# Film Star.

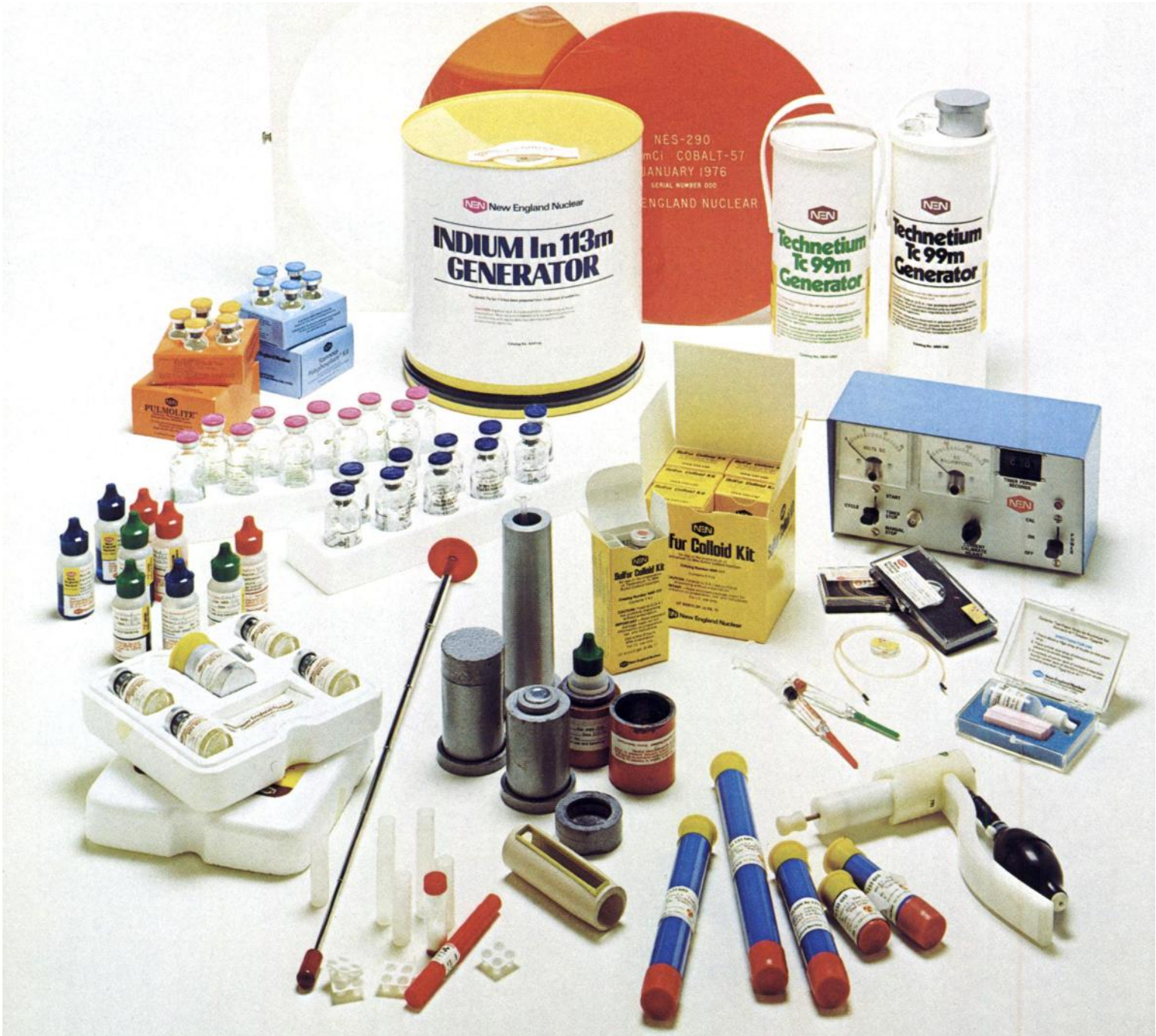
With Cameray II, the new 37-tube scintillation camera from Raytheon, you get what you'd expect from a star: Performance. Total System Performance. TSP.

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

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

RAYTHEON

# Think NEN first when it comes to nuclear medicine.



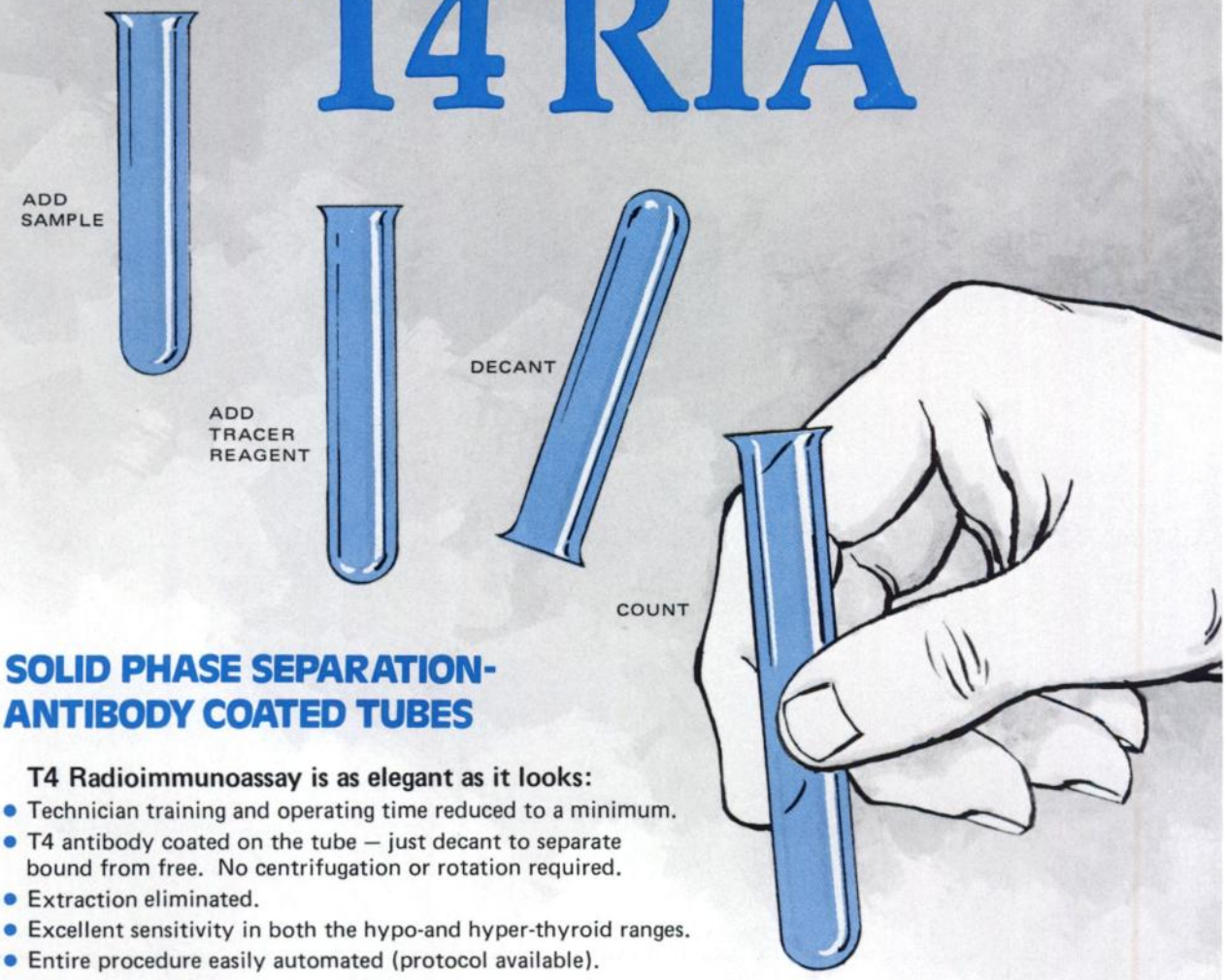


**New England Nuclear**
**Radiopharmaceutical Division**
Atomlight Place, North Billerica, Mass. 01862
Telephone 617-667-9531
Los Angeles: 213-321-3311 Miami: 305-592-0702

Canada: NEN Canada Ltd., Lachine, Quebec, H7T 3C9, Tel: 514-636-4971, Telex: 05-821808
Europe: NEN Chemicals GmbH, D-6072 Dreieichenhain, W. Germany, Daimlerstrasse 26, Postfach 1240, Tel: (06103) 85034.


PC
Control Gives You...
Flood Field
00 cps
r Resolution
Dallas
June
7-10
from
ohio-nuclear, inc.
A subsidiary of Technicare Corporation
U. S. — 6000 Cochran Road • Solon, Ohio 44139
Telephone (216) 248-8500
TWX 810 427 2696
U. K. — Ohio-Nuclear U.K. • Radix House • Central Trading Estate • Staines • Middlesex, England
Telephone Staines 51444
Worldwide — Siemens A. G. Medical Division • D8520 Erlangen •
Telephone 09131 84-1

# Clinical Assays GammaCoat™ T4 RIA




## SOLID PHASE SEPARATION- ANTIBODY COATED TUBES

**T4 Radioimmunoassay is as elegant as it looks:**

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

**Protocol:**

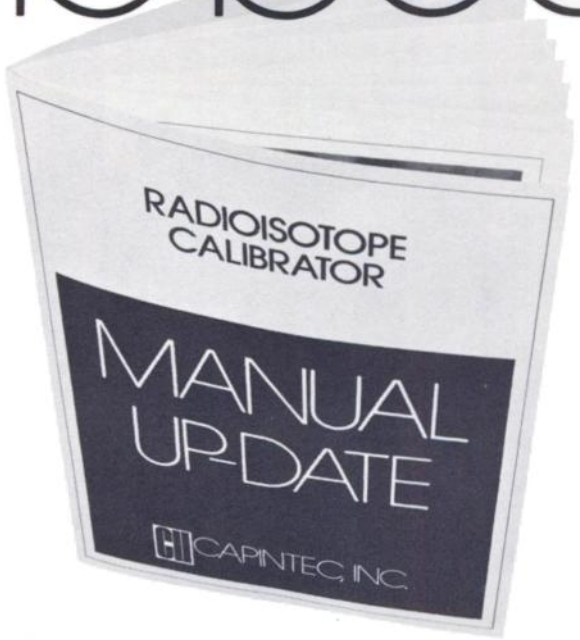
- **Add sample directly into GammaCoat tube.**
- **Add Tracer-Buffer Reagent.**
- **Incubate – for 45 minutes at room temperature.**
- **Decant or Aspirate.**
- **Count – the tube is counted for as little as 30 seconds.**

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

**Clinical Assays, Inc.**

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

# We wrote the book.




When you bought your Capintec Radioisotope Calibrator, you received a comprehensive owner's manual and a promise to keep you up-to-date.

And as complete as your manual is, it does require up-dating to make the most of the latest available reference standards and calibration techniques. That's what our new Manual Up-date is about.

For example, there are calibrations listed for over 90 radionuclides.

Even if you don't already have a Capintec Calibrator, there is information here of considerable value to you. Whether or not you are a Capintec owner, we will continue to keep you up-to-date. That's a promise.

Just complete this self-addressed card and the new Manual Up-date is yours, free.

Type of Calibrator:

- ☐ CRC-2N
- ☐ CRC-4
- ☐ CRC-6
- ☐ CRC-6A
- ☐ CRC-8
- ☐ CRC-10
- ☐ CRC-10N
- ☐ CRC-16
- ☐ Other _____

Serial No. _____

Name _____

Title _____

Director of Nuclear Medicine _____

Chief Nuclear Medicine Technologist _____

Hospital _____

Address _____

City/State/Zip _____

CAPINTEC, INC.

136 Summit Avenue • Montvale, New Jersey 07645 • (201) 391-3930

# Family planning.

**CRC-4 Compact Radioisotope Calibrator**

**CRC-2N Radioisotope Calibrator with Remote Detector**

**CRC-4M Compact Radioisotope Calibrator with Radiation Exposure Monitor**

**CRC-10M Push Button Auto-Ranging Radioisotope Calibrator with Radiation Exposure Monitor**

**CRC-10N Push Button Auto-Ranging Radioisotope Calibrator with Remote Detector**

**CRC-10 Push Button Auto-Ranging Radioisotope Calibrator**

FIRST CLASS
Permit No. 71
Montvale NJ 07645

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY

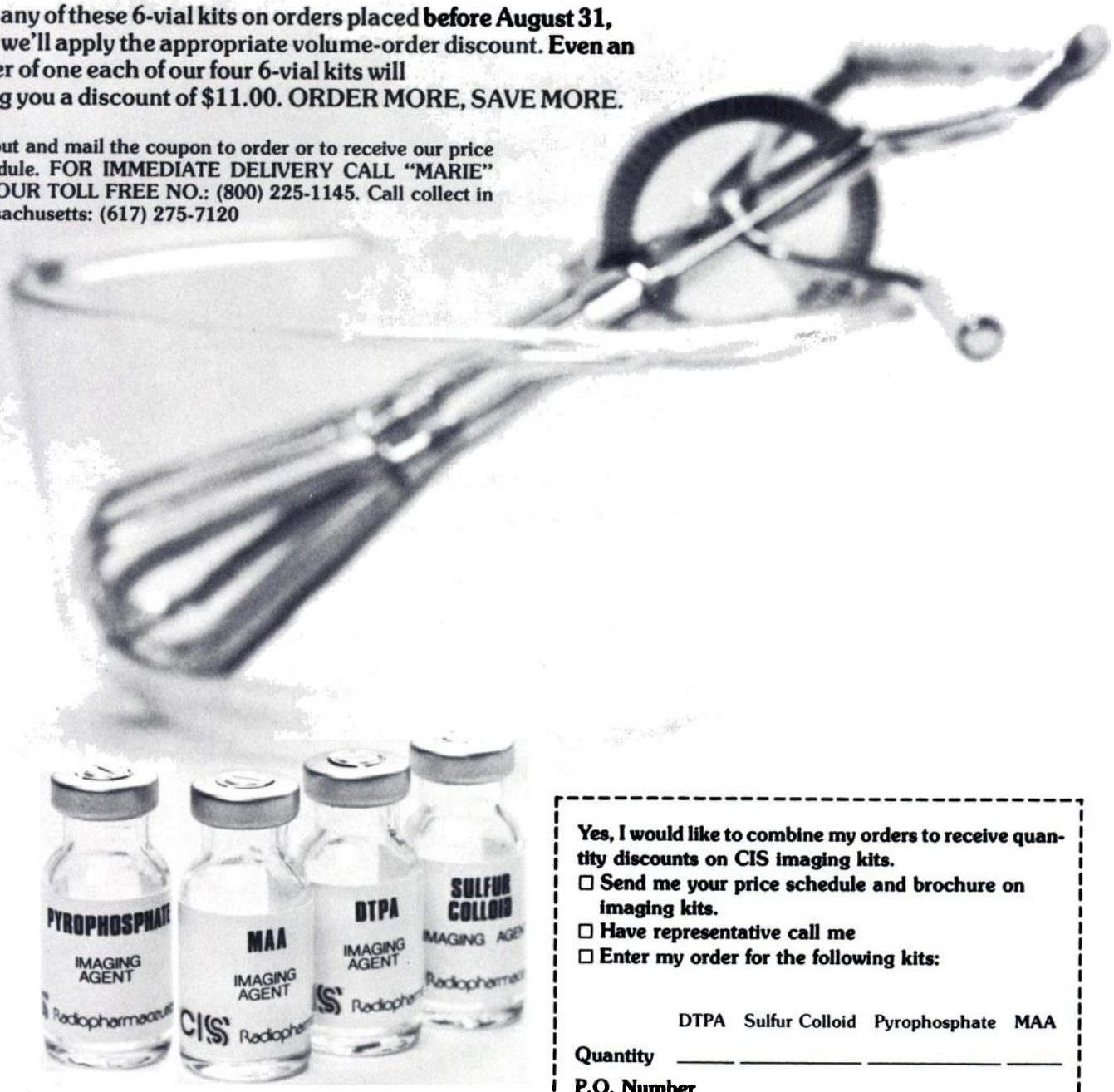
CAPINTEC, INC.
136 Summit Avenue
Montvale, New Jersey 07645

# MIX THEM
## for the Best Buy

**Take advantage of our quantity discount by combining any of our Tc99m radionuclide imaging kits (DTPA, Sulfur Colloid, Pyrophosphate or MAA) in** one order.

Mix any of these 6-vial kits on orders placed **before August 31,** and we'll apply the appropriate volume-order discount. **Even an** order of one each of our four 6-vial kits will bring you a discount of $11.00. ORDER MORE, SAVE MORE.

Fill out and mail the coupon to order or to receive our price schedule. FOR IMMEDIATE DELIVERY CALL "MARIE" ON OUR TOLL FREE NO.: (800) 225-1145. Call collect in Massachusetts: (617) 275-7120




Yes, I would like to combine my orders to receive quantity discounts on CIS imaging kits.

- ☐ Send me your price schedule and brochure on imaging kits.
- ☐ Have representative call me
- ☐ Enter my order for the following kits:

| | DTPA | Sulfur Colloid | Pyrophosphate | MAA |
|---|---|---|---|---|
| Quantity | | | | |

P.O. Number _____

Refer to price schedule dated Oct. 31, 1975

Name _____ Title _____

Organization _____

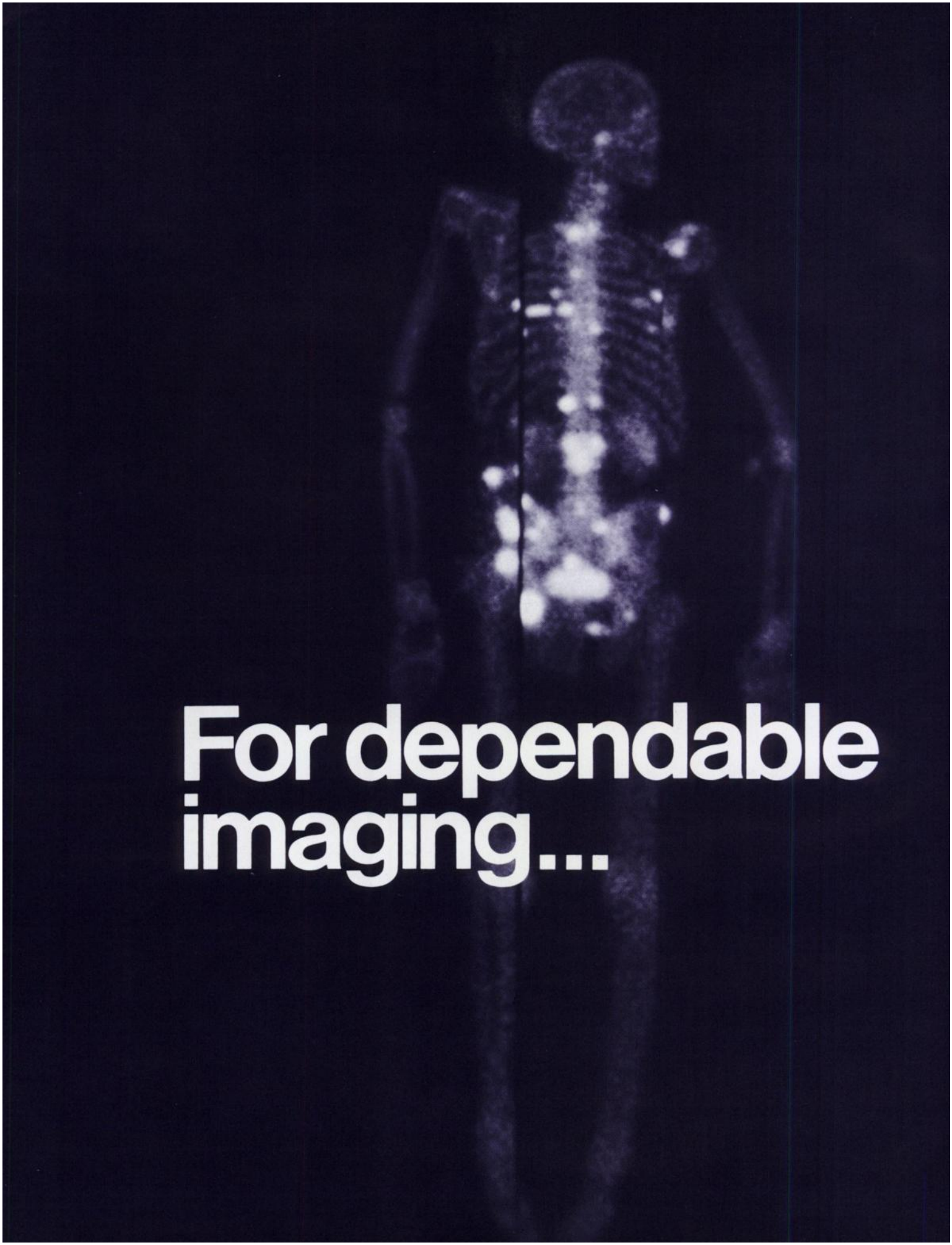
Address _____ Tel _____ Ext _____

City _____ State _____ Zip _____

CIS®

CIS Radiopharmaceuticals, Inc.

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


For dependable
imaging...

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

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

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

# the dependable diphosphonate

PROCTER & GAMBLE

# OSTEOSCAN®

(5.9 MG DISODIUM ETIDRONATE, 0.16 MG STANNOUS CHLORIDE)

SKELETAL IMAGING AGENT

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

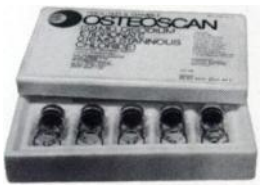
See following page for a brief summary of package insert.

PROCTER & GAMBLE

# OSTEOSCAN®

(5.9 MG DISODIUM ETIDRONATE, 0.16 MG STANNOUS CHLORIDE)

SKELETAL IMAGING AGENT




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

**DESCRIPTION**

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

**ACTIONS (CLINICAL PHARMACOLOGY)**

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

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

**INDICATIONS**

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

**CONTRAINDICATIONS**

None.

**WARNINGS**

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

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

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

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

**PRECAUTIONS**

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

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

**ADVERSE REACTIONS**

None.

**DOSAGE AND ADMINISTRATION**

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

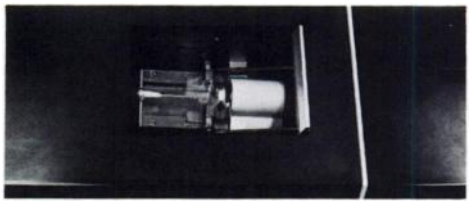
**The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.**

# CintiChem™

Automated $^{99m}$Tc Unit-Dose Delivery System

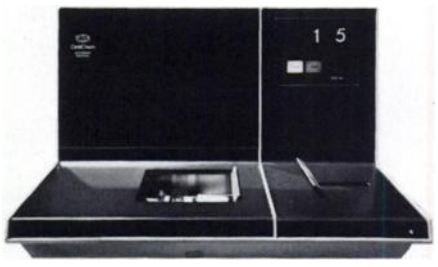
## Systematically safer.

Organ-specific agents for optimum imaging of brain, kidney, bone and lung, and for glomerular filtration rate studies, are provided in kits containing 10 unit-dose vials. Each kit is single step, requiring only addition of technetium to produce the scanning agent.



Preselected amount of $^{99m}$Tc activity is automatically dispensed into vial, then diluted with saline to 1.3 ml. Entire dispense/dilute cycle is automatic and shielded, and is completed within 75 seconds.

Unit-dose vial is entered only once for technetium delivery, once for agent withdrawal. Shielded syringe assembly automatically centers disposable syringe with vial. A 1.0-ml patient injection is reproducibly withdrawn into syringe.




Dispenser fully automates isotope measurement, reagent transfer and dose calibration. Eliminates time-consuming manual steps, computations and potential radiation exposure.

UNION CARBIDE

# Delivering the future in imaging agents:

The CINTICHEM System, a total unit-dose $^{99m}$Tc delivery system...

- ☐ Simplifies radionuclide delivery
- ☐ Improves dosage accuracy and reproducibility
- ☐ Reduces radiation burden
- ☐ Permits precise, contaminant-free administration of agents
- ☐ Reduces labor and cost per test
- ☐ Simplifies record keeping and calculations

The CINTICHEM System includes: an automated technetium dispenser, a high-yield molybdenum 99/technetium 99m generator, organ-specific kits and a unique unit-dose shielded syringe assembly. All integrated for the preparation of sterile, pyrogen-free radiodiagnostic agents—precisely, reliably and with greatly reduced radiation burden to the user.

The CINTICHEM Dispenser automatically delivers a preselected amount of $^{99m}$Tc activity ($TcO_4^-$ in saline) into a single-use unit-dose vial. Vial contents are transferred to a disposable syringe via a shielded syringe assembly that permits reproducible withdrawal of a 1.0-ml patient dose.

The CINTICHEM Generator is an optimized, advanced-technology $^{99m}$Tc generator. It offers exceptionally high yields and is available in 500-, 1,000-, 1,500- and 2,000-mCi sizes. (Sodium pertechnetate $^{99m}$Tc in isotonic saline.)

A series of organ-specific CINTICHEM Agents incorporates optimum current formulations for organ specificity. Each kit contains 10 unit-dose vials. (Kits containing five multidose vials are also available.) Each kit is single step. Requires only the addition of technetium to produce the imaging agent. And the CINTICHEM Dispenser performs this step automatically.

Kits currently available include: DTPA (diethylene triamine pentaacetic acid [calcium trisodium salt]). For brain and kidney imaging, and glomerular filtration rate (GFR) studies. Unit dose contains 3.3 mg $CaNa_3$ DTPA, 0.17 mg $SnCl_2$-$2H_20$, pH adjusted to 4 with HCl. HEDSPA (1-hydroxy-ethylidene-1,1 disodium phosphonate). For bone imaging. Unit dose contains 0.75 mg HEDSPA, 0.08 mg stannous ion as tartrate, pH adjusted to 4 with HCl. MAA (macroaggregated albumin). For lung perfusion studies. Unit dose contains 0.11 mg MAA (0.3-1.3 $\times 10^6$ particles), 0.09 mg stannous tartrate, isotonic saline. HCl and NaOH may be present for pH adjustment. Additional radiopharmaceuticals will also be offered.

Let us send detailed data on the CINTICHEM System. Simply return the coupon and we'll come back with a glimpse into the future.

**CintiChem™**
**Systematically safer.**

Union Carbide Corporation
Clinical Diagnostics
401 Theodore Fremd Avenue
Rye, New York 10580

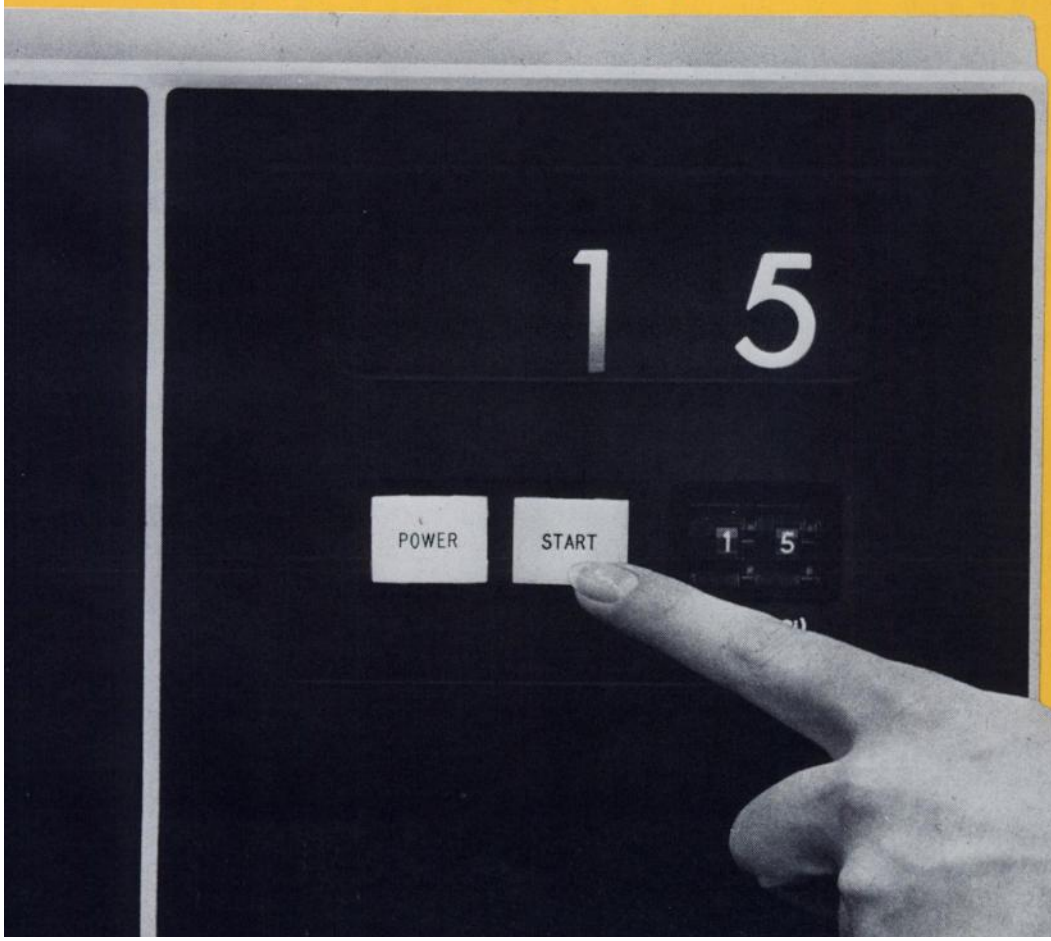
- ☐ Send brochure on the CINTICHEM System.
- ☐ Have field representative call for an appointment.

Name _____
(Please print)
Title _____
Institution _____
Address _____
City _____ State _____ Zip _____
Telephone _____
(Area code and number)

NM5

UNION CARBIDE
**Clinical Diagnostics**

# Unit-dose.




# Nothing could be simpler: NEN's Blood Pool Imaging Agent

Just place the vial on the elution needle.

The sterile, pyrogen-free Indium 113m is automatically drawn from the generator.

The self-contained 2-liter reservoir of 0.05N HCl provides enough eluant for the life of the generator.

Quality assured—pretested for sterility, pyrogenicity, Tin Sn 113 breakthrough, zirconium ion and flow characteristics.

Each generator contains a 0.22 micron final filter.

**Indications:** Ionic Indium Chloride In 113m eluted from the NEN Indium In 113m Generator may be used directly as a blood pool imaging agent or as the radioactive label in the synthesis of other Indium In 113m radiopharmaceuticals.

**Contraindications:** Radiopharmaceuticals containing Indium In 113m should not be used in patients with a history of allergy to such agents.

**Warnings:** Indium Chloride In 113m should not be administered to children or to patients who are pregnant or to nursing mothers unless the information to be gained outweighs the potential hazards. Ideally, examinations using radiopharmaceutical drug products, especially those elective in nature of a woman of childbearing capability should be performed during the first few (approximately ten) days following the onset of menses.

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

**Precautions:** In order to assure the sterility and non-pyrogenicity of the eluate, the Generator must be eluted according to the operating instructions. It is essential that the user adhere to strict aseptic procedure. The eluate should be crystal clear and any eluate appearing hazy or containing particulate material should not be used. Testing of the eluate for tin breakthrough and zirconium breakthrough should be performed after each elution. Periodic recertification of the sterility of the eluate is recommended beginning two (2) weeks after the calibration date.

Indium Chloride In 113m is eluted in acid solution. Therefore, slow intravenous injection over at least 30 seconds of no more than 1.0cc is advised. Indium In 113m remains in solution at a pH below 3.0; raising the pH above that level results in the formation of a colloidal hydroxide.

Each patient dose should be determined by a suitable radioactivity calibration system immediately prior to administration.

**Adverse Reactions:** To date, no adverse reactions based on the use of this agent have been reported. However, several reports have been published documenting the occurrence of transient hypotensive episodes after prolonged patient recumbency for placental imaging. This is probably due to physiologic compression of the inferior vena cava by pelvic contents and has been completely reversible spontaneously without the necessity for pharmacologic intervention.

**Dosage and Administration:** Ionic Indium Chloride In 113m is administered intravenously for blood pool imaging. The suggested dose for the average 70 kg patient is 0.5-4.0mCi and imaging can be performed within minutes after injection.

Indium Chloride In 113m can also be incorporated into radiopharmaceuticals according to procedures determined and approved by each user institution to assure sterility and non-pyrogenicity of the final product.

**How Supplied:** The NEN Indium In 113m Generator is available with column loadings of 5mCi to 100mCi of Tin Sn 113 on the day of calibration, yielding sterile, non-pyrogenic In 113m as the chloride upon elution. Expiration date is 6 months after calibration.

**New England Nuclear**
**Radiopharmaceutical Division**
Atomlight Place, North Billerica, Mass. 01862
Telephone 617-667-9531
Los Angeles: 213-321-3311 Miami: 305-592-0702

Canada: NEN Canada Ltd., Lachine, Quebec, H7T 3C9, Tel: 514-636-4971, Telex: 05-821808
Europe: NEN Chemicals GmbH, D-6072 Dreieichenhain, W. Germany, Daimlerstrasse 23, Postfach 1240. Tel: (06103) 85034.

# State of the art in gamma camera hard copy recording.

## Multi-Imager 1

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

## Multi-Imager 4

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

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

## #MATRIX INSTRUMENTS

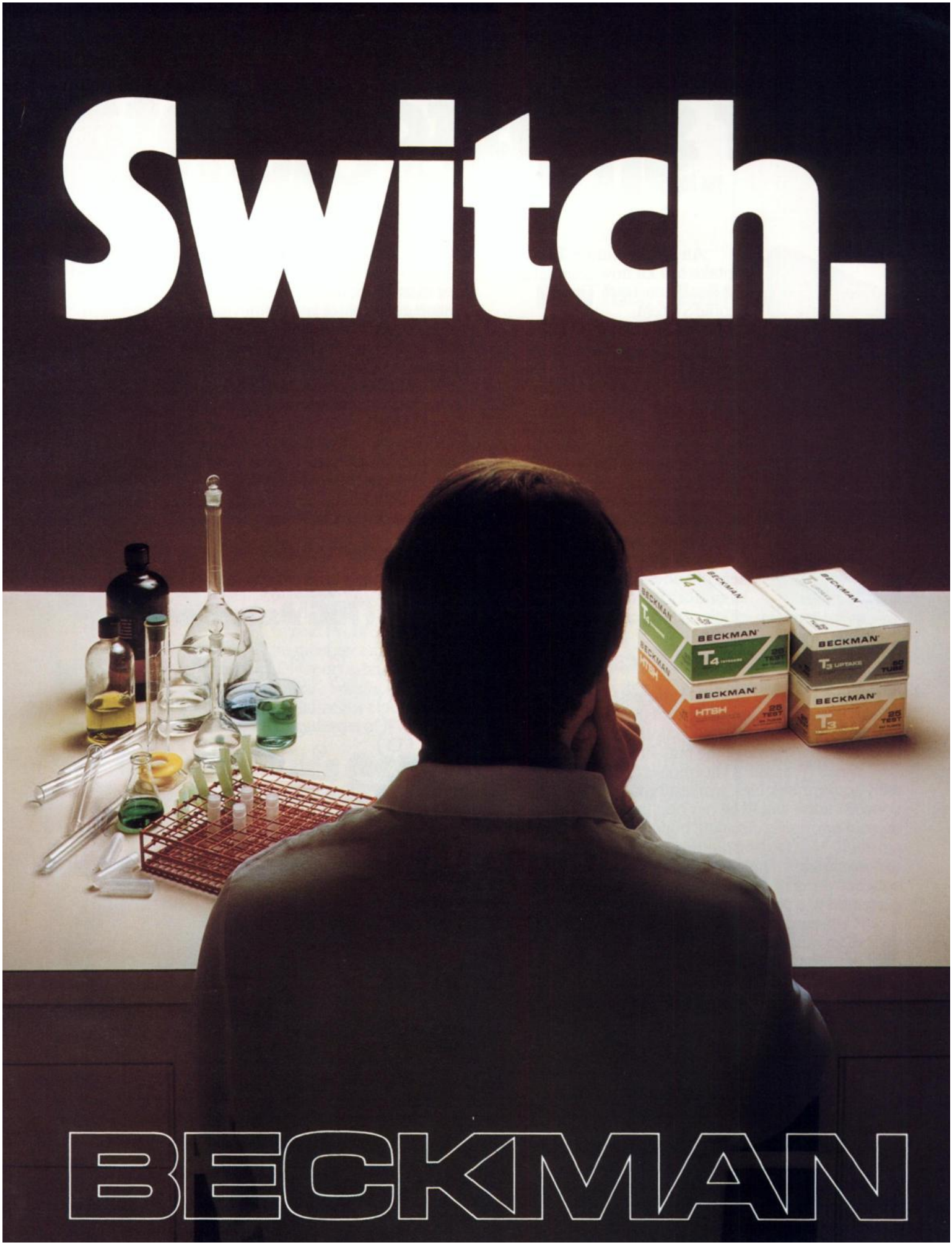
1 Ruckman Rd.
Closter, N.J. 07624
**(201) 767-1750**

**Mail coupon to receive sample clinical studies.**

Matrix Instruments, Inc., 1 Ruckman Rd., Closter, N.J. 07624
Please send Multi-Imager System literature and sample studies.

Name
Hospital
Address
State
Phone
Title
Dept.
City
Zip

# Switch.




BECKMAN

3. Standardized protocols decrease the possibility of error while they improve speed and minimize technician time.
4. Double antibody separation (the method of reference) eliminates non-specific sources of error associated with most CPB techniques.
5. System prices are very competitive, and you get standardized reagents and protocols from one quality manufacturer.

Taken together, these five benefits of the Beckman Total Thyroid Profile System can result in a major improvement in laboratory cost-effectiveness.

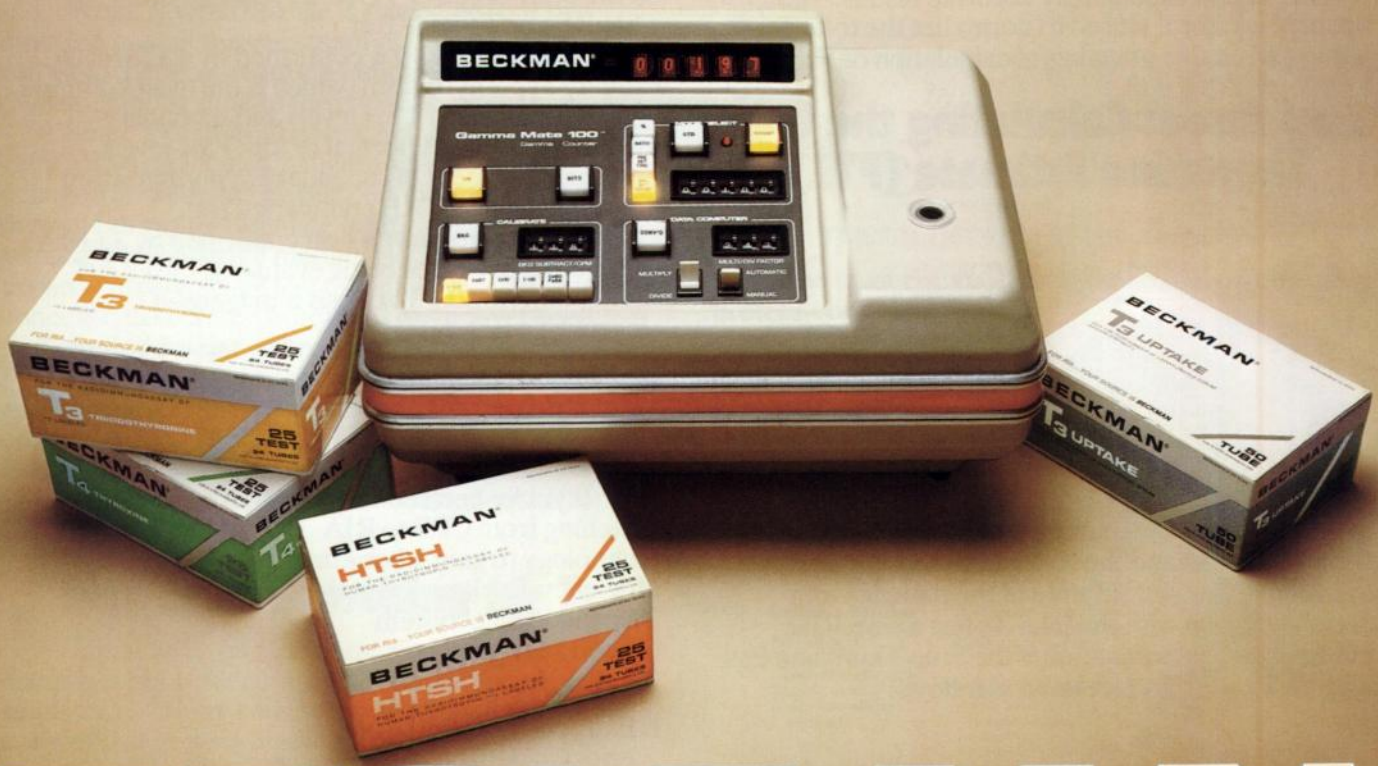
In addition, of course, you get the back-up and technical support capabilities of an internationally recognized leader in nuclear instrumentation and radioimmunoassay reagents and supplies.

At Beckman we're committed to *total* RIA capability. So if you've considered switching, now *is* the time.

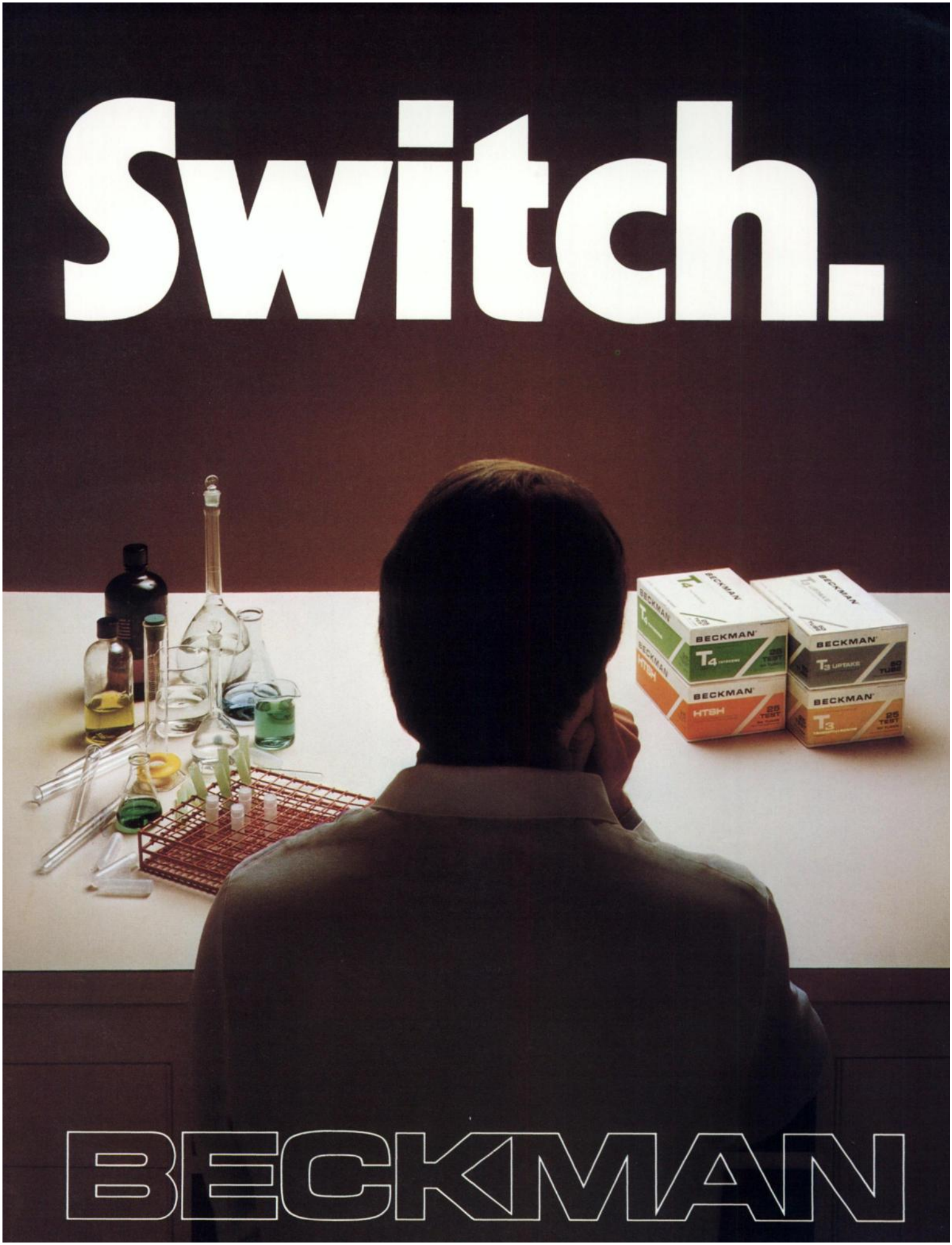
Contact your Beckman representative for the full details on our Total Thyroid Profile Capability. You'll receive at no charge a complete technical manual on thyroid profiling. To get yours, write Scientific Instruments Division, Beckman Instruments, Inc., P.O. Box C-19600, Irvine, CA 92713.

For RIA, your source is Beckman.

**Beckman®**




BECKMAN


Switch.
BECKMAN
T4
BECKMAN
T3 UPTAKE
BECKMAN
HTSH
BECKMAN
T3
BECKMAN

# Four steps for a total

1

An ultra accurate $T_3$-Uptake test kit now completes the Beckman Total Thyroid Profile System.

That means any lab doing thyroid batteries can simplify ordering, stocking, and procedures for $T_4$-RIA, $T_3$-Uptake, $T_3$-RIA, and TSH-RIA. By switching to the one system of integrated tests that makes them all fast, accurate, and reliable. All Beckman kits are optimized to be as time-, temperature-, and protein-independent as technically feasible. And here's how the state-of-the-art system can help the physician and the laboratory to confirmed, efficient diagnoses.

## Thyroid Diagnosis Encapsulated

When thyroid disease is suspected, our first question is what measurement of thyroid hormones will yield the most accurate indication of the thyrometabolic state of the patient?

Since free thyroid hormones are the physiologically active molecules, a measurement of their concentration would be our best indicator. But most thyroid hormones circulate bound to serum proteins, particularly thyroxine binding globulin (TBG). And, unfortunately a single test that measures the absolute concentration of free hormones has not yet been perfected to a point where it is practical.

Consequently, a combination of tests is used to give an answer that correlates with the free hormone concentration. That answer, called Free Thyroxine Estimate(FTE), is our initial diagnostic goal.

We begin to reach it by measurement of Total Circulating $T_4$.

## Step one: Screening for $T_4$

Tetraiodothyronine or thyroxine ($T_4$) has been estimated since the early 1950's. In the early 1960's, Ekins and Murphy and Pattee developed the competitive protein binding (CPB) technique for measuring $T_4$. About 1970, specific antiserum was made for both $T_3$ and $T_4$ to make radioimmunoassay of these hormones possible.

Today, your Beckman $T_4$-RIA test kit eliminates the extraction step in the CPB procedure. In addition to saving the usually large amounts of time required for extraction, the Beckman $T_4$ kit avoids any inaccuracies associated with variable extraction efficiencies, in which 15-20% of the $T_4$ in the sample is lost. And our 20$\mu$l sample volume is convenient for pediatric samples.

Whatever test your lab uses currently, CPB-$T_4$ or RIA-$T_4$ both measure the same quantity, *total circulating* $T_4$ concentration. Consequently, it is then necessary to refine that total concentration into two categories: 1) Protein bound $T_4$ and 2) Free $T_4$.

In order to estimate "free $T_4$" concentrations, the total $T_4$ bound to proteins (TBG-$T_4$) must be "corrected" for TBG changes.

## Step two: Correcting for TBG Changes via $T_3$-Uptake (TBG Assessment)

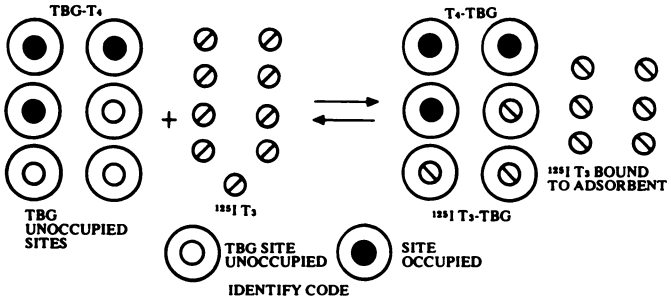



FIGURE 1 THEORY OF $T_3$-UPTAKE ($T_3U$)

The most common things that affect the binding protein concentration and capacity are pregnancy or birth control pills. Other causes of binding protein changes are summarized in Table I.

2

TABLE I
CAUSES FOR INCREASE OR DECREASE IN TBG-BINDING CAPACITY

| Protein | Increase | Decrease |
|---|---|---|
| TBG | Estrogens, including oral contraceptives | Androgens, including anabolic steroids |
| | Pregnancy | Active acromegaly |
| | Newborn infant (due to maternal estrogen) | |
| | Hepatic disease | Hepatic disease |
| | Acute intermittent porphyria | Acute illness or surgical stress |
| | | Prednisone |
| | | Nephrotic syndrome |
| | Perphenazine (Trilafon) | Diphenylhydantoin (Dilantin) |
| | Hypothyroidism | Hyperthyroidism |
| | Hereditary | Hereditary |

# thyroid profile.

These changes in binding proteins are most commonly measured by a $T_3$-Uptake test ($T_3U$). The $T_3$-Uptake test measures the number of sites on the TBG that are not bound by $T_3$ and $T_4$ (Figure 1). This test, which uses $T_3$ only as a reagent, should not be confused with the $T_3$ test by RIA which measures the total circulating $T_3$.

Both $T_3$-RIA and $T_3$-Uptake test kits are available from Beckman as part of the Total Thyroid Profile System. The most recently developed Beckman test kit, $T_3$-Uptake, has been refined to give exceedingly accurate results. That accuracy, in turn, is used to normalize the total $T_4$ value and enable meaningful calculation of FTE.

## Step three: Calculating the Free Thyroxine Estimate (FTE)

TABLE II*
DIAGNOSTIC ACCURACY OF FREE $T_4$ ESTIMATE VERSUS TOTAL $T_4$

| | % Diagnostic Accuracy | |
|---|---|---|
| | Free $T_4$ Estimate | Total $T_4$ |
| Hyperthyroid (High Free Hormone) | 100% | 97.8% |
| Euthyroid (Normal Free Hormone) | 95.6% | 75.6% |
| Hypothyroid (Low Free Hormone) | 97.3% | 91.9% |

Table II shows that by combining the results of the total $T_4$ test and the $T_3$-Uptake test it is possible to evaluate the thyroid state of the patient more accurately than with the total $T_4$ test alone. This mathematical combination is the Free Thyroxine Estimate (FTE) and is calculated as follows:

FTE or Free Thyroxine Index = Total $T_4$ X% $T_3$-Uptake

*From *Laboratory Medicine*, Vol. 4 No. 5, May 1973 p. 20.

## Step four: Confirming the Diagnostic Indications of the FTE

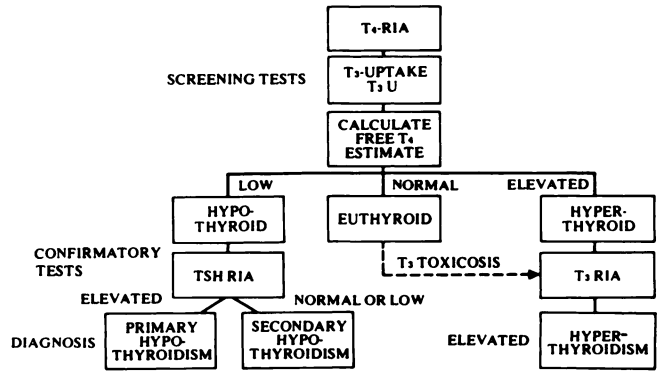



FIGURE 2: BECKMAN TOTAL PROCEDURE FOR THYROID PROFILE

As Figure 2 indicates, you can confirm low, normal, or elevated thyroid conditions by proceeding on the basis of your FTE result to a Beckman TSH-RIA or $T_3$-RIA Test.

*Hypothyroidism* is confirmed by a TSH-RIA. Primary hypothyroidism (which is the most common type) has increased TSH levels and secondary hypothyroidism has normal or low TSH levels. Further assessment of secondary hypothyroidism may be done by a TRH stimulation test.

*Hyperthyroidism* is best confirmed by $T_3$-RIA, with borderline cases being evaluated by a TRH stimulation test. $T_3$ Toxicosis is diagnosed by an elevated $T_3$-RIA test.

## Notes on Switching from CPB $T_4$ to RIA $T_4$

If you've been considering switching from CPB to RIA technology to gain laboratory efficiency, Beckman's Total Thyroid Profile System offers 5 very good reasons for changing over now:

1. Extraction (a source of error) of patient samples is eliminated.
2. Increased sensitivity allows for more definitive diagnostic information especially in borderline cases

3. Standardized protocols decrease the possibility of error while they improve speed and minimize technician time.
4. Double antibody separation (the method of reference) eliminates non-specific sources of error associated with most CPB techniques.
5. System prices are very competitive, and you get standardized reagents and protocols from one quality manufacturer.

Taken together, these five benefits of the Beckman Total Thyroid Profile System can result in a major improvement in laboratory cost-effectiveness.

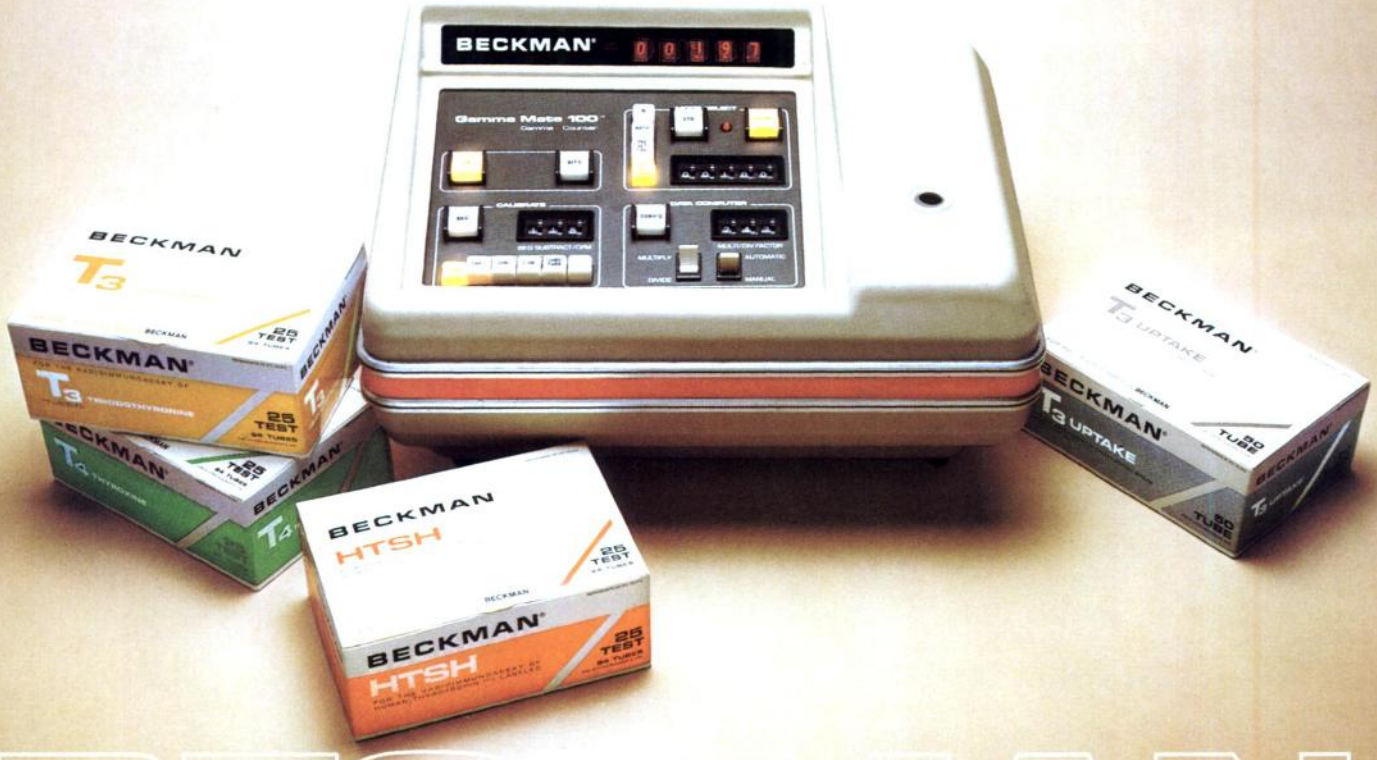
In addition, of course, you get the back-up and technical support capabilities of an internationally recognized leader in nuclear instrumentation and radioimmunoassay reagents and supplies.

At Beckman we're committed to *total* RIA capability. So if you've considered switching, now *is* the time.

Contact your Beckman representative for the full details on our Total Thyroid Profile Capability. You'll receive at no charge a complete technical manual on thyroid profiling. To get yours, write Scientific Instruments Division, Beckman Instruments, Inc., P.O. Box C-19600, Irvine, CA 92713.

For RIA, your source is Beckman.

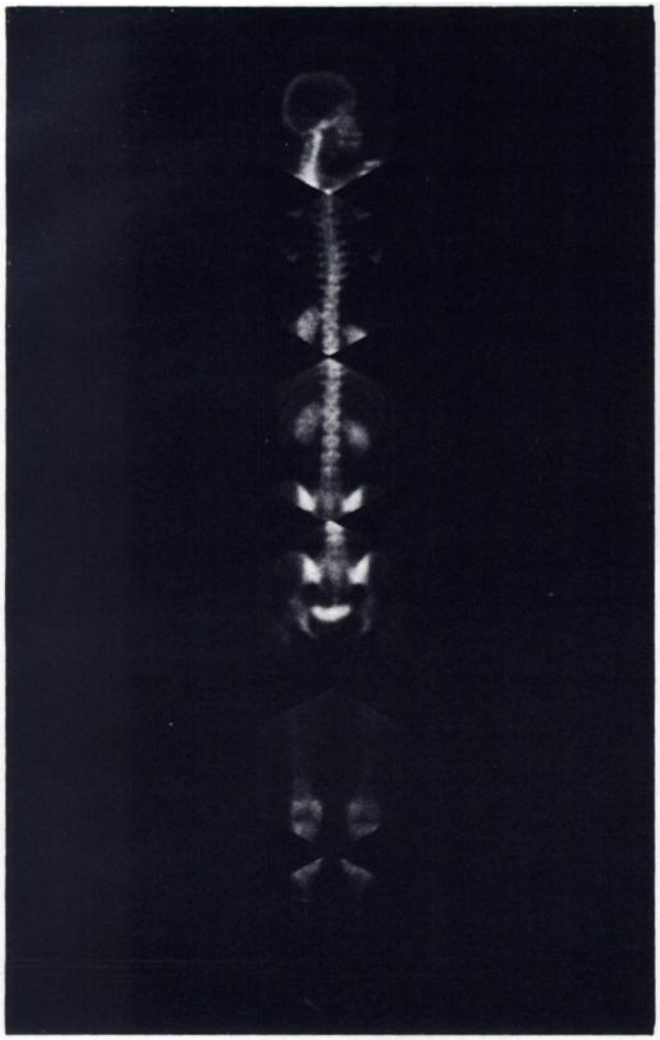
**Beckman®**




BECKMAN

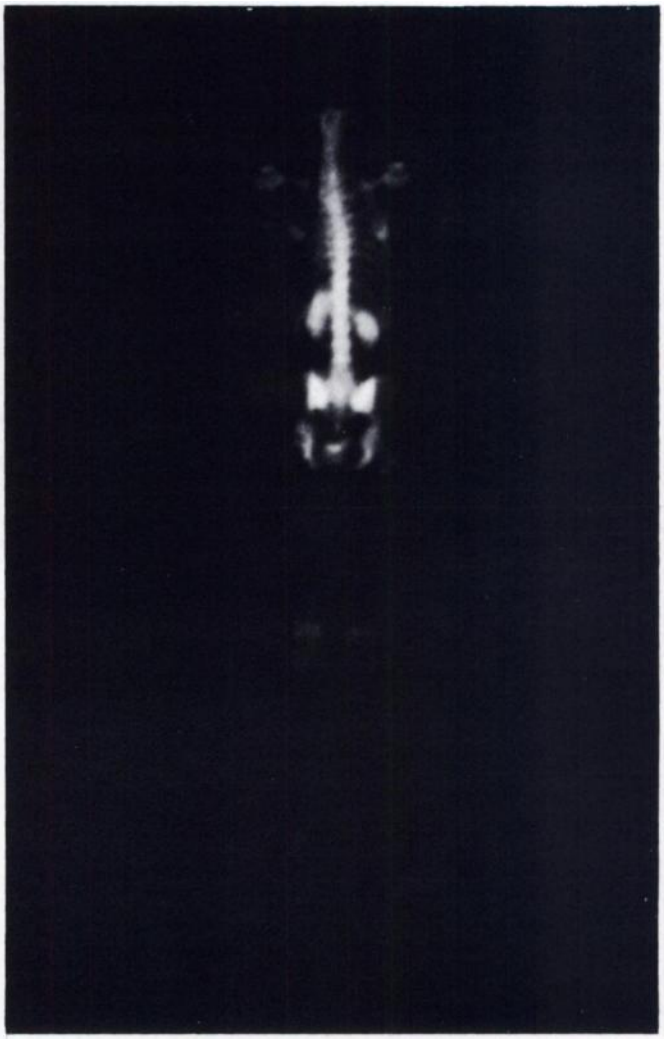
Printed in U.S.A.

# An Unbiased Comparison



## Our Wide Field

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



## Our Wide Field

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

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

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

AreaScan

Total Scan Time: 12.2 minutes

ohio-nuclear, inc.
A subsidiary of Technicare Corporation
U S 6000 Cochran Road • Solon Ohio 44139 Telephone (216) 248-8500 TWX 810 427 2998
U K Ohio Nuclear U K • Radix House • Central Trading Estate • Staines • Middlesex England Telephone Staines 51444
Worldwide Siemens A G Medical Division • D8520 Erlangen • Henkestrasse 127 • West Germany Telephone 09131 84 1 TWX 841 629 847

# MaxiCamera™

## Unmatched performance: largest detector available gives you outstanding image quality.

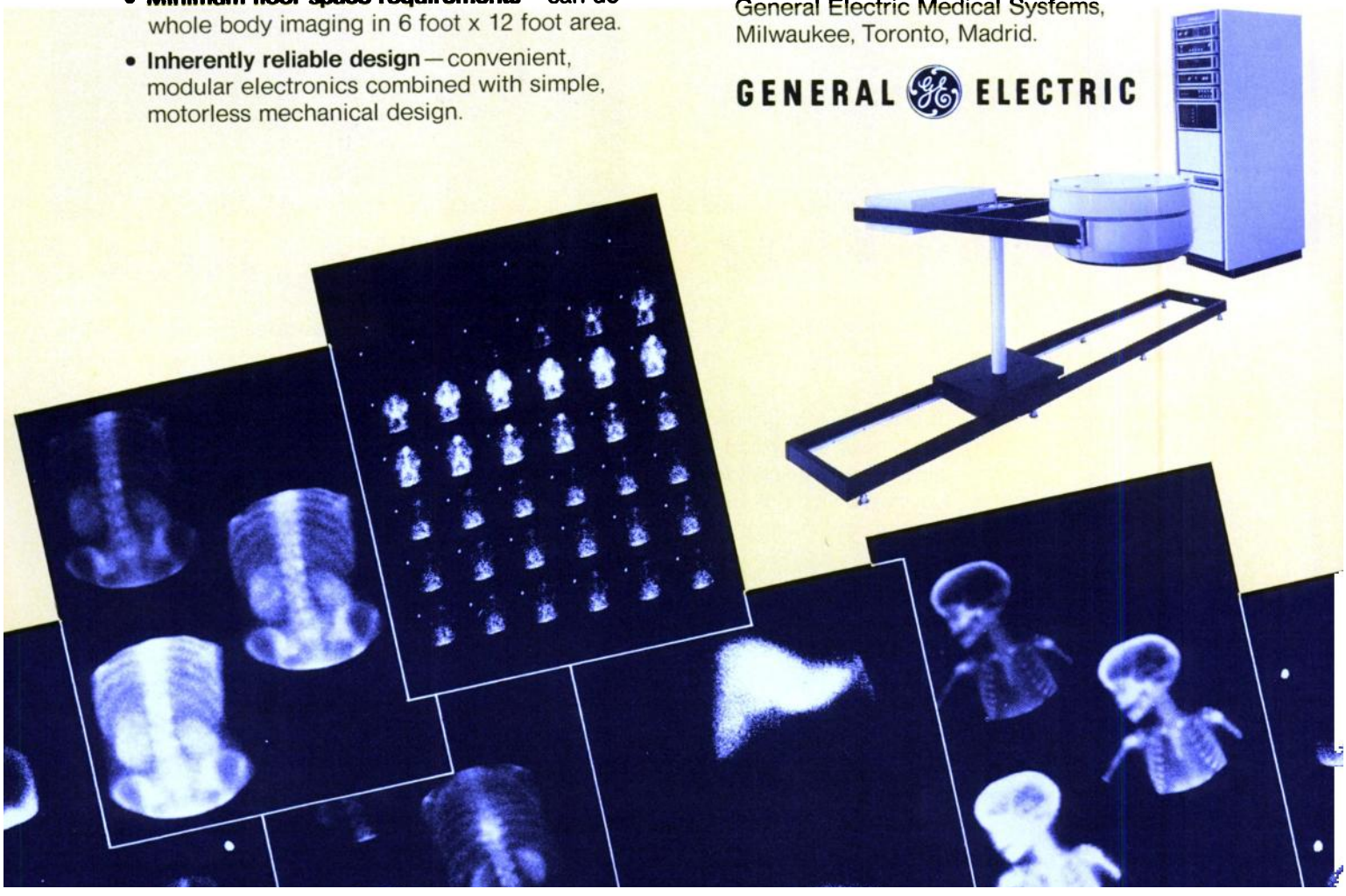
MaxiCamera's unequalled 400mm field of view delivers unprecedented image quality. The high sensitivity of the large field provides images so sharp, so clear... we urge you to see them for yourself. Consider these MaxiCamera advantages:

- **Largest field of view available**—yields maximum information density per second and allows easy positioning over large organs.
- **Better than 3.2 mm intrinsic resolution**—unequalled by any other scintillation unit.
- **18% to 40% more resolution elements** than other large detector cameras, yields higher sensitivity and greater patient throughput.
- **Fastest camera available**—up to 200,000 cps.
- **Minimum floor space requirements**—can do whole body imaging in 6 foot x 12 foot area.
- **Inherently reliable design**—convenient, modular electronics combined with simple, motorless mechanical design.
- **Maximum patient throughput**—fast, safe and easy manual positioning of the large detector and simple three-step operation enable you to handle up to 50% more patients per day.
- **Comprehensive training** for your technologists at GE Medical Systems Institute and in your institution.
- **Fast, efficient service** by GE technicians in your area.

MaxiCamera—largest field of view, outstanding resolution, easy positioning and minimum floor space. Isn't that the kind of scintillation system you want and need? See the MaxiCamera's exceptional images firsthand. Call your GE representative.

General Electric Medical Systems, Milwaukee, Toronto, Madrid.

GENERAL ELECTRIC



# GE Formatter

## Now...a formatter that records as fast as the camera can detect.

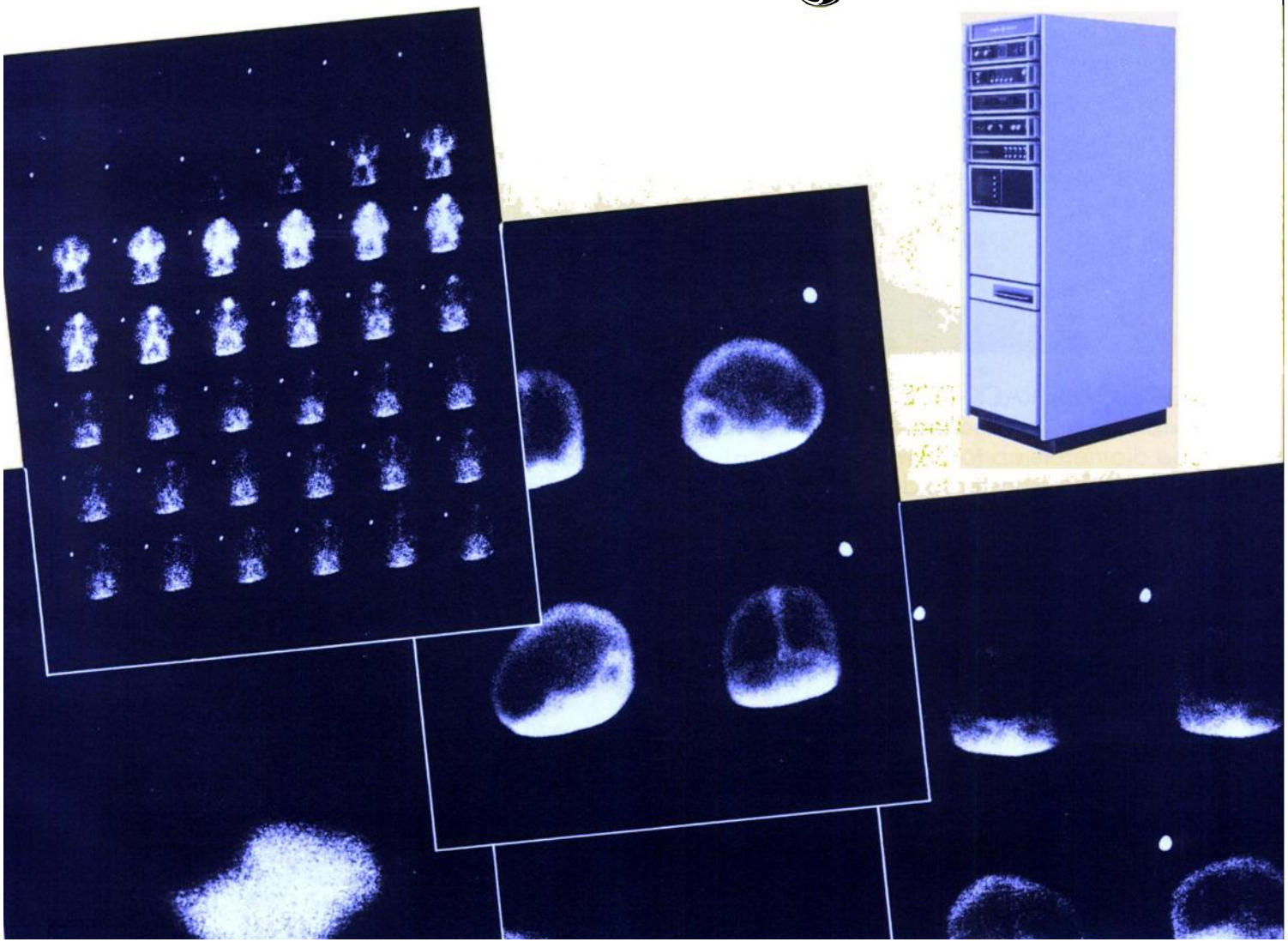
**GE Formatter records 4 times more information per second than any other unit—it's the system of choice for dynamic studies.**

- **10 frames per second** with no data loss—the fastest formatter available.
- **Up to 42 dynamic study images** on one 8 x 10 film.
- **Uses standard 8 x 10 photographic cassettes**—economical, readily available.
- **Standard multiple formats**—35, 70 and 105 mm.
- **Minimum floor space**—about 4½ square feet. Includes camera and formatter electronics in one compact cabinet.
- **Easy serviceability** with modular design.

Those are the facts about the GE Formatter . . . the system that helps you get maximum diagnostic data out of every second. Why get anything less? Contact your GE representative.

General Electric Medical Systems, Milwaukee, Toronto, Madrid.

GENERAL ELECTRIC



# GE Formatter

## Now...a formatter that records as fast as the camera can detect.

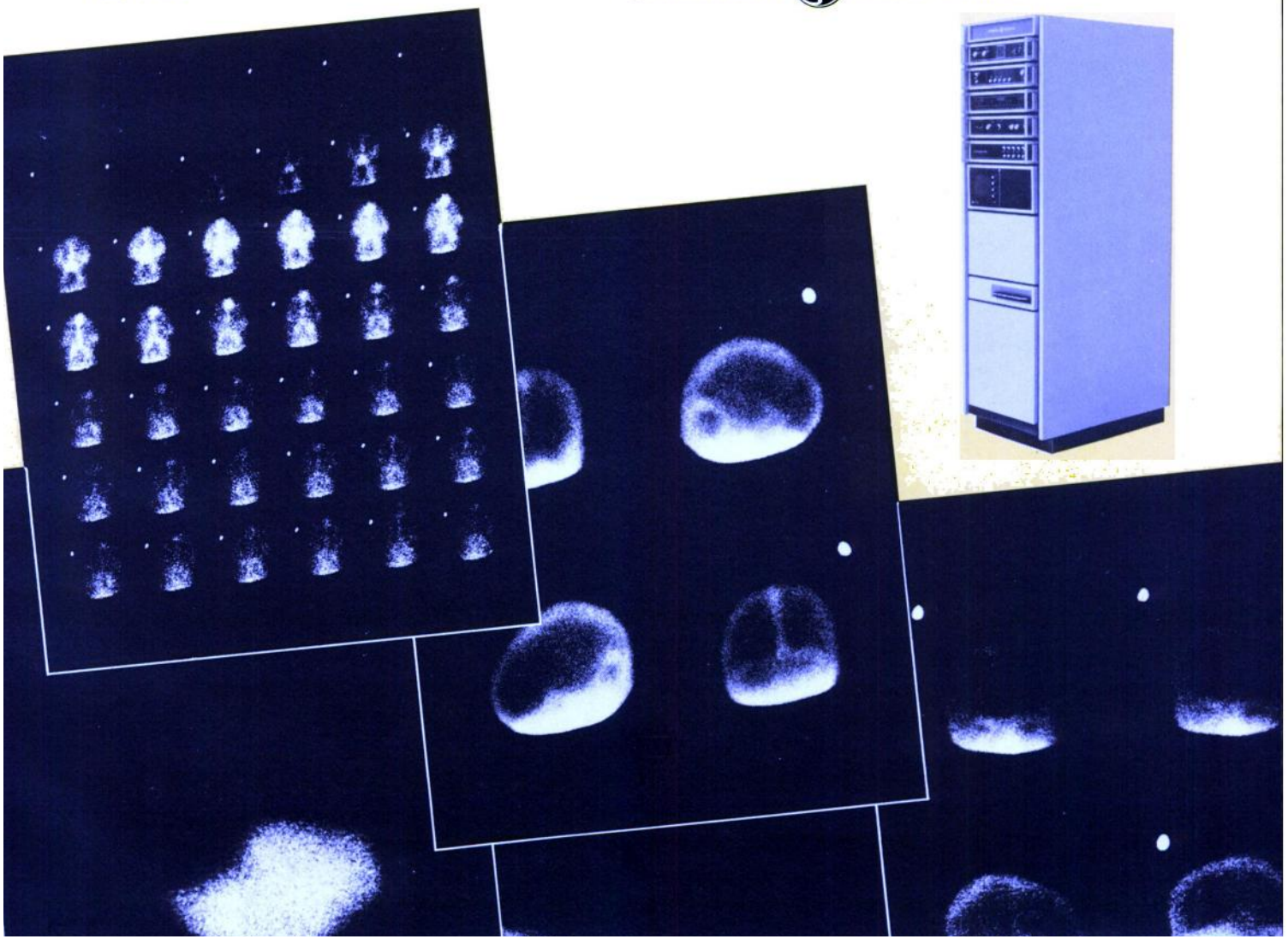
**GE Formatter records 4 times more information per second than any other unit — it's the system of choice for dynamic studies.**

- **10 frames per second** with no data loss — the fastest formatter available.
- **Up to 42 dynamic study images** on one 8 x 10 film.
- **Uses standard 8 x 10 photographic cassettes** — economical, readily available.
- **Standard multiple formats** — 35, 70 and 105 mm.
- **Minimum floor space** — about 4½ square feet. Includes camera and formatter electronics in one compact cabinet.
- **Easy serviceability** with modular design.

Those are the facts about the GE Formatter . . . the system that helps you get maximum diagnostic data out of every second. Why get anything less? Contact your GE representative.

General Electric Medical Systems, Milwaukee, Toronto, Madrid.

GENERAL ELECTRIC



# INTERTECHNIQUE CG-4000 AUTOMATIC GAMMA COUNTERS INCREASE LABORATORY OUTPUT.

**400-760 TUBE RACK-TYPE TRANSPORT** for fast, flexible sample handling. Accepts intermixed tube diameters up to 28 mm. Insures fast, reliable tube transfer to detector.

**WELL-TYPE DETECTORS AND CASCADED LINEAR AMPLIFIER** for maximum resolution, efficiency and long term stability with low and high energy isotopes.

**BUILT-IN RIA CALCULATOR** computes average NSB and $B_o$ or Total activity from replicates, then

calculates % $\left[\frac{\text{CPM-NSB}}{B_o - \text{NSB}}\right]$

or % $\left[\frac{\text{net CPM}}{\text{Total}}\right]$

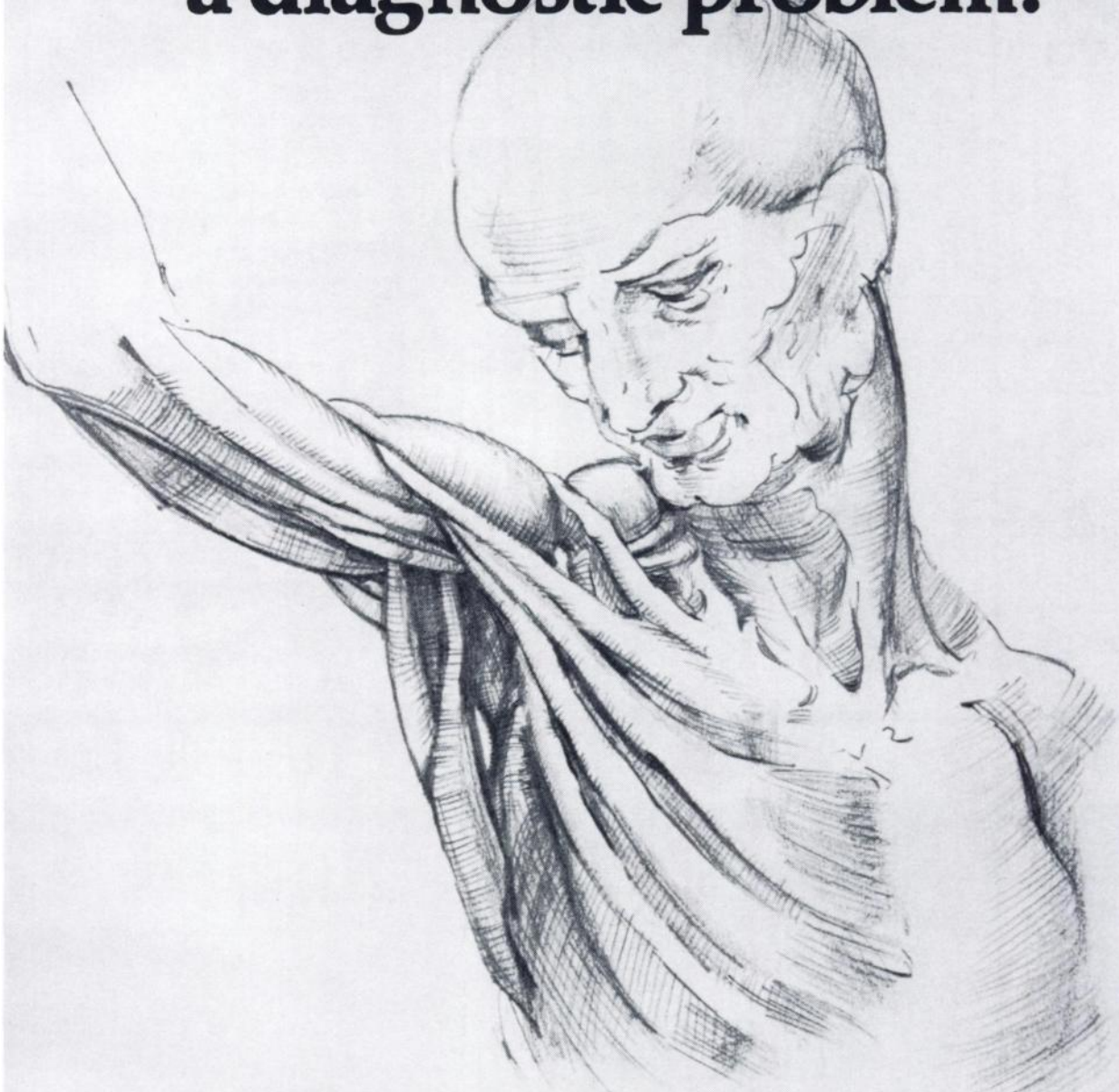
**ADVANCED RIA COMPUTATION** with the 16-32 K Multi-Mat ® 4000 computer option. Programmable in LEM, delivered with general purpose and kit-oriented RIA programs.

**MULTI-USER PROGRAMMER** selects windows, presets, background subtract parameters and specific RIA programs by individual Control Command Cards ©.

INTERTECHNIQUE

78370 PLAISIR-FRANCE - Teleph.: (1) 460.33.00
cable address INTERTEC Telex: IN 692 642 F
IN/US Service Corporation, 1275 Bloomfield Ave.
Fairfield, N.J. 07006. Tel: 201-575-7552. Telex: 138749

# Rheumatic diseases: a diagnostic problem?



Diagnosis of individual rheumatic diseases can present problems. Our simple test, the anti-DNA Kit, can give vital information to aid that diagnosis.

The kit provides the first standardized assay to consistently and reliably measure anti-DNA antibodies. High circulating levels of these antibodies are closely linked with systemic lupus erythematosus (SLE). In doubtful cases, the kit offers excellent discrimination between SLE and rheumatoid arthritis and is particularly valuable as a follow-up to ANF tests. Results show that the kit is also useful as a means of monitoring disease activity, providing the physician with guidance on drug therapy.

The kit is a simple radioassay – a matter of routine for any clinical laboratory with a gamma counter. Please write or 'phone for further information.

## Anti-DNA kit

Amersham/Searle
AMERSHAM / SEARLE CORPORATION:
An Activity of G. D. Searle & Co. and the Radiochemical Centre

Product described in '76 CLR page 213.

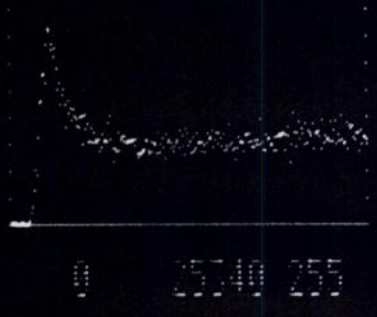
2636 S. Clearbrook Drive/Arlington Heights, Illinois 60005
Telephone: Toll free: 800-323-9750 – Telex: 28-2452
In Illinois, Alaska, Puerto Rico, & Hawaii: 312-593-6300
400 Iroquois Shore Road/Oakville, Ontario
Telex: 069-82286 – Telephone: 416-844-8122
C 767107

# Think dynamic functions.

Cerebral Flow Study
$^{99m}$Tc Sodium Pertechnetate


Cerebral Flow Curve, right hemisphere

Anterior Cerebral View, showing position of regions of interest in right and left hemispheres



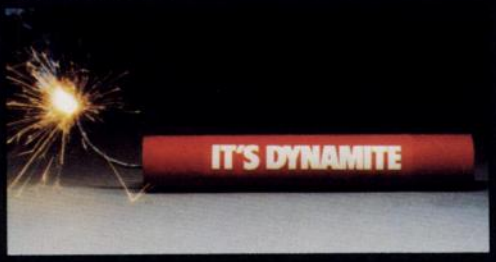

Cerebral Flow Curve, left hemisphere

Think Clinical Analyzer, the data processing and tape storage and replay system designed specifically for nuclear medicine static and dynamic function imaging applications.

Applications include (1) cerebral and carotid uptake, (2) cardiac flow for measuring transit time, left ventricular ejection fraction, and cardiac output, (3) renal function, (4) lung ventilation and perfusion. In short, any clinical imaging study requiring quantification of image data in specific organ areas.

Clinical Analyzer offers three independent and adjustable size and shape regions of interest for dynamic function analysis of organ areas.

Curves can be displayed separately, overlapping or side-by-side, with the time per data point as short as 0.01 second. Clinical Analyzer records and replays data at 100,000 counts/sec. in a 512 x 512 point image matrix for excellent image resolution.




For static studies, Clinical Analyzer offers two profile slices for simultaneous count versus distance curves showing count levels in any segment of an organ. An automatic file search feature can search a 1-hour tape from end to end in 2-3 minutes.

The Clinical Analyzer is another example of Picker synergy — the complete interfacing of systems and services for improved diagnostic visualization. Contact your local Picker representative. Or write direct to the Picker Corporation, 12 Clintonville Road, Northford, CT 06472.

**PICKER®**

ONE OF THE C.I.T. COMPANIES


PICKER
PICKER CLINICAL ANALYZER
PICKER DIGITAPE AC
Picker'synergy

# [$^{125}$I] CORTISOL RIA KIT

## FEATURING:

- SUPERSENSITIVITY ..... 67 pg/tube
- LINEAR RANGE ..... 1-50 $\mu$g/dl
- SHORT INCUBATION TIME ..... 30 minutes
- PRECISION (within-run) .....C.V. < 3%
- PRECISION (run-to-run) .....C.V. < 6%
- AVERAGE RECOVERY ..... > 90%
- LINEAR PLOT (log-logit paper provided)
- DOUBLE ANTIBODY SEPARATION
- NO EXTRACTION REQUIRED
- PRE-MEASURED STANDARDS
- LYOPHILIZED REAGENTS (Buffer included)
- RELIABILITY AND ECONOMY

Less than 1.00% CROSS-REACTIVITY *with:* Corticosterone, Progesterone

Less than 0.10% CROSS-REACTIVITY *with:* 11-Deoxycortisol

Less than 0.01% CROSS-REACTIVITY *with:*
Aldosterone, Cortisone, 11-Deoxycorticosterone, Dexamethasone, Esterone, Estradiol, Estriol, Prednisone, Prednisolone, Testosterone.

**Kits Also Available:**

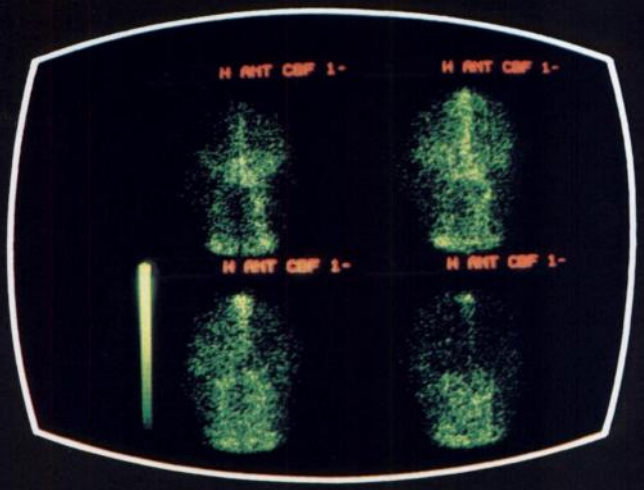
T-3 RIA
T-4 RIA
[$^{125}$I] Folic Acid
[$^{3}$H] Folic Acid
[$^{3}$H] Aldosterone (no Chromatography)
[$^{3}$H] Cortisol RIA
[$^{57}$CO] Vitamin B-12
[$^{3}$H] Cyclic AMP
[$^{3}$H] Cyclic GMP
[$^{125}$I] Gentamicin RIA

**Diagnostic Products** CORPORATION

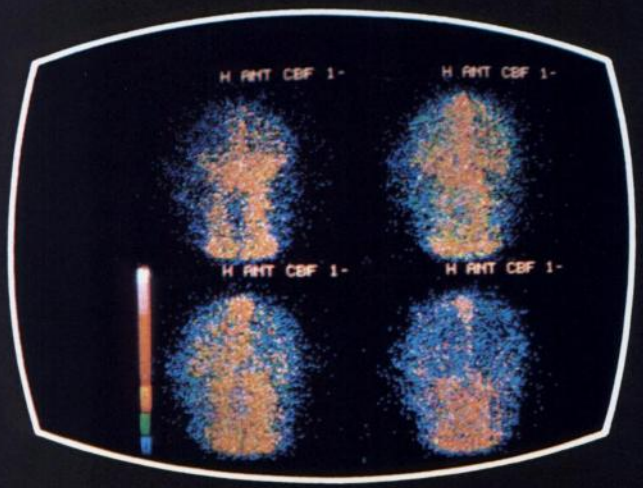
12306 Exposition Boulevard • Los Angeles, Calif. 90064

TWX 910-342-7577 (213) 826-0831

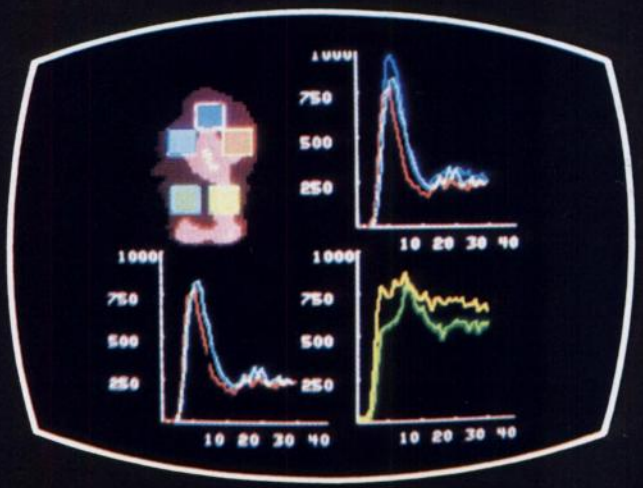
1. Camera Images




2. Monochrome green off Informatek TV




3. Color off Informatek TV




4. Curves off Informatek TV

## Right Hemisphere Cerebrovascular Accident

1. Anterior cerebral "flow" sequential 2 second images show initial right internal carotid and middle cerebral artery diminished activity with subsequent "flip-flop." 2,3. Monochrome and color sequential non-interpolated 128 x 128 digital images of same study. 4. Regions of Interest and their time-activity curves are color coordinated. The upper right hand curves are the anterior cerebral and 2 middle cerebrals. The lower right hand curves are the 2 carotids. The lower left hand curves of the 2 middle cerebrals show that their asynchrony is due to both a 1 second difference in appearance time and a 0.83 second mean transit time difference.

Images courtesy of Harbor General Hospital, Torrance, California

# SIMIS 3: The most advanced data processing system in nuclear medicine.

- ☐ dynamic 128 x 128 studies with 15 bit depth
- ☐ static and movie-like display of images with 256 x 256 definition in color or monochrome
- ☐ hard copy output for permanent files
- ☐ regions of interest of any shape or size
- ☐ double precision arithmetics
- ☐ 200 data acquisition and processing programs including smoothing, filtering, convolution, image and curve arithmetics, statistics
- ☐ clinical studies such as ejection fraction, left-right shunt, cardiac output, renograms, functional imaging, software and ECG gating
- ☐ high level language: Fortran IV accesses to all files. Protocol generator which creates any "push button" routine function
- ☐ various multiple camera configurations
- ☐ simultaneous acquisitions and processing and programming and . . .

**informatek**

**Informatek States Inc.**
244 Goodwin Crest Drive
Birmingham, ALA 35209
Tel.: (205) 942-9462
Telex: 5-9827

**Informatek S.A.**
BP 81
Orsay 91401 France
Tel.: 907 64 18
Telex: 691628

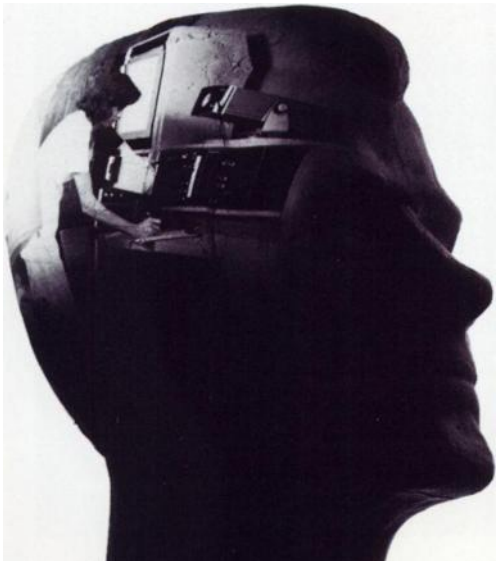
Pho/Gamma® V

# Hewed out of solid tradition

Searle's new Pho/Gamma V is a worthy addition to the proven Pho/Gamma scintillation camera series. Designed for the clinic or laboratory looking for cost-effective instrumentation, the Pho/Gamma V features the advanced, high-speed electronics of the Pho/Gamma LFOV in a standard field of view camera. It also offers a large assortment of parallel-hole, pin-hole, diverging-converging and spot-converging collimators.

**EASE OF OPERATION**

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



**TRIPLE PEAK CAPABILITY**

Window width and energy level can also be set independently on 3 analyzers for unique isotopes and special studies. Thus, your facility can take full advantage of the diagnostic potential in multi-peak nuclides such as Gallium 67. This is especially important in soft-tissue studies where high sensitivity and superior resolution are vital.

**IMPROVED ELECTRONICS**

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

IMAGING:
The Living Art

The Pho/Gamma V is the most advanced standard field of view scintillation camera available today. Like other instruments in the famous Pho/Gamma line, it consistently delivers high quality images to give the physician maximum diagnostic support.

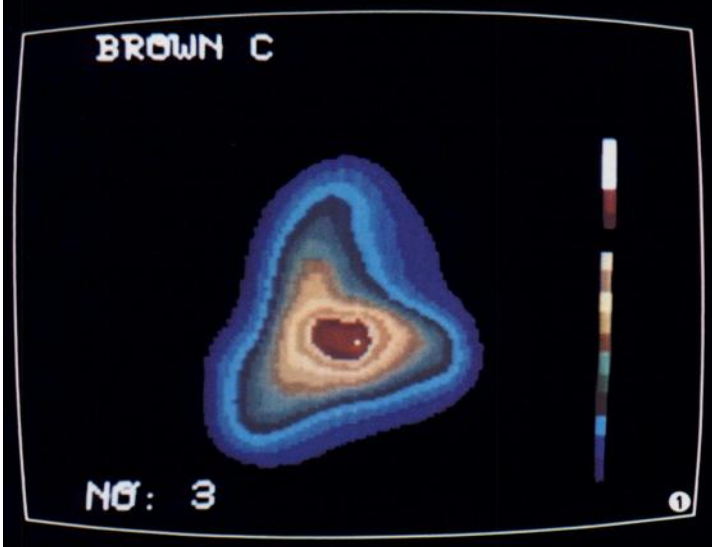
*For more information on the Pho/Gamma V system, including the unique Micro Dot™ Imager and Scintiscan™ Whole Body Table, call your Searle representative or write: Searle Radiographics, Inc., 2000 Nuclear Drive, Des Plaines, IL 60018. Telephone: (312) 298-6600.*

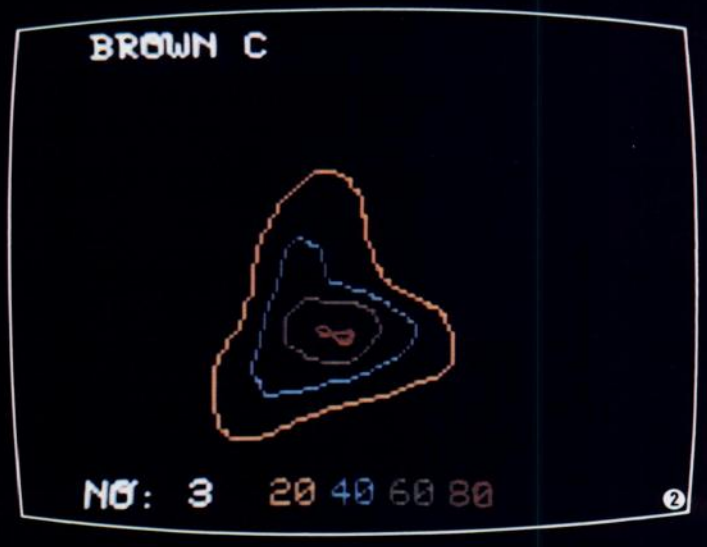
SEARLE

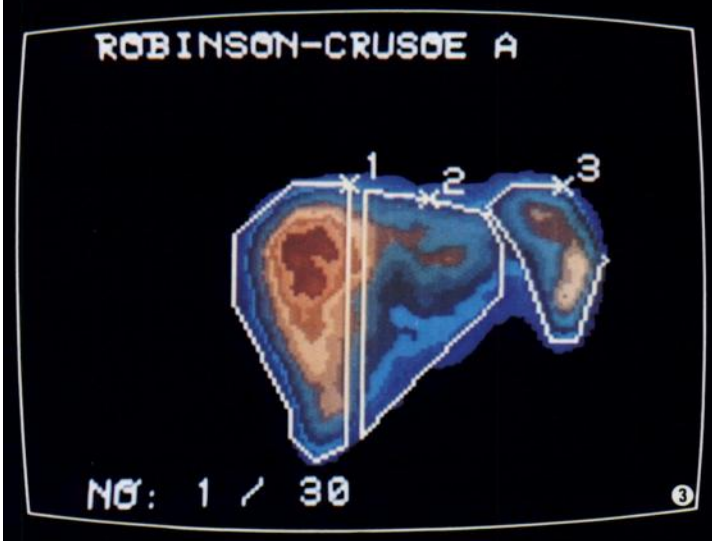
**Searle Radiographics, Inc.**
Subsidiary of G. D. Searle & Co.

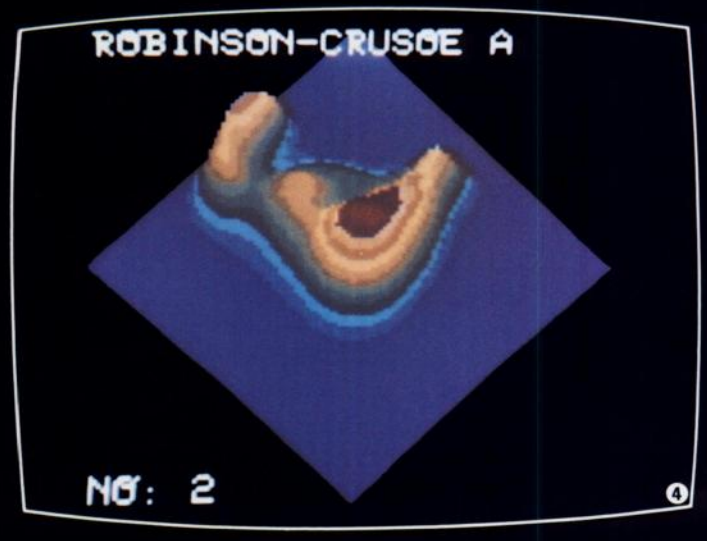
SR 544

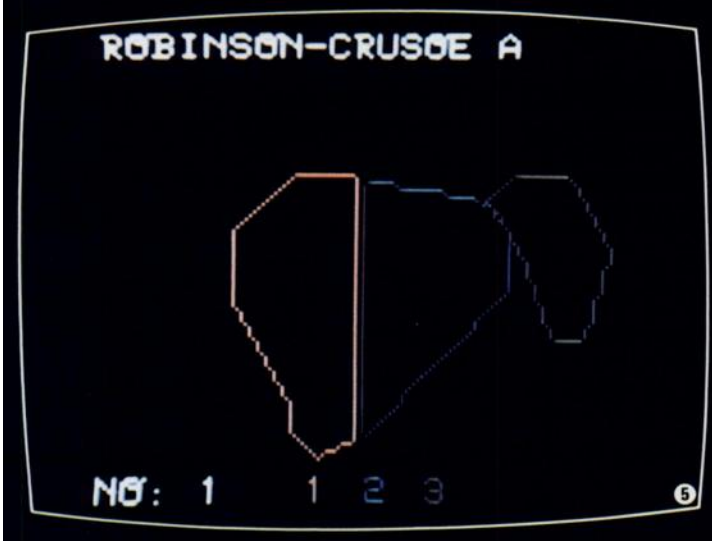
# Multiple~Screen Color Displays from varicam

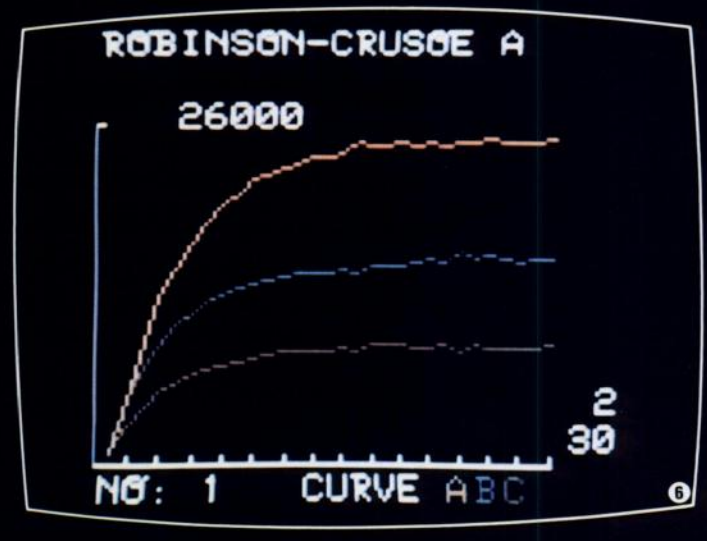


# Advances in Low~Cost

Originally color displays were regarded by a large section of the medical physics profession as merely a pretty gimmick.

However it became apparent that the color display was of significant use in viewing successive frames in dynamic examinations.

Varian continued work on color displays and have produced such a display that provides good quality images in the following modes.

- Color scales with identification.
- Color curves with annotation.
- Color regions of interest outlines with identification
- Color contours with identification
- Color isometrics with identification
- Multiple screens at remote locations

Varian physicists feel that, if the black and white STATOS® hardcopy is to be used as a definitive clinical record, the color display is more than adequate as a volatile display.

Accordingly, any system where the modified Tektronix monochrome display is standard, it may be replaced by a color display for a price reduction.

1. Color Scale of Embolized Lung in Left Lateral View
2. Contour Map of Embolized Lung in Left Lateral View
3. Dynamic Liver Examination showing Frame no 30 and Interactive Formation of Regions of Interest
4. Isometric View of Sum Matrix of Liver Dynamic Examination
5. Display of Completed Regions of Interest as shown in frame 3 (above)
6. Curves formed from Regions of Interest as shown in frame 5 (left)

varian
Radiation Division

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

European enquiries: Molesey Road, Walton-on-Thames, Surrey, England. Telephone: (093 22) 28971 Telex: 261351

# Mallinckrodt TechneScan® PYP™ Kit (Stannous Pyrophosphate) for the preparation of Technetium Tc 99m Stannous Pyrophosphate.

15.4 mg Sterile Stannous Pyrophosphate

## What others have said about the performance of pyrophosphate is more relevant than anything we could say!

(Excerpts from literature on stannous pyrophosphate:)

"With the rectilinear scanner, $^{18}F$ appeared to be the best bone scanning agent. Technetium-99m-phosphate compounds were favorable for clinical use because of availability and usefulness in studies with the gamma camera. Quality of scan with polyphosphate was most variable. Sometimes phosphate compounds and $^{87m}Sr$ showed considerable interference with bone scan due to soft-tissue radioactivity. Diphosphonate might be regarded as the agent of choice because of its low concentration in the soft tissue. **Pyrophosphate appeared to be most favorable agent considering ease of preparation, reproducibility, and quality of scan."**[1] (Bold-face added.)

**"While the physical properties of $^{18}F$ are poor, the biological properties are still superior for bone imaging. The biological properties of polyphosphate made from this kit are significantly worse than the pyrophosphate or EHDP prepared from kits. The latter two are more similar to $^{18}F$ in blood clearance and soft-tissue uptake."**[2]

"The introduction of $^{99m}Tc$-labeled phosphate complexes has given the nuclear medicine physician a wide choice of agents for skeletal imaging. Both polyphosphate and pyrophosphate are biodegradable and have P-O-P linkage. Because of the complex nature of the molecule, one cannot be certain of the chain length in any given batch of polyphosphate. In contrast, $^{99m}Tc$-labeled diphosphonate has a discrete chain length and P-C-P linkage. Concern is expressed in the literature about the importance of exact chain length and biodegradability. One author has suggested waiting until more is known about the toxicity of diphosphonate before using it in man. Another author replies that biodegradability should not be equated with toxicity. In our previous study we concluded that there was no reason to be concerned about toxicity with the amount of diphosphonate used for skeletal imaging. **Now the introduction of technetium-labeled pyrophosphate by Perez, et al., should satisfy both protagonists for it has a discrete chain length and is biodegradable."**[3] (Boldface added.)

**The TechneScan PYP Kit is an excellent bone imaging agent for several reasons—**

- **Its discrete chain length contributes to consistent performance**
- **It clears the bloodstream quickly**
- **It gives high bone-to-tissue ratios**
- **It seldom produces liver visualization**
- **It provides for a variable dose-to-scan time**
- **It gives high initial tagging efficiencies**
- **It is highly stable, both in-vitro and in-vivo**


**REFERENCES**

1. Hosain F, Hosain P, Wagner HN, Dunson GL, Stevenson JS: Comparison of $^{18}F$, $^{87m}Sr$, and $^{99m}Tc$-Labeled Polyphosphate, Diphosphonate, and Pyrophosphate for Bone Scanning. J. Nucl. Med. 14: 410, 1973 Abst.
2. Ackerhalt RE, Blau M, Bakshi S, Sondel JA: A Comparative Study of Three $^{99m}Tc$-Labeled Phosphorous Compounds and $^{18}F$-Flouride for Skeletal Imaging. J. Nucl. Med. 14: 375, 1973 Abst.
3. Krishnamurthy GT, Huebotter RJ, Walsh CF, et al: Kinetics of $^{99m}Tc$-Labeled Pyrophosphate and Polyphosphate in Man. J. Nucl. Med. 16: 114-115, 1975.


Mallinckrodt NUCLEAR
RADIOPHARMACEUTICALS


**Mallinckrodt, Inc.**
**675 Brown Rd.**
**Hazelwood, Missouri 63042**


# TechneScan® PYP™ Kit (Stannous Pyrophosphate)

**BEFORE USING, PLEASE CONSULT COMPLETE PRODUCT INFORMATION, A SUMMARY OF WHICH FOLLOWS:**

**DESCRIPTION**

The **TechneScan PYP** reaction vial contains all of the non-radioactive reagents required to prepare a sterile, non-pyrogenic solution of Technetium Tc 99m Stannous Pyrophosphate (**TechneScan PYP** Tc 99m) for intravenous injection.

Each 10-milliliter reaction vial contains a total of 15.4 milligrams of stannous pyrophosphate in the lyophilized state in a nitrogen gas atmosphere. The pH of the solution is adjusted with **hydrochloric** acid prior to lyophilization.

**ACTION**

When injected intravenously, **TechneScan PYP** Tc 99m has a specific affinity for areas of altered osteogenesis.

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

**INDICATIONS**

**TechneScan PYP** Tc 99m is a skeletal imaging agent used to demonstrate areas of altered osteogenesis.

**CONTRAINDICATIONS**

None.

**WARNINGS**

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

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

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

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

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

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

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

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

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

**PRECAUTIONS**

Both prior to and following **TechneScan PYP** Tc 99m administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the **TechneScan PYP** Tc 99m injection to minimize background interference from accumulation in the bladder and unnecessary exposure to radiation.

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

**ADVERSE REACTIONS**

None.

See package insert for procedural and dosimetry information.

**Mallinckrodt, Inc.**
**675 Brown Rd.**
**Hazelwood, Missouri 63042**

Mallinckrodt NUCLEAR

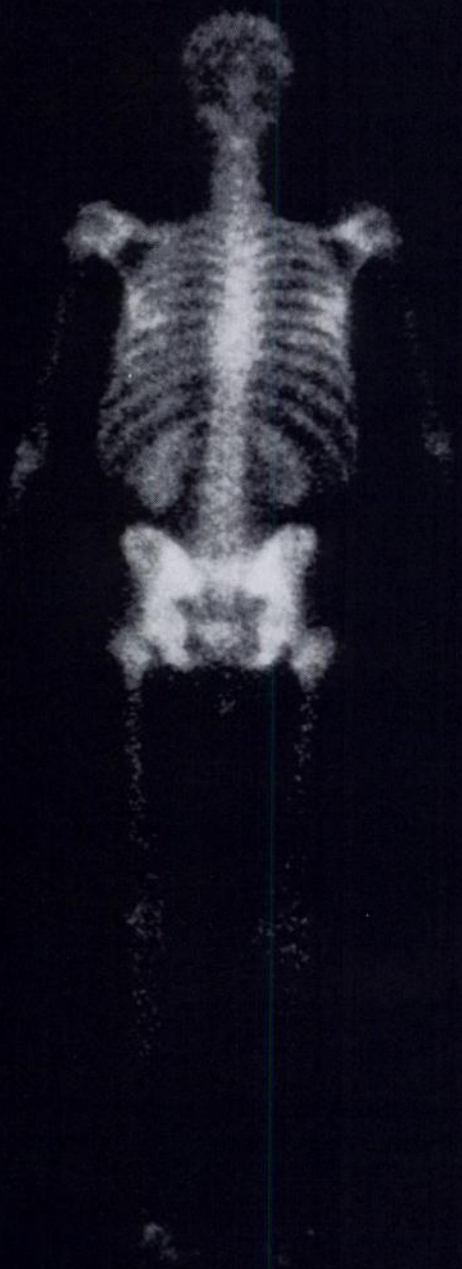
**RADIOPHARMACEUTICALS**

## a quiet revolution in WHOLE BODY and ORGAN imaging.

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

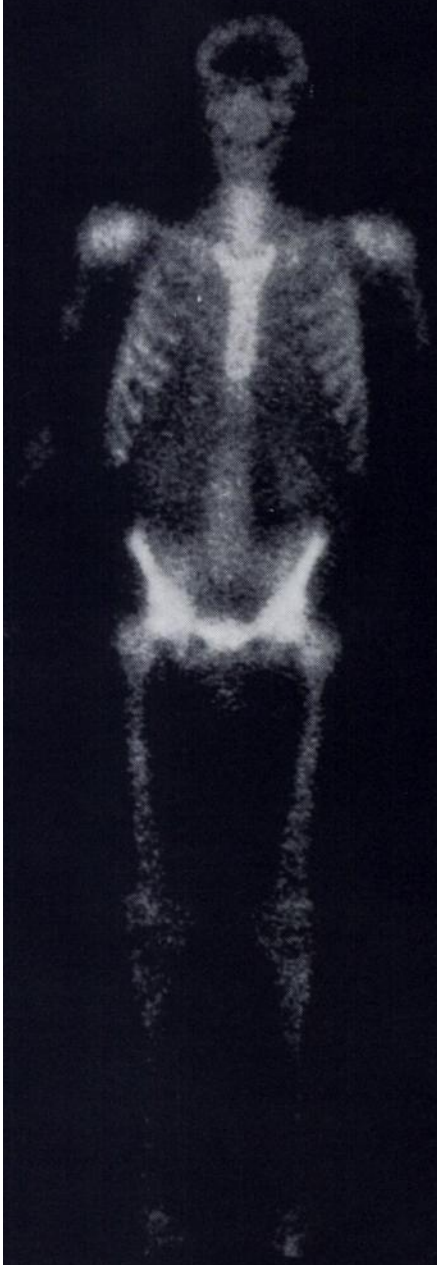
Large crystal area (109 square inches in each detector head) gives high information density with reproducible results for given scan times. Interchangeable focused collimators permit use with various nuclides for skeletal and organ imaging, as well as tumor-screening. (The Imager has proved successful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

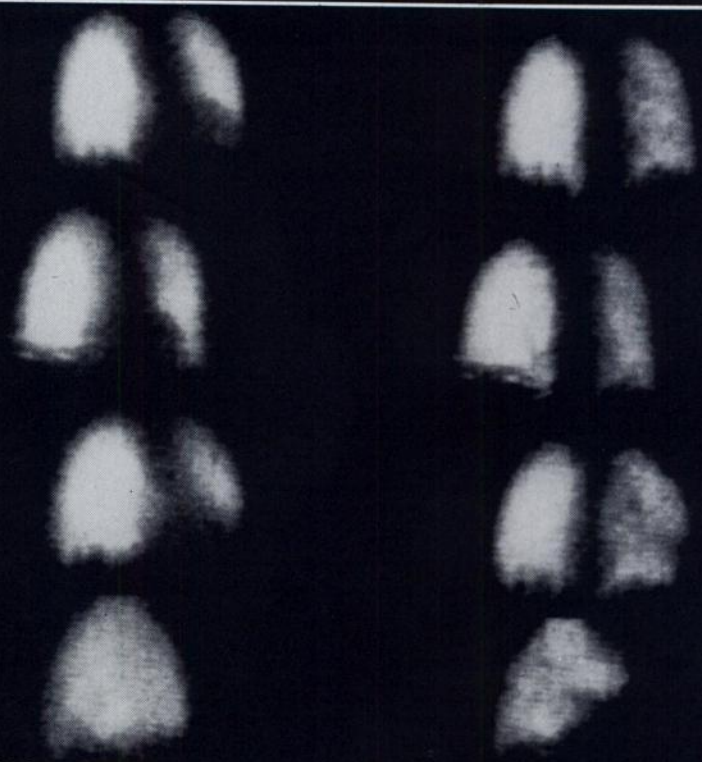
The Imager's display and recording options, enhancement of photo-images, and the capability to playback stored data greatly increase its clinical usefulness. Reliability, rapidity of operation, and high patient turnover mean increased utilization and economy, along with improved diagnostic efficiency.



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

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





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

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

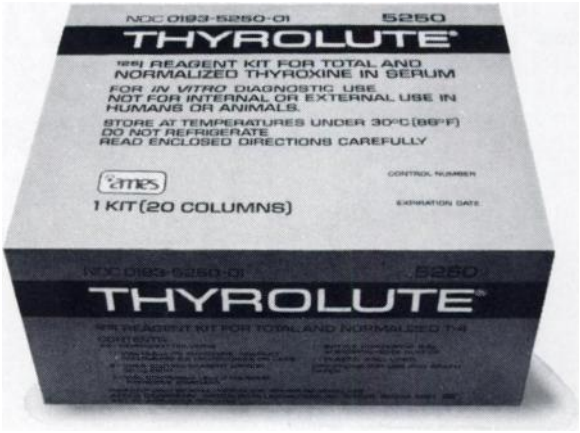
**cleon**
CORPORATION

**150 Gould Street, Needham, Massachusetts 02192/Telephone 617-444-2494**

# No 'me too' $T_4$.


9438/23537125

# Thyrolute®




***Thyrolute:*** **Reagent kit for quantitative determination in serum of Total Thyroxine ($T_4$) and Normalized Thyroxine ($T_4N$) combined in a single test procedure. Based on a modification of the Murphy-Pattee principle, Thyrolute utilizes a Sephadex* column to separate bound and unbound $T_4$. An aid in the diagnosis, management, and follow-up of thyroid disorder. Available in kits of 20 and 100 columns.**

***Sephadex is a registered trademark of Pharmacia Fine Chemicals AB.**

**Ames Company**
Division Miles Laboratories, Inc.
Elkhart Indiana 46514
In Canada: 77 Belfield Rd., Rexdale, Ontario

Everybody's climbing on the $T_4$ bandwagon. With claims. Counterclaims. The "me too" approach.

Not Ames. We want you to try a $T_4$ test that's *different*: Thyrolute. No pellets, no tweezers, no sponges, no strips, no centrifuge, no controlled temperatures, no rotation, no critical timing. No sweat. With Thyrolute, it's simply pipetting, washing, draining, counting.

And look at the results. Total $T_4$ and, optionally, a routine or "on request" Normalized $T_4$. Sensitive. Specific. Clinically significant.

We'll give you a free 20-test kit so you can evaluate the Thyrolute difference where it counts—*in your lab*. After all, more than 1000 clinical labs have already chosen Ames thyroid function tests . . . how about you too?

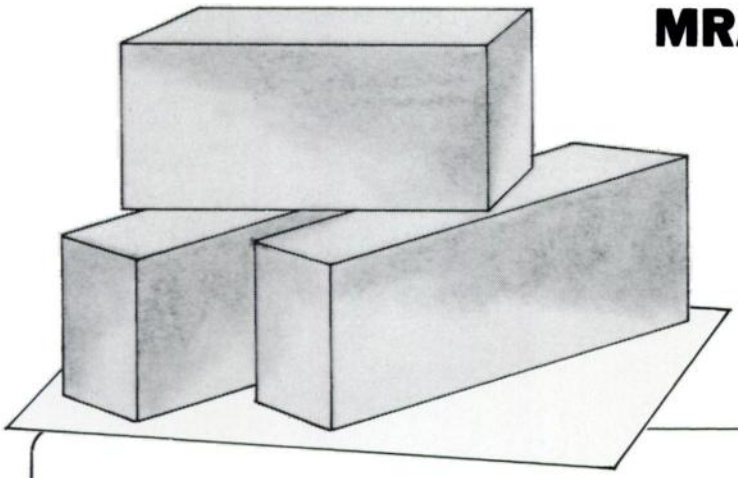
ames

HEALTH INFORMATION THROUGH INNOVATION

# Medical Radiation Accessories, Ltd.

A Subsidiary of Medi-Ray, Inc.

# LEAD SHIELDING



## MRA DURABLOCK LEAD BRICKS

Durablocks are ideal for storage and shielding of radioactive materials. Especially recommended where blocks are subject to frequent set-up. Durablocks quality casting and high production standards assure uniformity, density, and finish. Open spaces between bricks are minimized and bricks are easily stacked to fabricate hot cells, storage areas and work stations. Available dimensions.

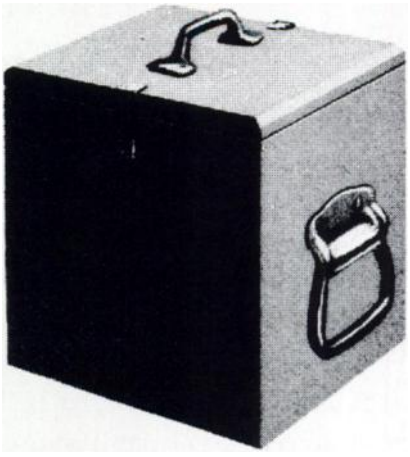
**DIMENSIONS**

**MRA 2" x 4" x 4"** **MRA 2" x 4" x 6"** **MRA 2" x 4" x 8"** **MRA 2" x 4" x 10"**

## LEAD SHIELDED CIRCULAR CONTAINER


CIRCULAR containers featuring a sectional interior, locking cover, and a hand rail for mobility. Two sizes are available: MRA ½" – MRA 1" wall.

## LEAD SHIELDED SQUARE CONTAINER

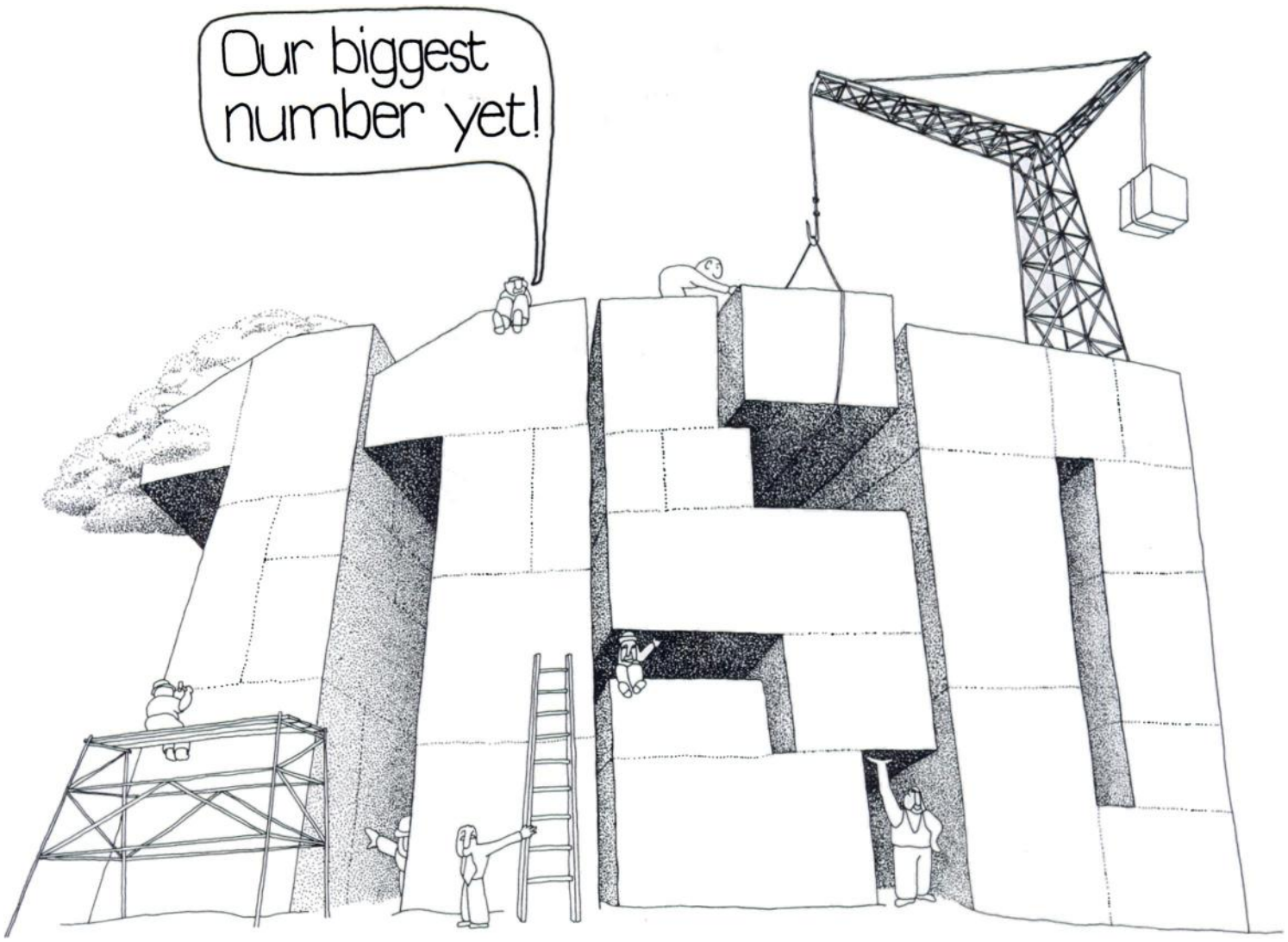


SQUARE container featuring tray to section-alize the interior. Two handles are provided to facilitate movement of container. Wall thickness available: MRA ½"

**For more information Write or Call Collect**

# Medi-Ray, Inc.

150 Marbledale Road, Tuckahoe, New York 10707 • (914) 961-8484




What's an 1150? That's what you get when you combine our 750-04 Electronic Programmer and 400 Oscilloscope Camera. So why not call it an 1150-04? Well, we didn't want *that* big a number.

But seriously, our big number gives you an incredible combination of versatility and for very little money produces some of the sharpest dots available in Nuclear Medicine. Your choice of formats (1,4,9,12, 16,19,21,34,64, etc.) with the 1150 is practically unlimited. Not to mention all the benefits derived from the 8x10 x-ray film format such as availability, gray-scale, group viewing, familiarity, and economy. And not to forget our 750-01 users out there, you can upgrade to 1150 capabilities simply with additional electronics and our 400 Oscilloscope Camera.

So, if you want to know more about our 1150 combination, mail this coupon. Or give a call. We'll be glad to do our big number for you.

# MODEL 1150 MULTI•FORMAT CAMERA SYSTEM

## DUNN INSTRUMENTS, INC.

52 Colin P. Kelly Jr. Street, P.O. Box 77172,
San Francisco, California 94107, Telephone (415) 957-1600

NAME _____ TITLE _____

ADDRESS _____ PHONE _____

CITY _____ STATE _____ ZIP _____

# NIH/TUNGSTEN SYRINGE SHIELD®

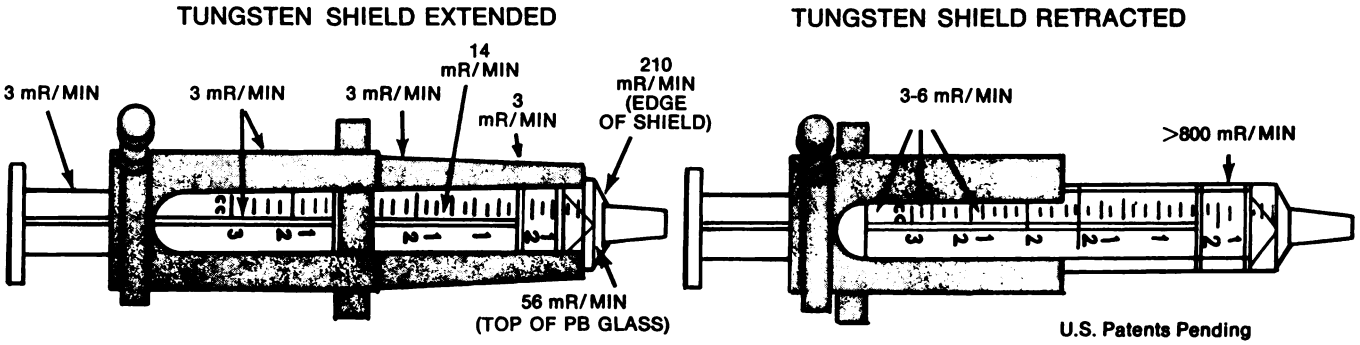
# Optimum Shielding Minimum Weight

**The NIH/Tungsten Syringe Shield:**

- **Reduces exposure from $^{99m}$Tc by a factor exceeding 200.**
- **Weighs less than 3-ounces—good balance.**
- **Retracts for dose calibration.**
- **Virtually unbreakable.**
- **Accepts most disposable syringes.**

---

**FILM EXPOSURE AT THE SURFACE 29.2 mCi for $^{99m}$Tc in 1cc of a 3cc PLASTIC SYRINGE**




U.S. Patents Pending

---

*CONCEIVED and DESIGNED BY: J. Howley, H. Tipton, A. Jones, M. Dickinson, M. Green, and G. Johnston. National Institutes of Health, Bethesda, Md.

SHIELDING PERFORMANCE CHART COMPLIMENTS OF: J. Howley, Radiation Safety Services, National Institutes of Health, Bethesda, Md.

---

# Atomic Products Corporation

Center Moriches, New York 11934, U.S.A.
(516) 878-1074

# In Nuclear Medicine,


# we've just made a good test easier.

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

The results are expressed as a percentage of each nuclide excreted and, more importantly, as a ratio of Co-57 to Co-58. An incom-

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

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

Dicopac for diagnosis of vitamin $B_{12}$ malabsorption.

Dicopac®

# NIH/TUNGSTEN SYRINGE SHIELD®

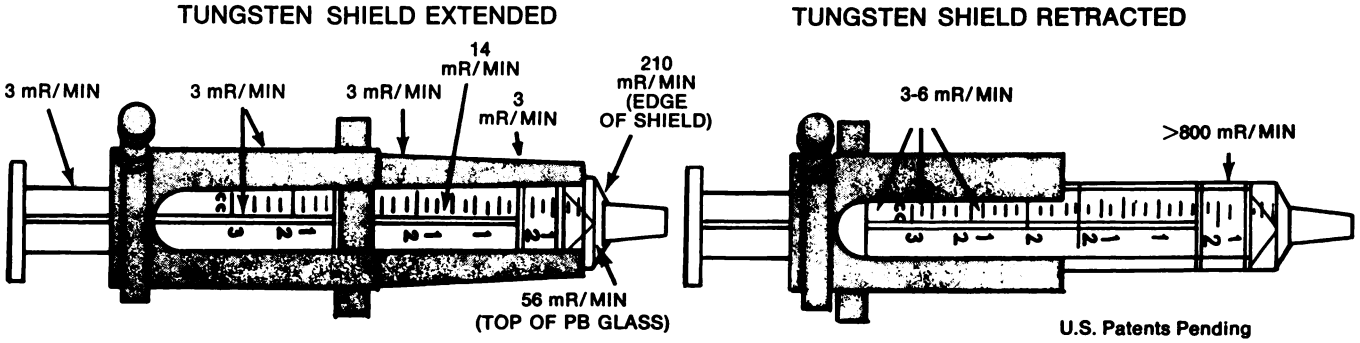
## Optimum Shielding Minimum Weight

**The NIH/Tungsten Syringe Shield:**

- **Reduces exposure from $^{99m}$Tc by a factor exceeding 200.**
- **Weighs less than 3-ounces—good balance.**
- **Retracts for dose calibration.**
- **Virtually unbreakable.**
- **Accepts most disposable syringes.**

---

**FILM EXPOSURE AT THE SURFACE 29.2 mCi for $^{99m}$Tc in 1cc of a 3cc PLASTIC SYRINGE**




U.S. Patents Pending

---

*CONCEIVED and DESIGNED BY: J. Howley, H. Tipton, A. Jones, M. Dickinson, M. Green, and G. Johnston. National Institutes of Health, Bethesda, Md.

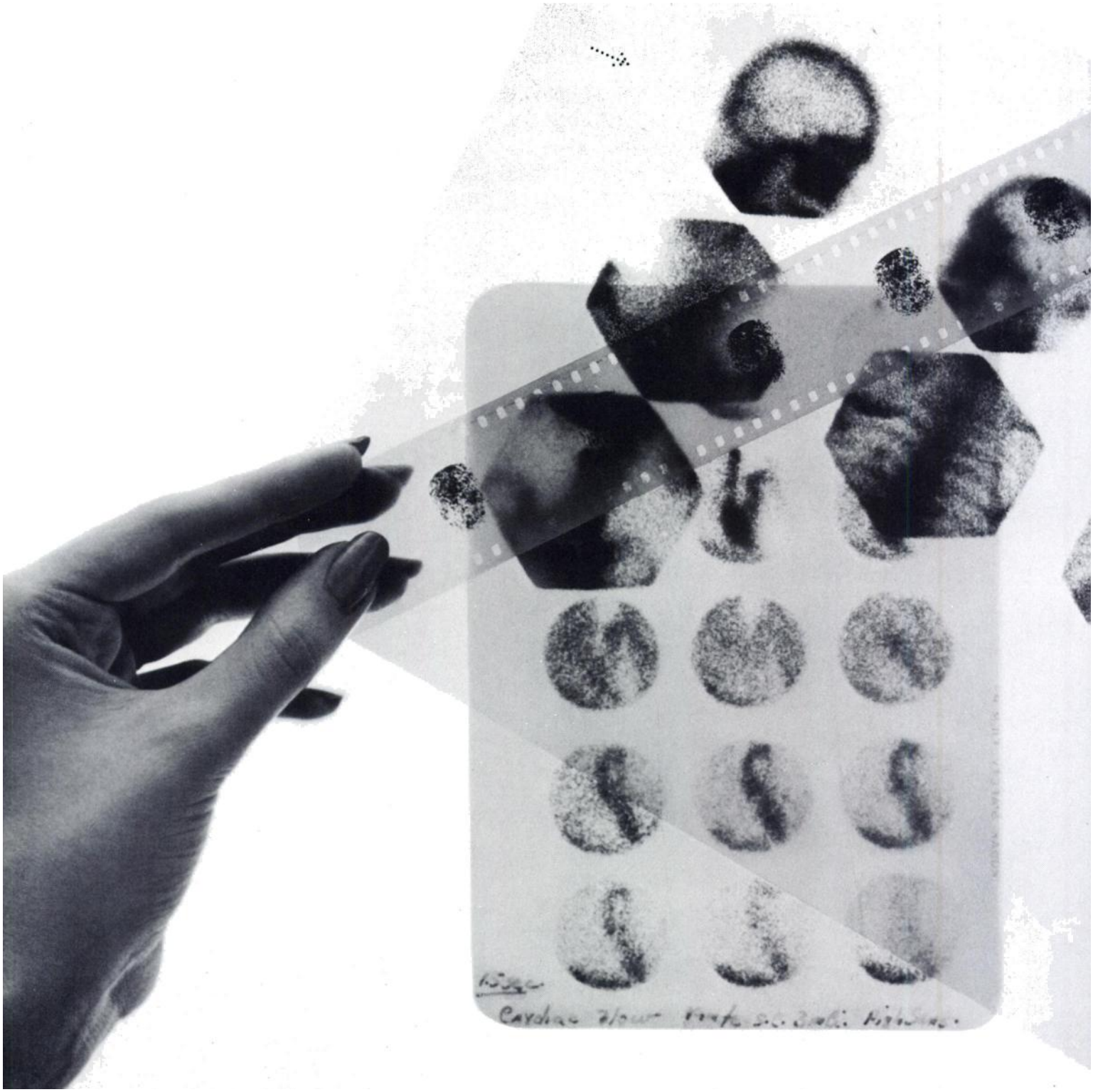
SHIELDING PERFORMANCE CHART COMPLIMENTS OF: J. Howley, Radiation Safety Services, National Institutes of Health, Bethesda, Md.

---

## Atomic Products Corporation

Center Moriches, New York 11934, U.S.A.
(516) 878-1074

# In Nuclear Medicine, the answer is transparent.



# when the question is imaging, Kodak film.

**Advances in nuclear medicine have increased the need for recording multiple, single, or dynamic images. And Kodak continues to help meet the need with a family of transparency films that are compatible with what your equipment can do now–or can be adapted to do.**

You can record single images on sheets of Kodak film, or on individual frames of Kodak roll film.

You can also record multiple images of the same study—economically—on a single sheet of film.

You can preserve images sequentially for dynamic studies on a single piece of roll film.

And you can record images from cathode-ray tube displays with Kodak's newest film—Kodak film for nuclear medicine SO-179—which can be used with most scintillation cameras.

Kodak transparency films offer high image quality, longevity, and economy. They're fade-resistant, curl-resistant, easy to store.

Your Kodak Technical Sales Representative can bring you up to date on Kodak films for nuclear medicine, automatic processors, and chemicals. And help you fill your nuclear imaging requirements.

Just ask the question; you'll get the right answer. Or contact your medical x-ray products dealer. Or write: Eastman Kodak Company, Department 740-B, Rochester, N.Y. 14650.

Kodak

**A commitment to quality.**


# we've just made a good test easier.

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

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

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

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

Dicopac for diagnosis of vitamin $B_{12}$ malabsorption.

# Dicopac®

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

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

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

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

**CONTRAINDICATIONS**
None

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

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

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

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

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

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

**ADVERSE REACTIONS**
None

**DOSAGE AND ADMINISTRATION:** One purple/white capsule containing 0.25 $\mu$g cyanocobalamin Co 57 (nominal activity 0.5 $\mu$Ci at activity date) bound to human gastric juice for oral administration.

One red/ivory capsule containing 0.25 $\mu$g cyanocobalamin Co 58 (nominal activity 0.8 $\mu$Ci at activity date) for oral administration.

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

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

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

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

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

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

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

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

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

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

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

**Table I. Principal Radiation Emission Data**

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

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

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

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

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

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

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

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

*Activity date

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

**Table I. Radiation Doses**

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

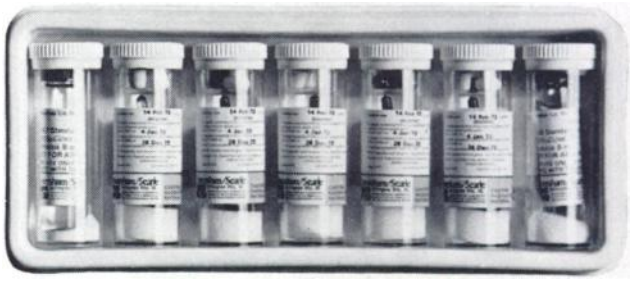
*The administration of a flushing dose of non-radioactive $B_{12}$ will decrease the dose to the liver, gonads, and whole-body from Co 57 and Co 58 by about 30%.

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

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

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

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

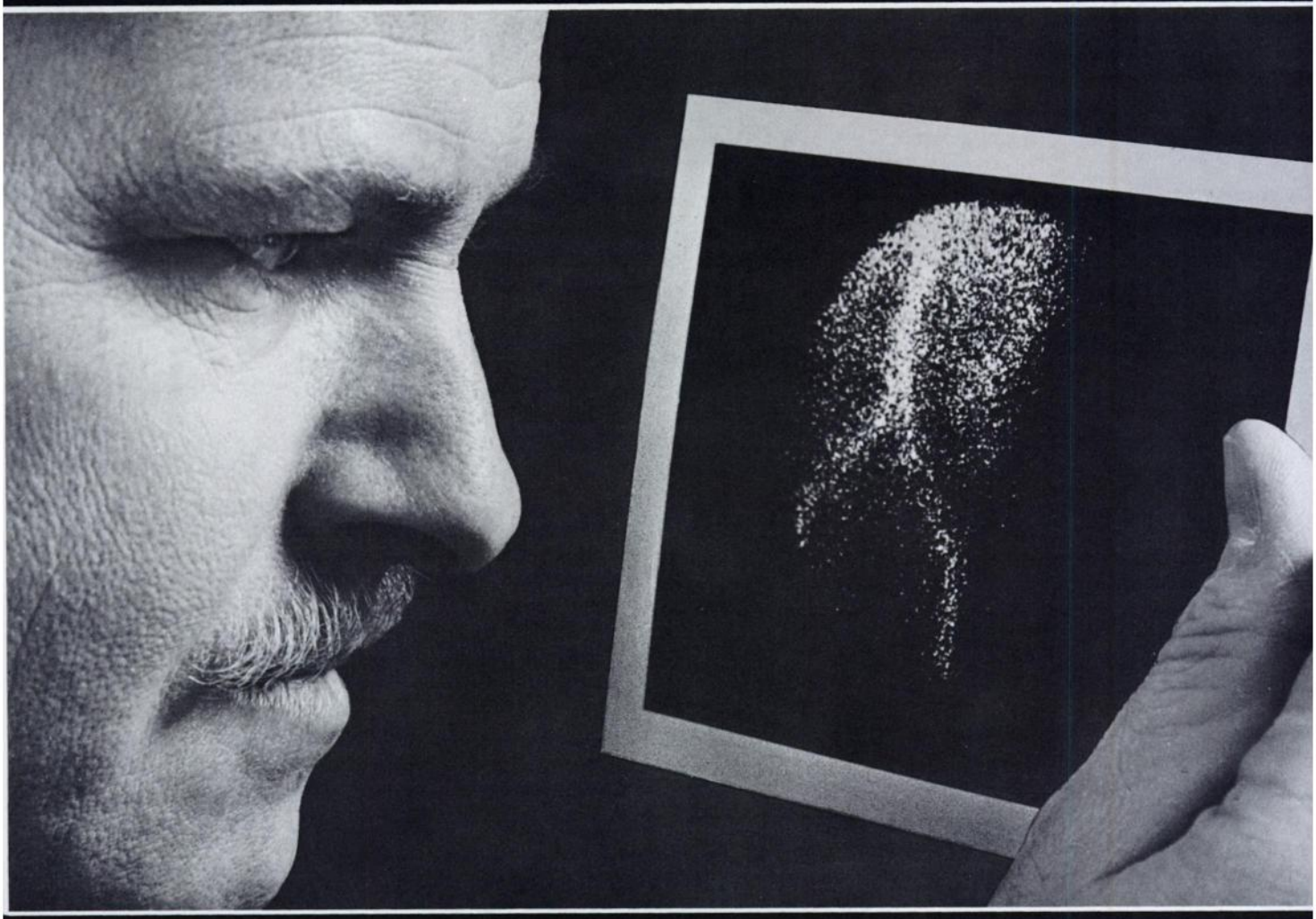


Amersham/Searle
Amersham/Searle Corporation
An activity of G. D. Searle & Co. and the Radiochemical Centre

2636 S. Clearbrook Drive/Arlington Heights, Illinois 60005
Telephone: 312-593-6300
Telex: 28-2452
400 Iroquois Shore Road/Oakville, Ontario
Telephone: 416-364-2183
Telex: 069-82216

C747101

# In less time, Elscint Gamma Cameras give you high resolution images like these . . .

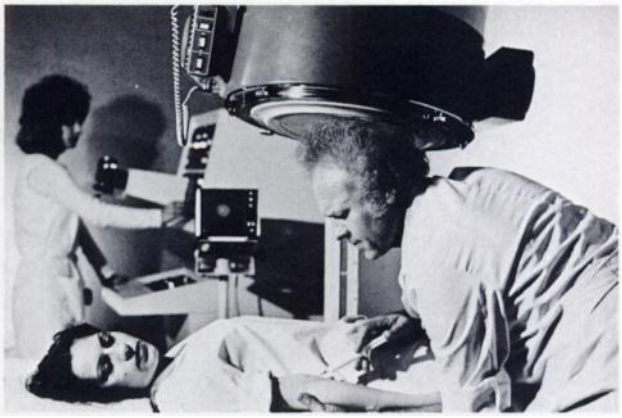


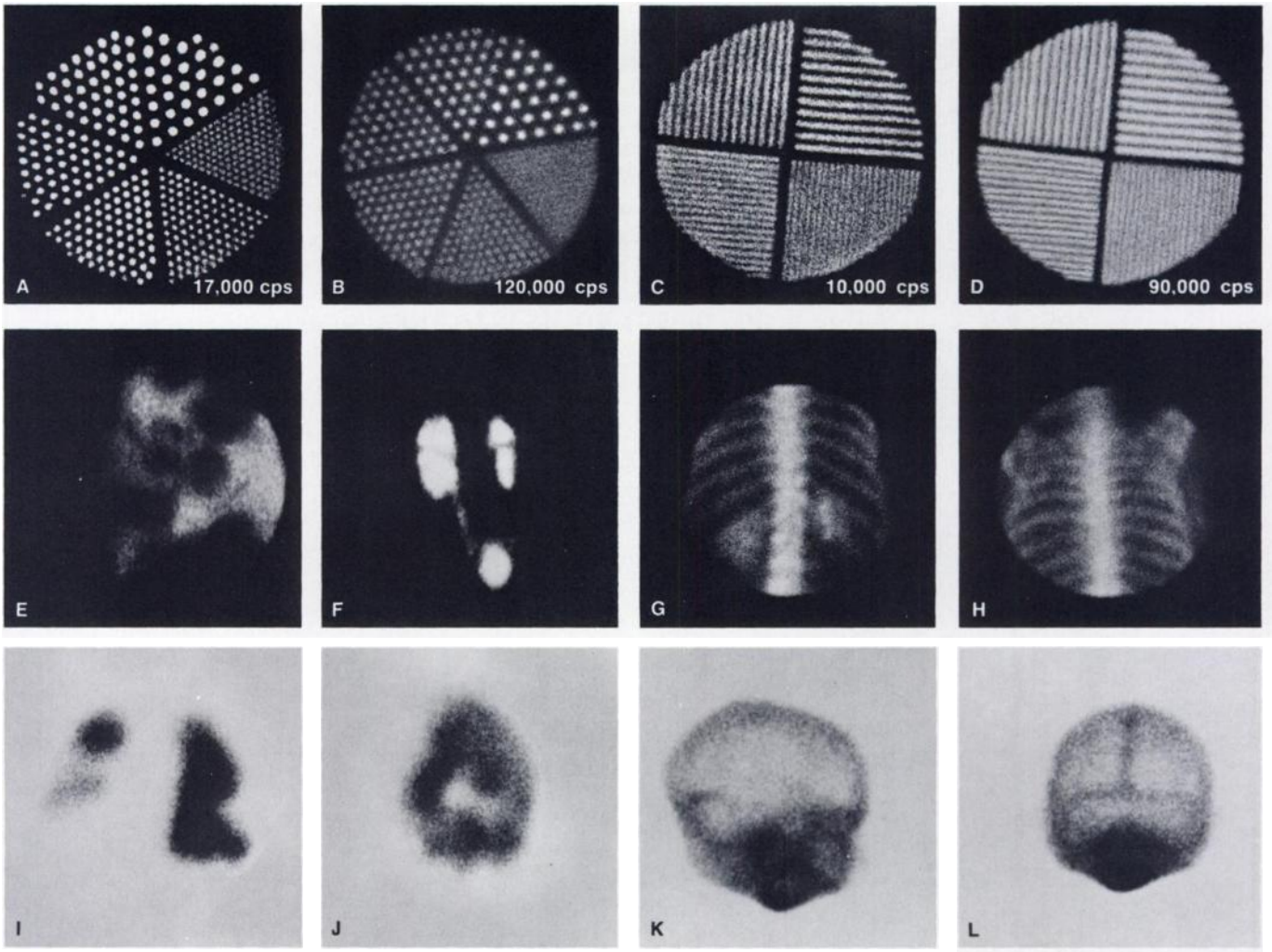
***Where quality counts . . . count on Elscint***

Data shown courtesy Albert Einstein College of Medicine Hospital, Bronx, N.Y. (A-H); Atlantic City Medical Center, Mainland Div. Pomona, N.J. (I.-L.)

One look at the actual data presented here will show you the excellent resolution Elscint Cameras offer you. Short dead time and high count rate capacity facilitate their use with very small isotope dosages and short-life radionuclides. Yet their operation is so simple that it can be mastered within hours. Their compact design saves up to 50% in floor space requirements. And, you'll find our prices most reasonable for today's tighter budgets.

Combine an Elscint Camera with an Elscint Image/Data Processing System and you'll have maximum diagnostic capability at your command. Call or write today for complete specifications and prices.






**A, B.** Anger phantom studies carried out at Albert Einstein College of Medicine Hospital.

**C, D.** ⅛" bar phantoms with CCL-4 high-resolution collimator.

**E.** Metastatic Liver. 1.5 mCi $^{99m}$Tc. S-colloid. 400,000 counts in 123 seconds with high resolution collimator.

**F.** 2 mCi $^{99m}$Tc DTPA. Renography study of patient with hydronephrosis.

**G, H.** Posterior bone scans of 52 year old female. 15 mCi $^{99m}$Tc-MDP; 4½ hours post injection. Each scan 300,000 counts, 106-108 seconds, using diverging collimator.

**I.** Posterior lung scan with Elscint CE-1 Camera: 12" FOV sufficiently large for 80% of lungs. 3 mCi $^{99m}$Tc-MAA; 500,000 counts, 59 seconds, parallel hole, low-energy medium-resolution collimator.

**J.** Lateral lung scan: massive embolism.

**K, L.** Right lateral and posterior brain scans with CE-1-9 (19 p.m.t.) camera.

# elscint inc.

***Where quality counts . . . count on Elscint***

**P.O. Box 832; 138-160 Johnson Avenue; Hackensack, N.J. 07602 Tel. (201) 487-5885.**

In United Kingdom: Elscint GB, 5 Priestley Way, Crawley Sussex RH102DW. Telephone: Crawley (0293) 21285/6/7. In France: Elscint S.A.R.L., 11 Rue Edouard-Lefebvre 78000 Versailles, Telephone: 950-2767. In Germany: Elscint GMBH, Freudenbergstrasse 27, 62 Wiesbaden-Schierstein, Telephone: (06121) 2786. In other countries: Write to Elscint Ltd., P.O. Box 5258, Haifa, Israel for the office in your country.

# World-Wide Acceptance ...Global Availability


**ISOLAB inc.**
INNOVATIVE PRODUCTS FOR RESEARCH
Drawer 4350 Akron Ohio USA 44321

Phone: 216/825-4528 collect Or
800/321-9632 toll-free
Cables: ISOLAB AKRON
Telex: 98-6475

# ISOCLEAN CONCENTRATE

## Radio-Labware Cleaner

The most effective solution anywhere offered for cleansing hot-lab apparatus of adherent radioactivity. Safe and easy-to-use. Proves itself thousands of times daily in research and clinical laboratories throughout the world.

Now available at reasonable cost, internationally, through licensed manufacture to Isolab's exacting specifications, plus national distribution from local stocks.

*Contact your nearest* Isoclean *licensee or distributor for complete information.*

**WESTERN EUROPE**
BIOLAB S. A.
Ave. Michel-Ange 8
1040 Brussels, Belgium

**IBERIAN PENINSULA**
ATOM
Paseo del Monte, 34
Barcelona-12, Spain

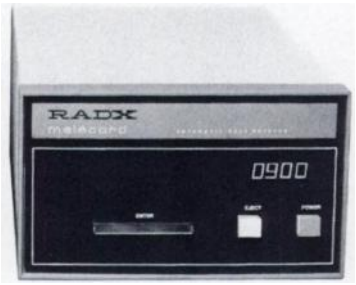
**SOUTH AFRICA**
CHEMLAB Pty. Ltd.
P.O. Box 56218
Pinegowrie, Transvaal, RSA

**AUSTRALASIA**
S.R.E. Pty. Ltd.
P.O. Box 69
Pennant Hills, N.S.W. 2120

***In the U.S. and Canada: Order from any office of Amersham-Searle, Nuclear Associates, Picker and other distributors—or call Isolab collect.***

# The first automatic dosecalibrator with a hard-copy data printer system for NRC (AEC) record keeping

# melétron & melécord


## your key to accurate dosecalibration and error-free records

**Now you can assay, compute dose, and get an instrument-verified printout — in just 30 seconds.**

Programmed sequenced instruction eliminates operator errors. All you do to assay a radionuclide is insert the proper key — from the 33 isotope keys now available, with others to come as they are needed — your insurance against instrument obsolescence.

The melétron calculates the volume to administer (in 0.1 ml increments from 0.1 to 99.9) for all patient doses (in 10 uCi increments from 10 uCi to 99.99 mCi.) Accuracy is ± 5%, with calibrations traceable to the National Bureau of Standards.

Range capability is up to 10 curies. Lets you handle high-activity Mo 99/Tc 99m generators. Melétron's automatic ranging eliminates manual selection — and another chance for operator error. Background subtraction is also automatic, and design of the ionization chamber will allow a 3/16" lead shield. The large chamber accommodates all standard size vials and syringes, and even an entire generator eluate for checking Mo 99 breakthrough.

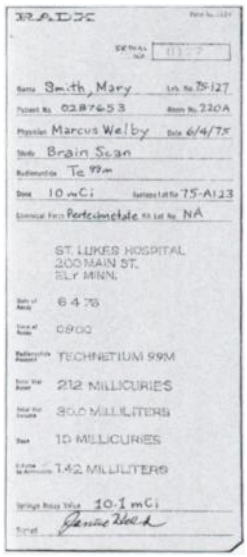
**Melétron Remote Chamber** is available as an accessory for use when the Melétron is located in a high radiation area, such as the "hot" lab. Allows for maximum shielding and ease of operation. When the remote chamber is connected, the Melétron's internal chamber is deactivated.


**Melécord prints permanent copies of all functions — the vital part of your record keeping system.**

You get hard copy in triplicate. Saves time. Prevents errors. Makes NRC (AEC) accountability far easier.

Melécord also prints the exact time and date of each assay automatically, while it alternately displays them on a digital calendar/clock on the front panel, and Melécord can be factory programmed to generate three lines for printing institution identification on each data card.

**The Melefile permanent record storage system — instant NRC (AEC) accountability.**




Compact, filing cabinets hold tab cards, lot number cards to identify and account for radio pharmaceuticals, and patient data cards. Keeps records organized and readily accesible when you need them for any reason.

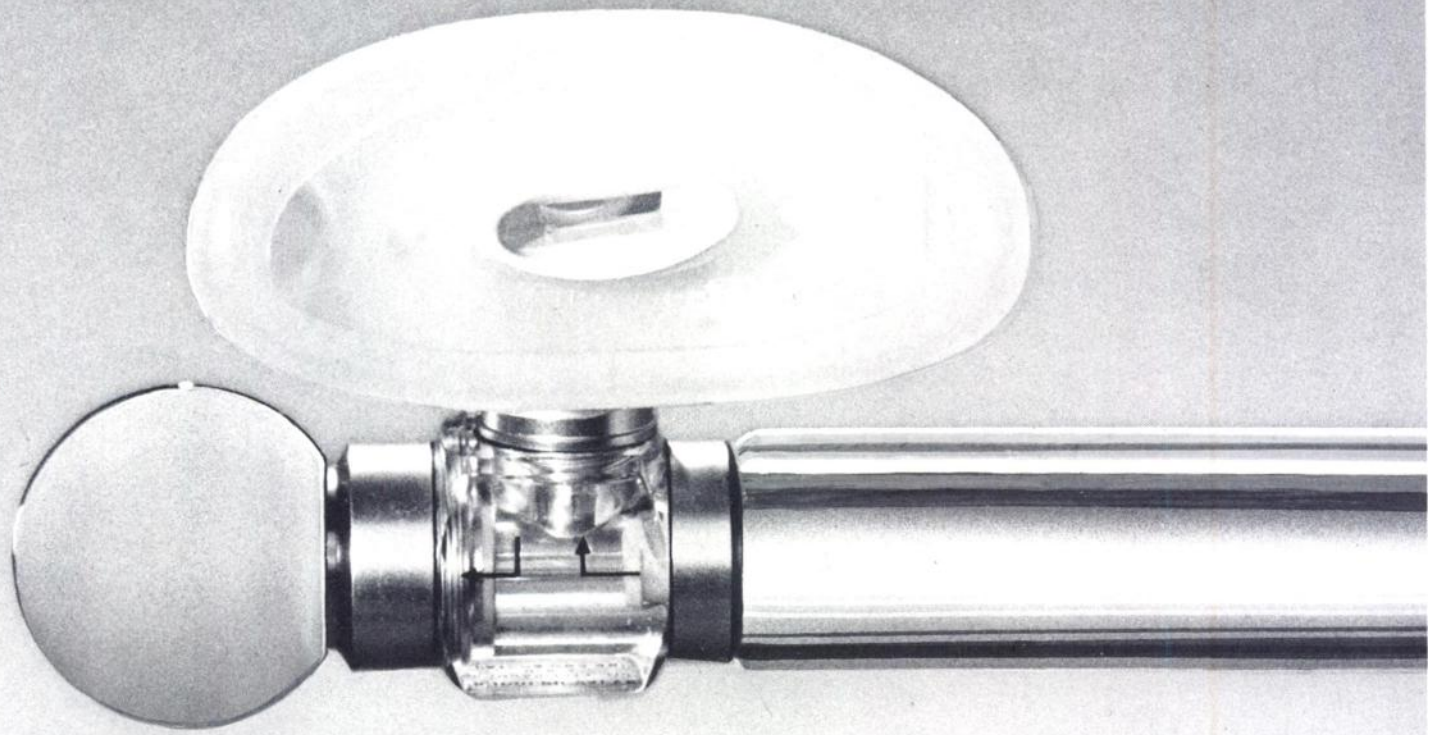
To find out how easy it is to solve your dosecalibration and record-keeping problems, call RADX — the innovators in nuclear medicine.

*The Melécord data card — permanent documentation of all pertinent information*

RADX

P. O. Box 19164 • Houston, Texas 77024 • 713/468-9628

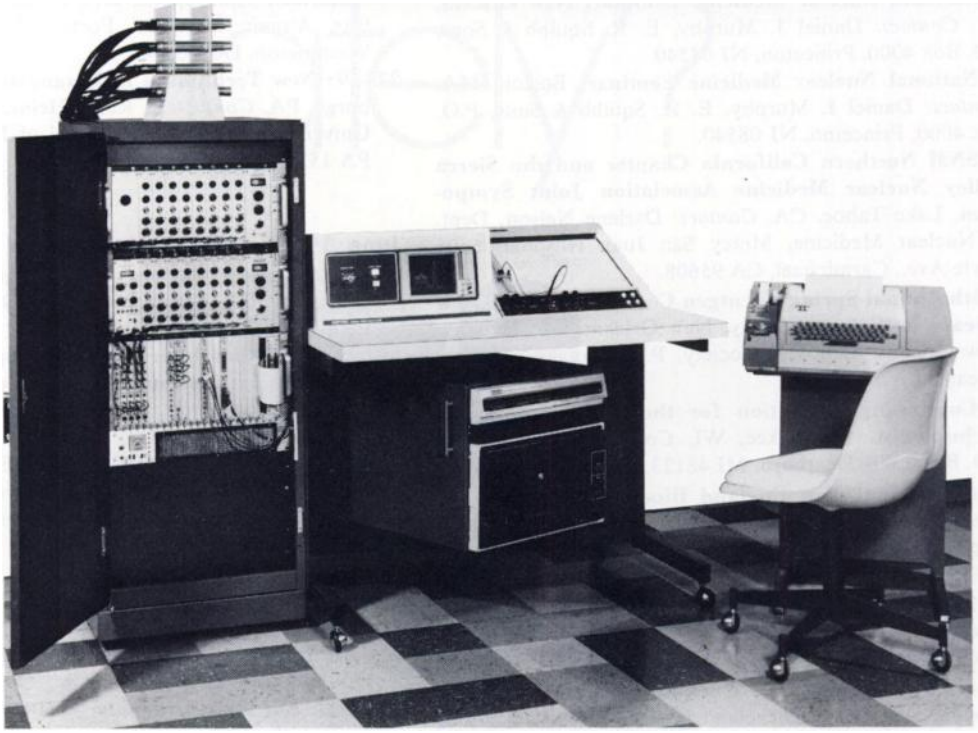
# Now Everybody Can Breathe Easier



Everybody benefits from comprehensive technological advances like the widely used Omnimedical AVM-3 Automated Ventilation Module. With the AVM-3 radioxenon ventilation studies are automated, simplified, reproducible one man operations. Patient cooperation is not needed. Interfaced with the gamma camera, the operator selects a study sequence—Single Breath (tidal volume or vital capacity) or Rebreathe, singly or in combination—and pushes the start button. Scintiphotos are initiated automatically at precise predetermined intervals. The data is then collected. The entire system is enclosed in a streamlined case mounted on an overbed table for use on patients in either sitting or supine positions. The AVM-3 is easy to position, easy to use, easy on the patient, even easy to store. And it's easy to buy. $3,750. F.O.B. Los Angeles. Omnimedical guarantees 30 day delivery. Now, you can breathe easier, too! AVM-3 by Omnimedical, P.O. Box 1277, Paramount, Ca. 90723 (213) 633-6660.

**OMNIMEDICAL**

# When you need that EXTRA capability...



Model 4840/16 Cerebral Blood-Flow System

**Solid-state detectors ☑**
**NIM electronics ☑**
**MCA's ☑**
**☑ CAMAC**
**☑ Computer systems**
**☑ Scintillation detectors**

. . . then you should ask yourself this important question: Where else can you obtain all these (plus the experience that goes with them) from one source?

For complete information, write Life Sciences Division, Ortec Incorporated, 110 Midland Road, Oak Ridge, TN 37830; phone (615) 482-4411. Worldwide sales and service.

ORTEC®
AN EG&G COMPANY

## Discover what you've been missing.

# What have we done for you lately?


We've developed a dual function radioisotope calibrator . . . one that provides an added measure of confidence with *two* modes of operation:

- ☐ Radiation Exposure Monitoring
- ☐ Radioisotope Calibration

FOR THE NUCLEAR MEDICINE SPECIALIST: The assurance of knowing the measured radiation exposure-rate around the work station . . . hot lab . . . injected patient. This knowledge leads to more rapid and safer handling of radioactive material and the consequent lowering of radiation exposure for the operator.

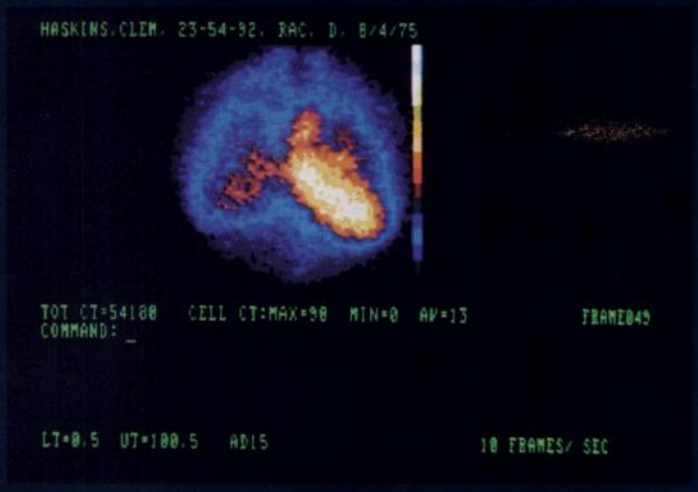
- ☐ Exposure-Rate Measurements to 20R/hour
- ☐ 0.1 mR/hour Sensitivity
- ☐ Remote Detector Operation

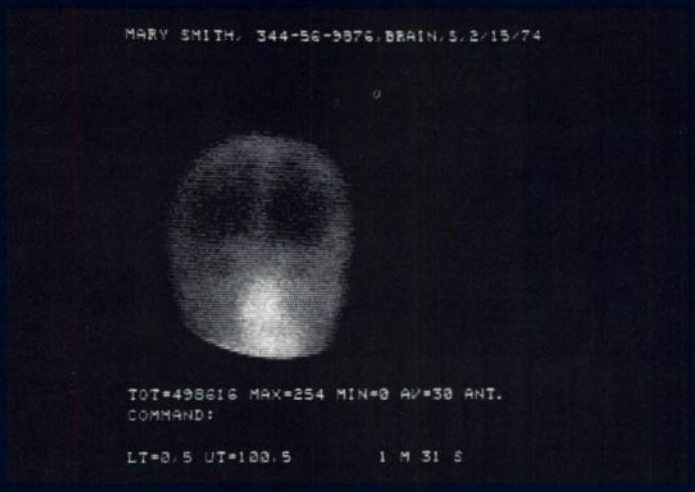
FOR THE PATIENT: The assurance that the administered dose is calibrated to be *exactly* as prescribed.

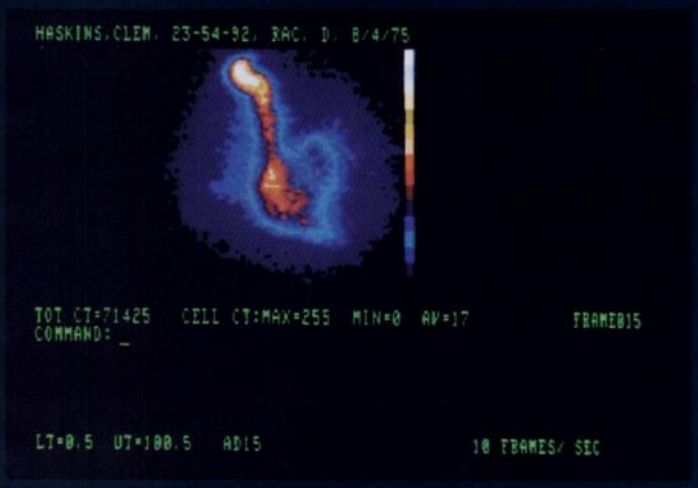
- ☐ 90+ Isotope Calibrations
- ☐ Widest Range (to 20 Ci)
- ☐ Geometry Independence

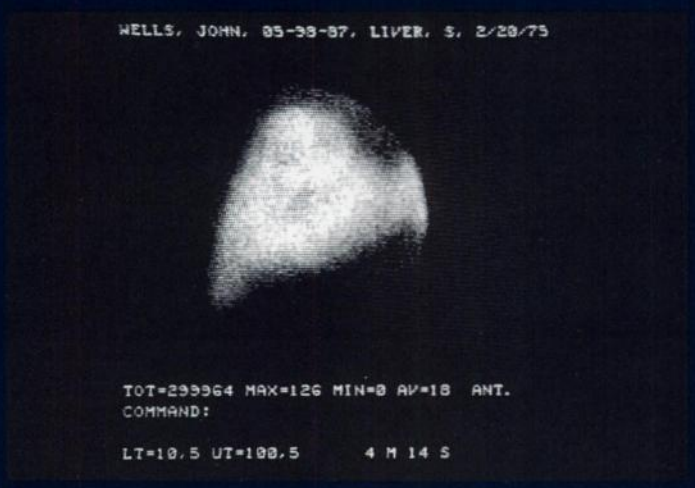
CAPINTEC, INC.

136 Summit Avenue • Montvale, New Jersey 07645 • (201) 391-3930




# Digital's Gamma-11. It's the most powerful nuclear medicine system you can buy.

Digital's Gamma-11 gives you more performance than any other system on the market.

The proof? Gamma-11 lets you acquire and analyze information from single or multiple gamma cameras. Simultaneously. Gamma-11 also lets you choose from more than 150 different data acquisition and analysis functions. What's more, you can display that data in either black-and-white or color. And replay high speed dynamic studies up to 16 frames/second with no flicker.

Gamma-11 even gives you built-in protection for patient data and programs. And positive patient identification and count information on every frame.

Yet even though the system is sophisticated, it's simple to use. You can run everything using a series of logical two-letter commands.

Gamma-11 gives you power and flexibility. Backed by Digital medical software and support specialists. No wonder 100 hospitals are using Gamma-11 today. Shouldn't yours?

**Gamma-11 clinical software includes:**

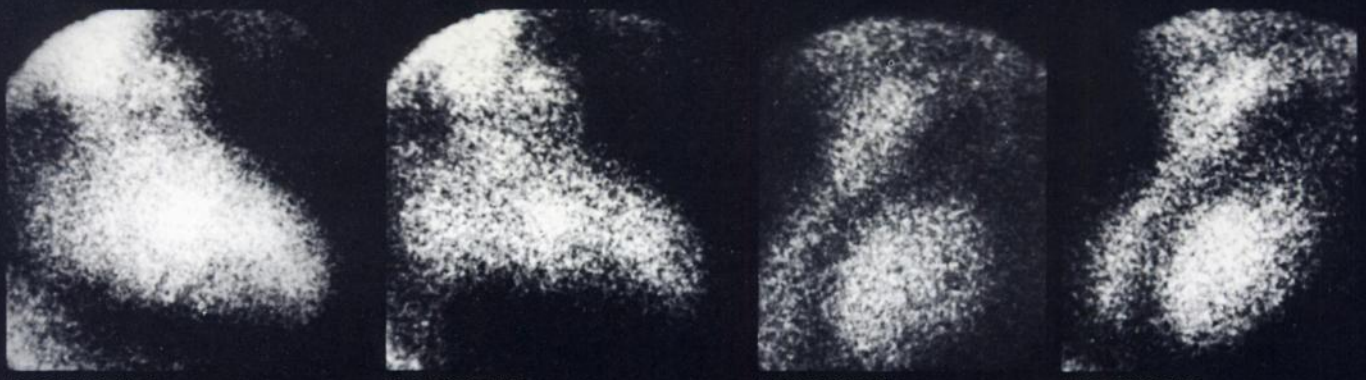
- Cardiac analysis
- Brain analysis
- Lung analysis
- Renal analysis
- Rib removal
- Functional imaging
- Radio-immunoassay
- Liver/pancreas analysis
- C.T. scan analysis

For our brochure, write Digital Equipment Corporation, Marlborough, Mass. (617) 481-9511, ext. 6982. European headquarters: 81 route de l'Aire, 1211 Geneva 26. Tel: 42 79 50. Digital Equipment of Canada, Ltd.

digital

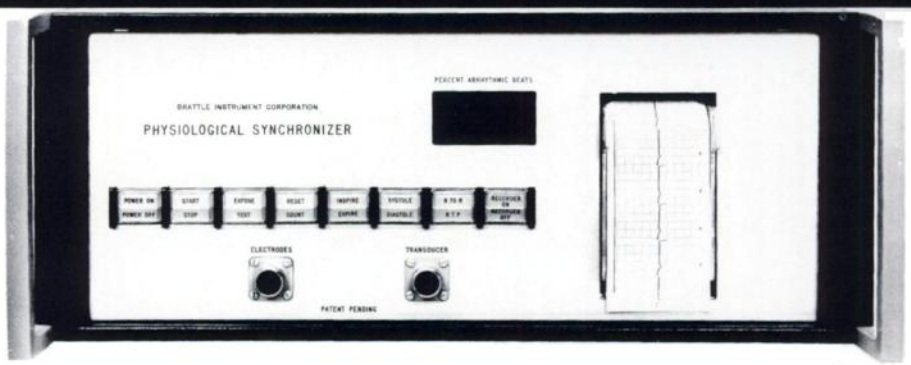
**Visit us at Booth E**
**23rd Annual Meeting, Society of Nuclear Medicine**
**June 8-11, 1976 — Dallas, Texas**

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



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

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




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

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

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

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

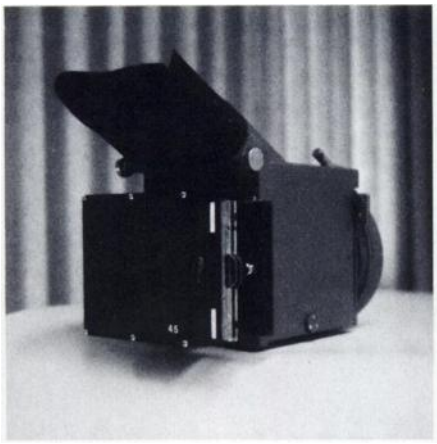
**A single pair of axillary electrodes captures both heart and breath**
It's easy. And we supply disposable, pre-filled electrodes.

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

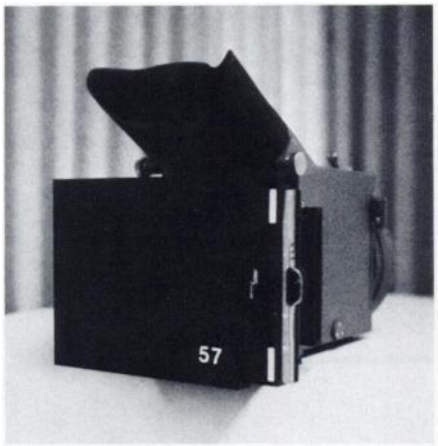
**What's the next step? Get in touch**
Ask your NEN man about Brattles and HSA Kits. He can show you a portfolio of clinical pictures and arrange to have one of our people give you a demo. Or write or call us direct. We'll send you brochures on this and other models, and will give you your own set of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

## Brattle Instrument Corporation

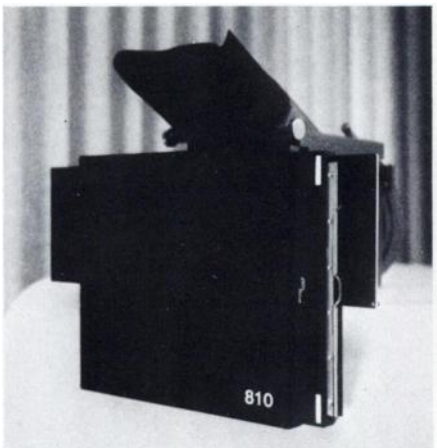
243 Vassar Street • Cambridge, Massachusetts 02139 • 617-661-0300



**MODEL "45" (4 x 5)**




**MODEL "57" (5 x 7)**




**MODEL "810" (8 x 10)**

# *"NISE-FORMAT"™

Since our first idea was born on February 18, 1972 to make a manual positioned, framed film cassette holder for multi-images on X-ray film, we have been able to improve our original design. The total size is now reduced to about the size of the cassette itself.

## FEATURES:

- Available in all sizes (11 x 14 not shown)
- Model No. 45 — Excellent for triple lens cameras
- Model No. 57 — For enlarged, single whole body studies or 2 normal size views (4 to 6 when minified)
- Model No. 810 — For 4 or 6 images (8 to 10 when minified)
- Model No. 1114 — For your "special" requirements (3 "Y" positions)
- Double-sided Cassette can be inserted from either side (left or right)
- No modification necessary, fits directly into existing Polaroid filmback holder (specify!)
- Will never need any service
- Works with triple or single lens cameras
- Economical, reduces film cost up to 60%

*Patent Applied For

Futher information available upon request.
Please write or call

**N.I.S.E., INC.**
**20018 STATE ROAD, CERRITOS, CALIFORNIA 90701**
**TEL. (213) 860-6708**

*As shown at the 22nd Annual Meeting of the S.N.M. in Philadelphia, PA.

## POSITIONS OPEN

NUCLEAR MEDICINE RESIDENCY. Two-year program affiliated with University of CA/Irvine. Opening available July '76. Active clinical and research program in 1691 bed GM&S teaching hospital. Contact K. P. Lyons, M.D., Chief, Nuclear Medicine Service, V.A. Hospital, Long Beach, Calif. 90801. An equal opportunity employer.

NUCLEAR MEDICINE TECHNOLOgist—for 600-bed teaching hospital providing excellent experience and opportunity for continued learning. Excellent fringe benefits. Registered in Nuclear Medicine or graduate of A.M.A. approved Nuclear Medicine program. Equal Opportunity Employer. Send Resume to: Personnel Dept., U. of I. Med. Center, P.O. Box 6998, Chicago, Ill. 60680. Tel. (312) 996-6680.

WANTED — RADIOLOGIST, BOARD certified by the American Board of Radiology with at least one year of training or experience in Nuclear Radiology. Additional training or experience in ultrasound desirable but not essential. Position available July 1, 1976; rank and salary dependent on experience. Send curriculum vitae to Clyde M. Williams, M.D., Department of Radiology, Box J374, University of Florida College of Medicine, Gainesville, Fla. 32610.

CURRENT OPENING FOR A REGISTered or experienced Nuclear Medicine Technologist. Preferable versatile enough to do both imaging and wet work. 450-bed teaching hospital with an active imaging and in vitro department. Located in Metropolitan Northern New Jersey, 20 minutes from downtown Manhattan. Please reply Box 500. Society of Nuclear Medicine, 475 Park Ave. So., New York, N.Y. 10016.

VACANCIES IN CHICAGO AND northern Illinois for scanning technologists. Top salaries, fully-paid hospitalization, major medical and profit-sharing plan. Send resume to: Isotope Measurements Labs., 2356 Skokie Valley Road, Highland Park, Ill. 60035. 312/ 433-3380.

CARDIOVASCULAR RESEARCH FELlowship. Postdoctoral fellowship position for research training in: Physiology, pathophysiology and pharmacology of cardiac and skeletal muscle; Reflex control of the circulation; X-ray videometry; clinical and basic ultrasound; 3-Dimensional reconstruction; Atherosclerosis; platelet inhibitors; hypertension; Computer applications in clinical cardiology. Position available immediately for candidates with M.D. or Ph.D.; stipend $12,600 and up, depending on experience. May combine with advanced clinical training in cardiovascular medicine. Contact Robert G. Tancredi, M.D., Director, Cardiovascular Research Training Program, Mayo Clinic, Rochester, MN 55901. An equal opportunity employer.

REGISTERED NUCLEAR MEDICINE Technologist. Immediate opening in a new and expanding department. Good benefits, salary commensurate with experience. Room for advancement to a qualified person. Contact: Jay R. Scharoff, M.D., Broadway Methodist Hospital, 8701 Broadway, Merrillville, Ind. 46410. An Equal Opportunity Employer.

IMMEDIATE OPENINGS FOR TWO technologists in fully accredited 370-bed community and university affiliated hospital, situated in scenic northcentral Pennsylvania. Proficiency required in radioimmunoassay work, imaging dynamic studies and computer applications. Department is equipped with cameras, rectilinear scanners, automated well counters and a computer. Good salary and full benefits. Contact Jack D. Cain, Director of Personnel, The Williamsport Hospital, 777 Rural Ave., Williamsport, Penna., 17701.

NUCLEAR MEDICINE RESEARCH technologist. Challenging position available July 1, 1976 or possibly sooner for exceptional, qualified, responsible individual, able and willing to assume substantial responsibility in a multidisciplinary research effort at a university medical center. Excellent opportunity for career development. Salary commensurate with experience. Contact Jerome G. Jacobstein, M.D., The New York Hospital-Cornell University Medical College, 525 East 68th Street, New York, N.Y. 10021.

NUCLEAR MEDICINE RESIDENCY. The nuclear medicine section of the University of Michigan Medical Center offers a two years AMA approved residency in nuclear medicine. The clinical staff includes five full time physicians, three physicists, two radiopharmacists, and seven certified technologists. The residency program is divided between clinical training and clinical research. The clinical unit contains 6,500 sq. ft. of space. The 4,000 sq. ft. of research space is in a connected building (radiopharmaceutical, physics, instrumentation and thyroid research). The department is comprehensively equipped with cameras, all of which are interfaced to a computer. The section performs over 20,000 procedures yearly including both imaging studies and in vitro test. The nuclear medicine section also has a technologist training program in which the residents may participate as instructors. For further information and applications for July 1977, contact William H. Beierwaltes, M.D., Physician in Charge, Nuclear Medicine Section, University Hospital, Ann Arbor, Mich. 48109. An equal opportunity/ affirmative action employer.

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

ASSOCIATE DIRECTOR, CLINICAL (Imaging) Nuclear Medicine. Large teaching hospital with nuclear medicine residency program and large service load. Modern, well-equipped lab. Seeking candidate with strong background in clinical medicine ABNM certified or eligible, academically oriented with full time commitment to nuclear medicine. Immediate opening. Send resume and salary requirements to Box 501, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

RADIOCHEMIST OR RADIOPHARMAcist for new, cooperative radiopharmacy involving five Honolulu hospitals. Salary dependent upon experience. Contact Pacific Radiopharmacy, Ltd., 347 North Kuakini Street, Honolulu, Hawaii 96817.

NUCLEAR MEDICINE TECHNOLOgist needed for this 600-bed teaching hospital with medical school affiliation. Must be registered, or meet the requirements for registry (ARRT or ASCP) and have one year experience. Salary negotiable and liberal benefits. Contact Office of Human Resources, Richland Memorial Hospital, 3301 Harden Street, Columbia, S.C. 29203. Phone (803) 765-6271. Equal Opportunity Employment.

NUCLEAR MEDICINE TECHNICIAN. Certified Technician with additional x-ray technology experience needed for expanding 100-bed Community Hospital in Western Washington. New equipment—Excellent salary & fringe benefits, proportional to experience. Contact Dr. Cagan, Radiology Dept.; Grays Harbor Community Hospital, Aberdeen, Wash. (206) 532-8330.

## POSITION WANTED

PHYSICIAN, DIPLOMATE OF ABNM and ABIM, 31, experienced in all aspects, seeks full-time opportunity in clinical nuclear medicine: group, partnership, or solo. Reply to: Box 502, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

INTERNIST, NUCLEAR MEDICINE. Specialist, certified in both Internal Medicine and Nuclear Medicine, university trained in both specialties, desires a full-time position in Nuclear Medicine or combined Nuclear Medicine-Internal Medicine. Reply: Box 503, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

NUCLEAR PHARMACIST/CHEMIST: B.A., B.S. Ph., 2 year Doctor of Pharmacy Degree, plus one year residency in nuclear pharmacy in university hospital. Three years' experience includes operation of centralized nuclear pharmacy, sterile product formulations, investigational studies of radiopharmaceuticals in animals and humans, and teaching in related topics. Contact, Dr. Dan R. Ford, Jr., 1473 Shady Birch Road, Memphis, Tn. 38116.

RADIOCHEMIST: Ph.D. 1970 WITH varied experience in radioanalysis, chromatography, isotope preparation, instrumentation, and labelling. Desires industrial or institutional R&D affiliation. Publications, excellent references, will relocate. G. P. Gennaro, 7 Randolph Terr., Fair Lawn, N.J. 07410.

PHYSICIAN IN CHARGE OF NUclear Medicine, ABNM certified, experience, previous university training and publications, wishes to relocate. Reply: Box 504, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

M.D., ABNM CERTIFIED, UNIVERsity trained, radiology background, 3½ yrs. administrative, teaching and clinical experience. Prefer Northeast, Mid Atlantic, Florida. Available Immediately. Reply: Box 505, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

NUCLEAR MEDICINE PHYSICIAN with extensive experience in all aspects of nuclear medicine; research and teaching, wishes to relocate. Board certified in Nuclear Medicine and Internal Medicine. Willing and able to develop a comprehensive, computerized nuclear medicine program for interested party whether in academic medicine, community hospital, or in private practice. Response should include job description and salary range. Send reply to Box 506, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

EDUCATIONAL DIRECTOR, ASCP (NM) certified with Ph.D. in chemistry, desires teaching position with, or without Radiochemistry/Radiopharmaceutical duties. Extensive experience in organizing and conducting all phases of NMT program as well as establishing and maintaining radiopharmacy including lab set-up, design of quality control, and compliance with state/ NRC/FDA regulations. Please reply to Box 507, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

## FOR SALE

BRAND NEW PACKARD 5230 GAMMA Counter coupled with Monroe 1860-11 calculator. Will accept best offer. Contact Ralph Perkerson, M.D., Route 4 Maple Dr., Vidalia, GA 30474. Phone 912-537-8277.

USED PICKER MAGNASCANNER with 5" detector head, Model #2806H, Transitorized. Unit has five collimator and two light pipes and cassette with slide. Contact Elaine Pekrul, Purchasing Agent—(203) 573-7335.

## RADIOPHARMACIST/RADIOCHEMIST

The Royal Victoria Hospital (a teaching hospital of McGill University) has an opening for a suitably qualified Radiopharmaceutical Scientist in the Department of Nuclear Medicine. The position calls for previous experience in all aspects of radiopharmacology, including quality control, assay and calibration, chromatography, record keeping and research. Apply to:

**Ms. Julie D. Dollin**
**Employment Counsellor**
**Royal Victoria Hospital**
**687 Pine Ave. West**
**Montreal, P.Q.**
**H3A 1A1**

**Immediate Opening!**

## NUCLEAR MEDICINE TECHNOLOGIST

Come, see what Nashville has to offer for registered or registry-eligible nuclear medicine technologists. A 550-bed teaching hospital, with a dynamic Department of Nuclear Medicine. Opportunity to alternate in Vitro, Vivo and Radiopharmacy areas. Modern facilities, including three gamma cameras, dual probe scanner, and X-ray fluorescent scanner. Excellent technologist training program. Negotiable salary. Outstanding health insurance. Retirement plans. Over one week of paid holidays. Paid sick leave. Two weeks paid vacation. Overtime and stand-by pay, with paging device provided. Scheduled call: One out of six weeks. Excellent growth opportunity in pleasant Southern atmosphere with unusually high quality lifestyle. Write or Call Collect (615) 322-2801.

VANDERBILT MEDICAL CENTER

Ms. Margaret Boyd
Vanderbilt Employment Center
110 21st Avenue South
Room 1103 Baker Building
Nashville, Tennessee 37203
**An Equal Opportunity Employer**

## INTRODUCTORY ONE WEEK PHYSICIAN COURSE IN NUCLEAR MEDICINE

**Cleveland, Ohio**

**Contact:**
**D. Bruce Sodee, M.D., Director**
**Nuclear Medicine Institute**
**6780 Mayfield Road**
**Cleveland, Ohio 44124**

**1976**

**July 12–16, 1976**
**November 8–12, 1976**

## One Week Training Program Given At Your Institution

**Introductory and survey course in**
**NUCLEAR MEDICAL SCIENCES**
**for the beginning**
**RESIDENT OR TECHNOLOGIST**

Course covers: Physics, instrumentation, imaging systems, quality assurance, in-vitro studies and radiopharmaceuticals.

Programs can also be tailored to meet your needs; for example, ABNM Review, quality assurance, computer applications, etc.

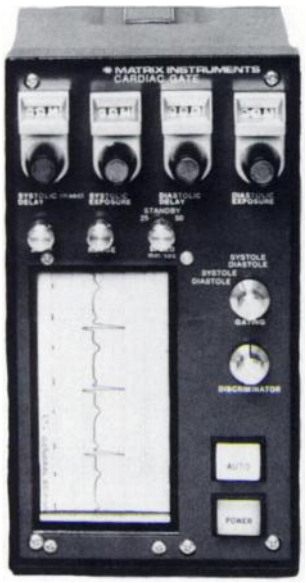
For information call or write:

**EDWARD M. SMITH, Sc.D.**
**Nuclear Medical Scientist**
**P.O. Box 128**
**Walland, Tennessee 37886**
**Phone: (615) 984-2931, 984-2599**

CONSULTING SERVICES AVAILABLE

# State of the art in cardiac and respiratory synchronization.

## Cardiac Gate




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

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

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

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

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

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

## Opti Imager


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

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

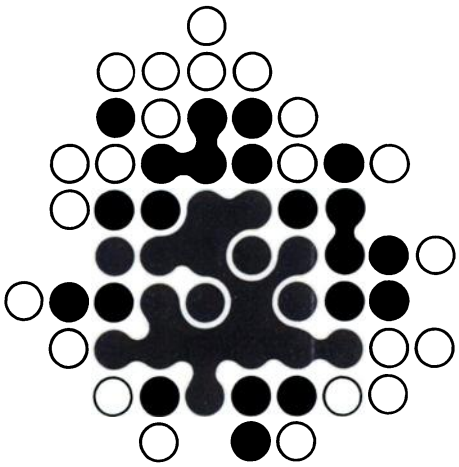

**#MATRIX INSTRUMENTS**

1 Ruckman Rd.
Closter, N.J. 07624
**(201) 767-1750**


**Mail coupon to receive sample clinical studies.**

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

Name
Hospital
Address
State
Phone
Title
Dept.
City
Zip



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

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

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

CEA-ROCHE may also be used...

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

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

Tear out here.

# CEA-ROCHE
*Carcinoembryonic Antigen assay*

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

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

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

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

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


*References*

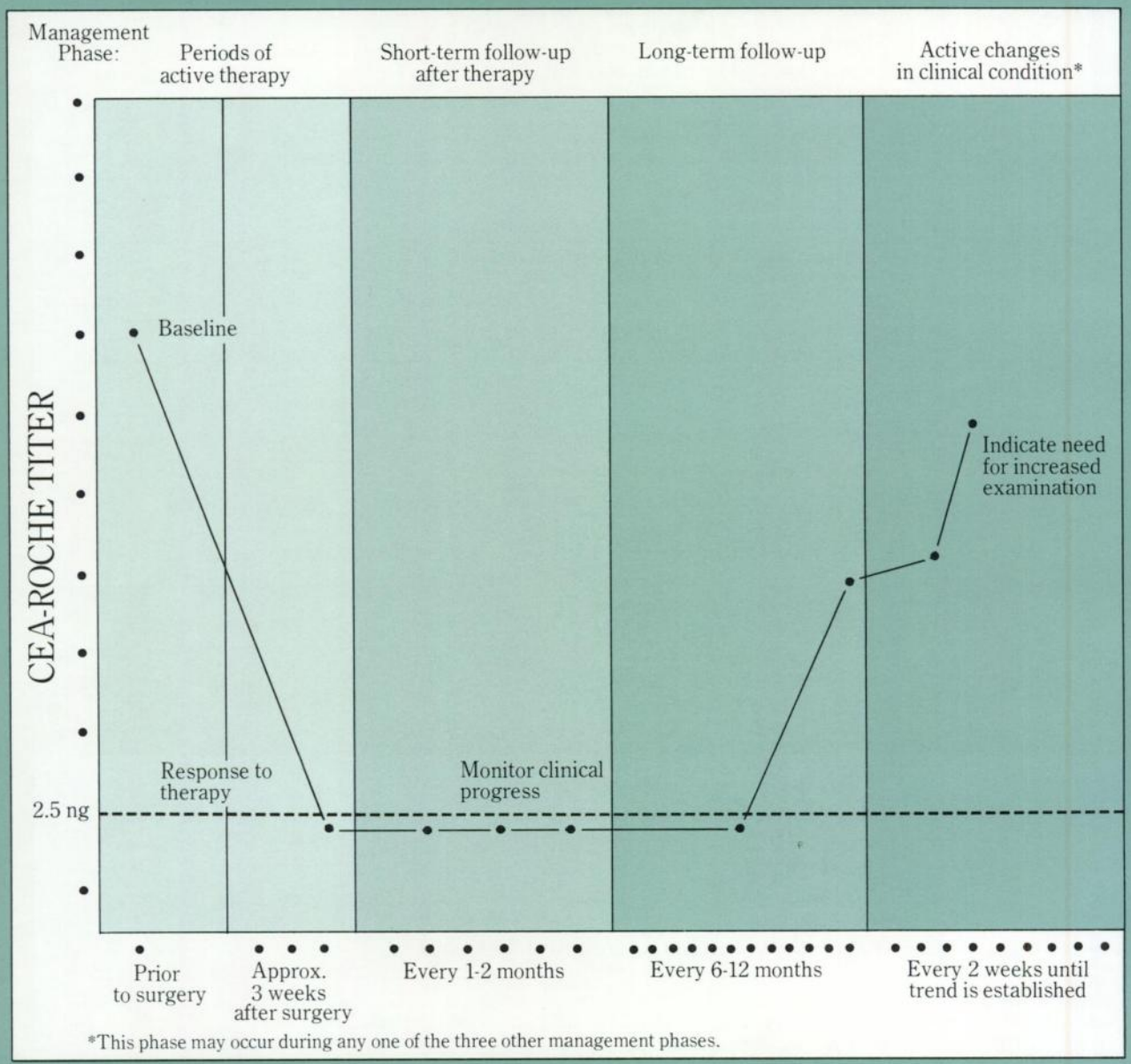
1. *CEA-ROCHE: A Clinical Monograph*, Hoffmann-La Roche Inc., Nutley NJ
2. Holyoke ED, *et al: Cancer 35*:830-836, Mar 1975
3. Mavligit GM, *et al: Am J Dig Dis 19* (11):1047-1053, Nov 1974
4. Mach J-P, *et al: Lancet 2*:535-540, Sep 7, 1974
5. Barrelet V, Mach J-P: *Am J Obstet Gynecol 121*:164-168,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


ROCHE

ROCHE

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

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




CEA-ROCHE may be ordered from

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

Additional information may be obtained from

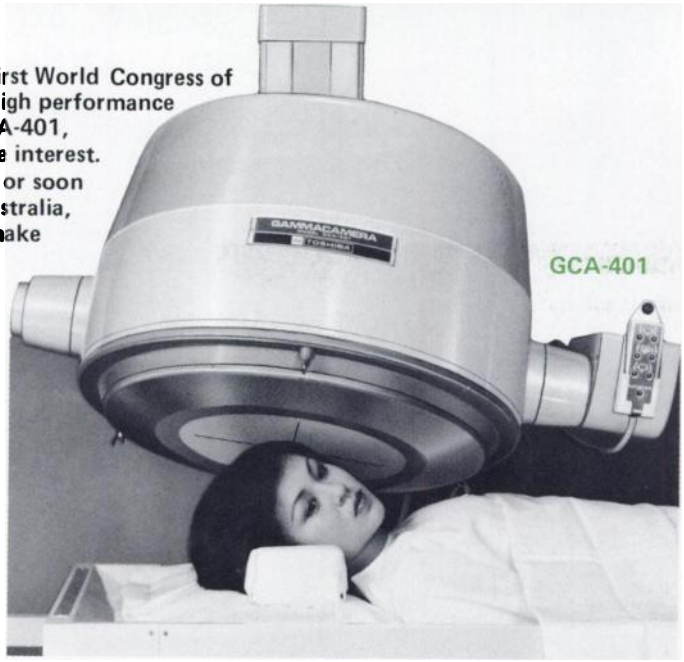
- your Roche Representative
- the Professional Services Department, Roche Laboratories, 340 Kingsland Street, Nutley, New Jersey 07110 (201) 235-4873

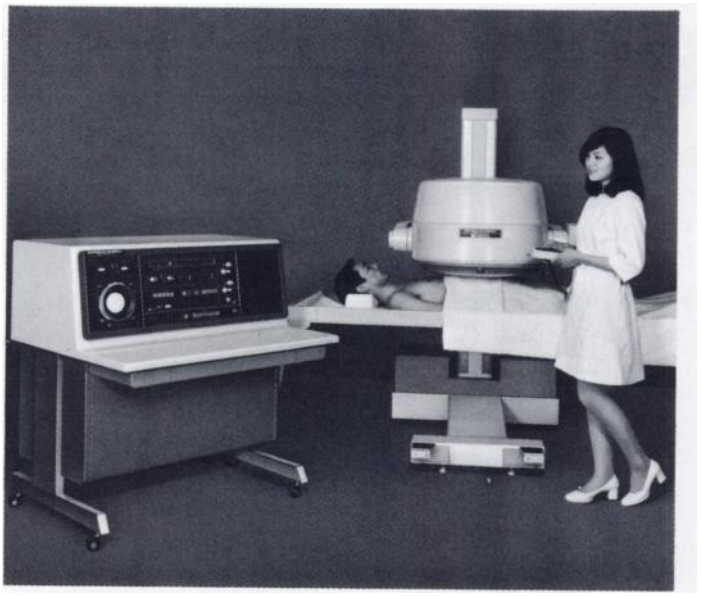
# Why All the Interest in Toshiba's Newest Jumbo Gammacamera?

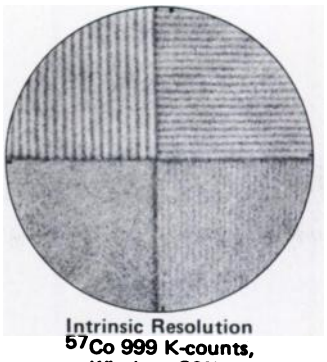
**Since its introduction at the First World Congress of Nuclear Medicine, our newest high performance delay line Gammacamera, GCA-401, has been generating world-wide interest. In fact, several sets have been, or soon will be installed in Europe, Australia, and Japan. The features that make this unit so attractive include:**

- High intrinsic resolving capability (3.2mm lead pattern using $^{99m}$Tc.)
- 35cm usable field of view, large enough to image both lungs or a large organ.
- Programable setting of measuring conditions
- Compact, easy-to-operate control console
- Adaptable for whole-body-imaging
- Compatible with any data processing system
- Reliability assured through utilization of Toshiba's world renowned IC electronics

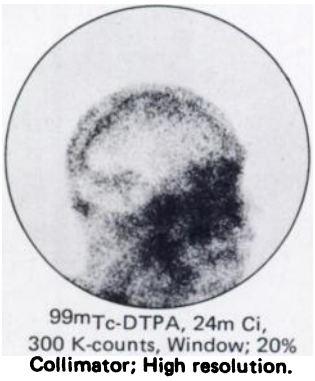
**If we've caught your interest too, please write. We'll be pleased to send you all the information you need on the GCA-401.**



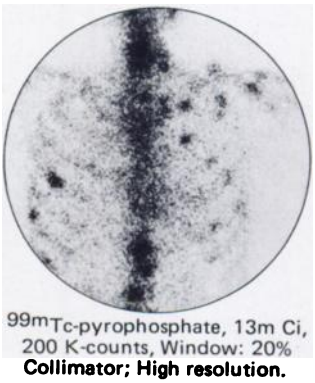





Intrinsic Resolution
$^{57}$Co 999 K-counts,
Window; 20%
Pb-Bar pattern; 2.4, 3.2, 4.0, 4.8 mm



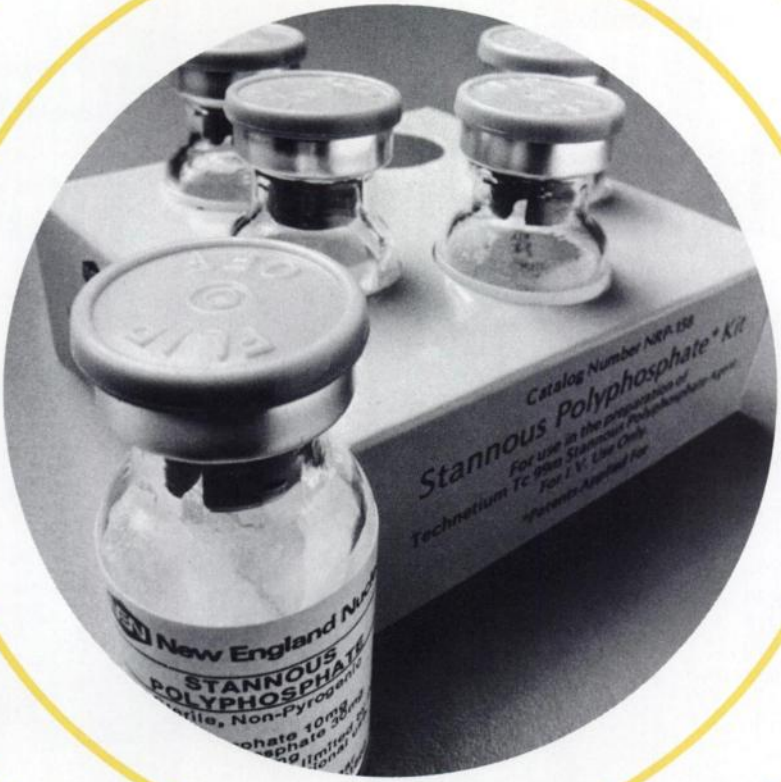
$^{99m}$Tc-DTPA, 24m Ci,
300 K-counts, Window; 20%
Collimator; High resolution.



$^{99m}$Tc-pyrophosphate, 13m Ci,
200 K-counts, Window: 20%
Collimator; High resolution.

Toshiba **TOSHIBA**
TOKYO SHIBAURA ELECTRIC CO., LTD.

Producer Goods Export Division
1-6, Uchisaiwaicho 1-chome, Chiyoda-ku, Tokyo, 100 Japan
Cable: TOSHIBA TOKYO Telex: J22587 TOSHIBA Phone: 501-5411




# One simple step to a bone imaging agent

It's quick—it's convenient. Add the sodium pertechnetate Tc 99m into a vial of NEN Stannous Polyphosphate and swirl. Now you have a bone imaging agent that provides a high target/non-target ratio, excellent lesion detection and consistent results.

Our unique formulation—Pyrophosphate and Trimetaphosphate—has long shelf life—1½ years. Low Stannous Chloride content—1 mg/vial. No refrigeration required... a truly effective bone imaging agent.

**Indications:** Technetium Tc 99m Stannous Polyphosphate is primarily used as a skeletal imaging agent to evaluate areas of altered osteogenesis.

**Contraindications:** None.

**Warnings:** This radiopharmaceutical preparation should not be administered to pregnant or lactating women or to children under 18 years of age unless the benefits to be gained outweigh the potential hazards.

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

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

The contents of the Stannous Polyphosphate vial are intended only for use in the preparation of Tc 99m Stannous Polyphosphate and are not to be directly administered to the patient.

Medical judgment appropriate for any agent should be maintained. As polyphosphates are known to complex cations such as calcium, particular caution should be used with patients potentially suffering from hypocalcemia.

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

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

**Precautions:** Use within 8 hours after aseptic reconstitution with Pertechnetate Sodium Tc 99m. Contains no bacteriostat.

In the use of any radiopharmaceutical, care should be taken to insure minimal radiation exposure to the patient as well as to personnel involved in the procedure, by using the smallest dose of radioactivity consistent with safety and the relative value of the diagnostic information. The bladder dose may be minimized by encouraging the patient to drink fluids immediately before and after the administration of the radiopharmaceutical, and to void approximately 0.5 hours after the administration and then as frequently as it is convenient. If the pelvic region is to be imaged, it is recommended that the patient be encouraged to void immediately prior to the imaging procedure in order to visualize the bony detail of the pelvis and to minimize the bladder contribution to the image.

**Adverse Reactions:** One investigator noted that out of 340 cases he studied within one year, 4 patients reported a mild faintness and numbness of one of the limbs within one hour of dose administration. In all cases the symptoms disappeared after several hours.

**Dosage and Administration:** Technetium Tc 99m Stannous Polyphosphate may only be administered by intravenous injection. In making dosage calculations, corrections must be made for radioactive decay. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

The recommended intravenous dose in the average patient (70kg) is 10mCi with a range of 5-15mCi. Optimal imaging results are obtained within 1-6 hours after administration.

**How Supplied:** The NEN Stannous Polyphosphate Kit is supplied as a set of five vials, sterile and non-pyrogenic. Each nitrogen-flushed vial contains in lyophilized form:

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

The kit may be stored at room temperature.

**New England Nuclear**
**Radiopharmaceutical Division**
Atomlight Place, North Billerica, Mass. 01862
Telephone 617-667-9531
Los Angeles: 213-321-3311 Miami: 305-592-0702

Canada: NEN Canada Ltd., Lachine, Quebec, H7T 3C9, Tel: 514-636-4971, Telex: 05-821808
Europe: NEN Chemicals GmbH, D-6072 Dreieichenhain, W. Germany, Daimlerstrasse 23, Postfach 1240. Tel: (06103) 85034.

# WHY BUY TWO WHEN ONE WILL DO?

**Monitor and Survey with the Searle Dual-duty Log Series Meter**

Need an area monitor *and* a survey meter? Consider the versatile Log Series Meter from Searle. Rugged and easy to use, these meters do double duty, saving you the cost of an additional instrument. Fitted with rechargeable Nickel-Cadmium batteries for long life, the meter stands in a charging base and functions as a highly accurate area monitor. When you need a survey meter, simply remove it from the base and take it to the site. Fully-charged NiCad batteries will provide at least 25 hours of continuous operation. (The meter will also accept standard "D" size flashlight batteries.)

Available in 3 sensitivity ranges (0.02 to 200, 0.2 to 2,000 and 2 to 20,000 mR/hr), these instruments are designed for ease of operation and reliability. The 4-decade meter is always on-scale, so you never need search for the right range. The only controls are an on-off switch and battery check button. Rugged, all solid-state electronics assure drift-free performance. Waterproof construction means the Searle Log Series Meter can be used in severe environmental conditions and is totally immersible for cleaning.

Searle Log Series Meters are available with your choice of 2 bases. The standard charging-monitoring base produces an audible click with each radiation detection event. The deluxe base has an adjustable audible/visual alarm that can be set for any dose rate in the top 3 decades of the meter range.

If your laboratory needs an area monitor *and* a survey meter, why pay for two when one will do? Get all the facts about the Searle dual-duty radiation monitors. Just write or call us for complete technical information.

SEARLE

**Searle Analytic Inc.**
Subsidiary of G. D. Searle & Co.
2000 Nuclear Drive
Des Plaines, Illinois 60018
*Attn: Health Physics*
*Instrumentation Manager*
TOLL FREE 800-323-6015
*(In Illinois 312-298-6600 COLLECT)*

**IN CANADA:**
Searle Instrumentation
Division of G. D. Searle & Co. of Canada, Ltd.
400 Iroquois Shore Road
Oakville, Ontario L6H1M5

AHP-324-A


# Now you can have a COMPUTING DOSE CALIBRATOR for only $1390

Imagine the versatility, convenience and economy, just in $^{99m}$Tc alone. Milk your generator in the morning... then, at any time of day, enter the time and the activity to be injected. The HP-25 INSTANTLY tells you the patient's dose in cc's.

Calculate for yourself

## RAD/CAL Digital Isotope Calibrator $1195

- 4-digit, solid state readout.
- Automatic ranging from 10 $\mu$Ci to 400 mCi (1 Ci—optional).
- Fully-shielded chamber.
- Factory-calibrated for 6 isotopes (additional ones may be added).
- Molybdenum breakthrough shield.

+


Hewlett Packard HP-25 Pre-Programmed Calculator $195

=

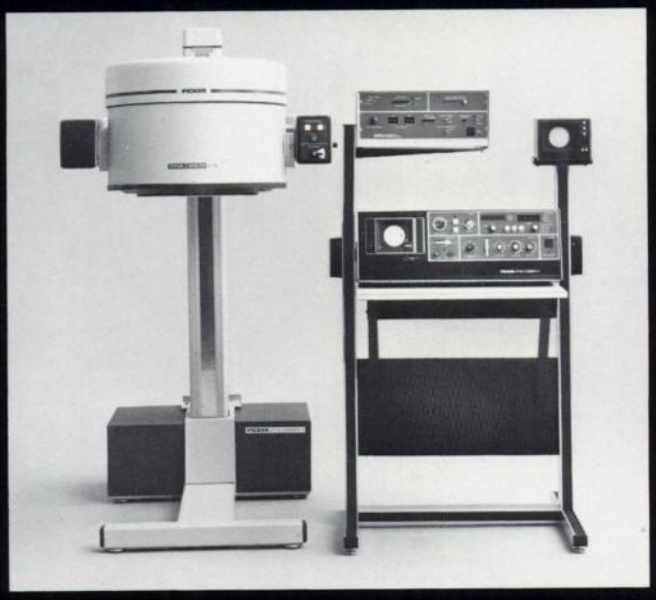
Computing Dose Calibrator $1390

**PRICE + PERFORMANCE... you won't beat this anywhere.**

*For full information, ask for Bulletin 170-1B*

**NUCLEAR ASSOCIATES, INC.**
Subsidiary of
**RADIATION-MEDICAL PRODUCTS CORP.**
100 VOICE ROAD • CARLE PLACE, N.Y. 11514

# Think results.



Think dynamite.

Picker's dynamite Dyna® Camera family of nuclear equipment—featuring the exceptional DynaCamera 4/15 Large Field Detector—achieves diagnostic results second to none.

The nuclear suite equipped with the DynaCamera 4 with 10, 12 or 15" detector, Clinical Analyzer data processing and storage system, Omniview® 4, full range of collimators and accessories is assured of possessing today's state-of-the-art nuclear imaging system.

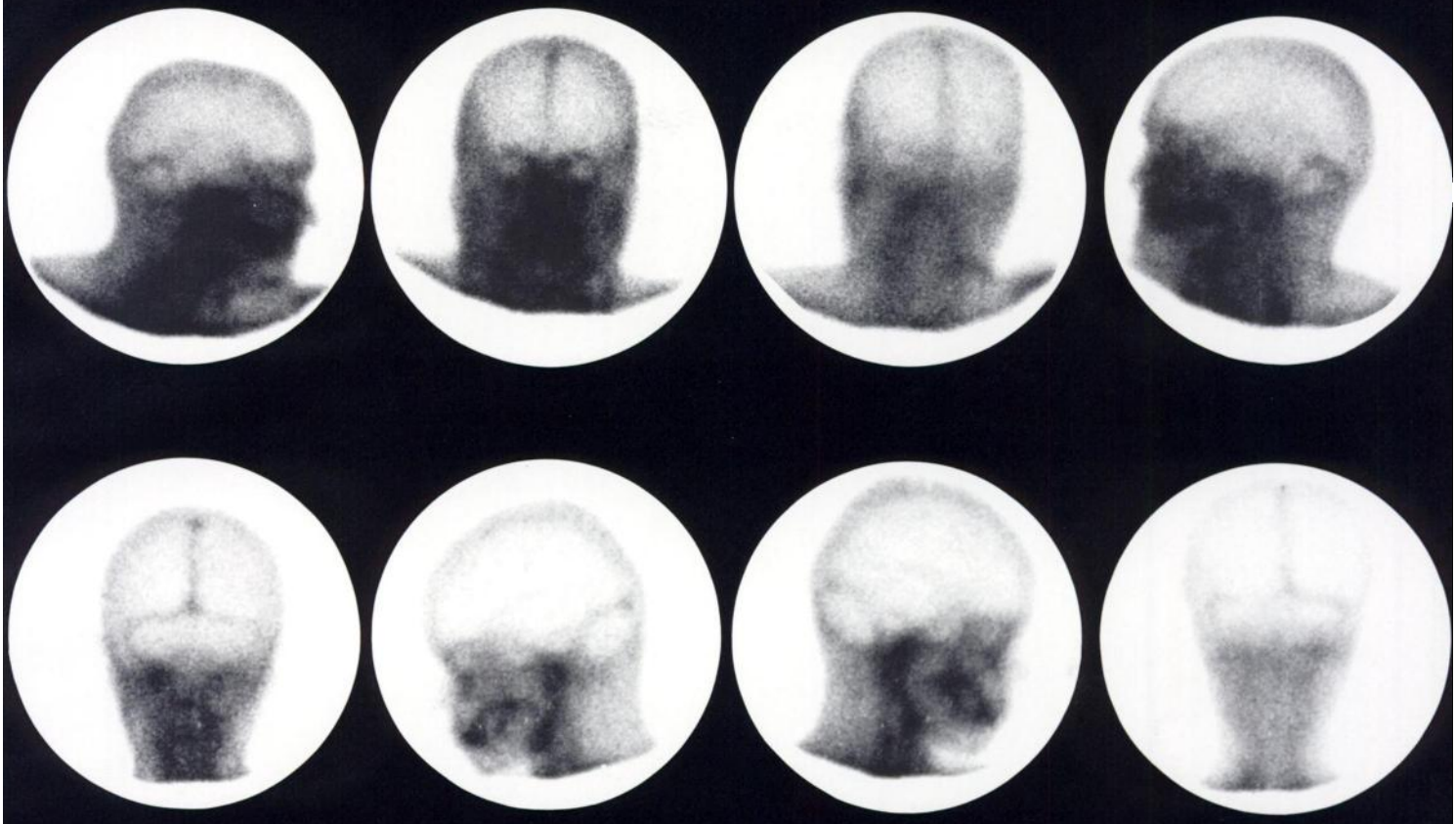
This flexible system of nuclear capabilities is another example of Picker'synergy—the complete interfacing of systems and services for improved diagnostic visualization.


Discuss the dynamite nuclear family with your local Picker representative. Or write Picker Corporation, 12 Clintonville Road, Northford, CT 06472.

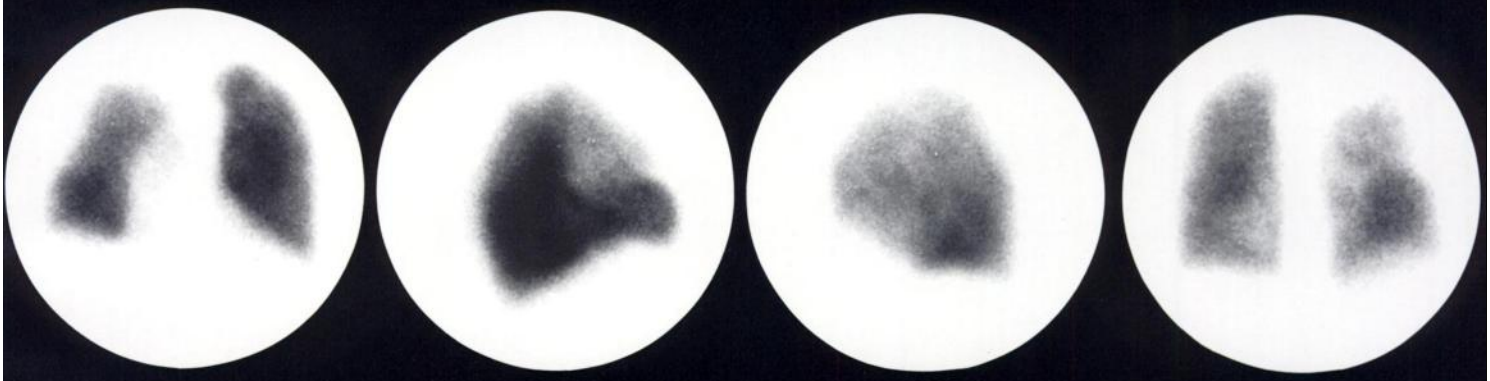
The results speak for themselves.

**PICKER®**

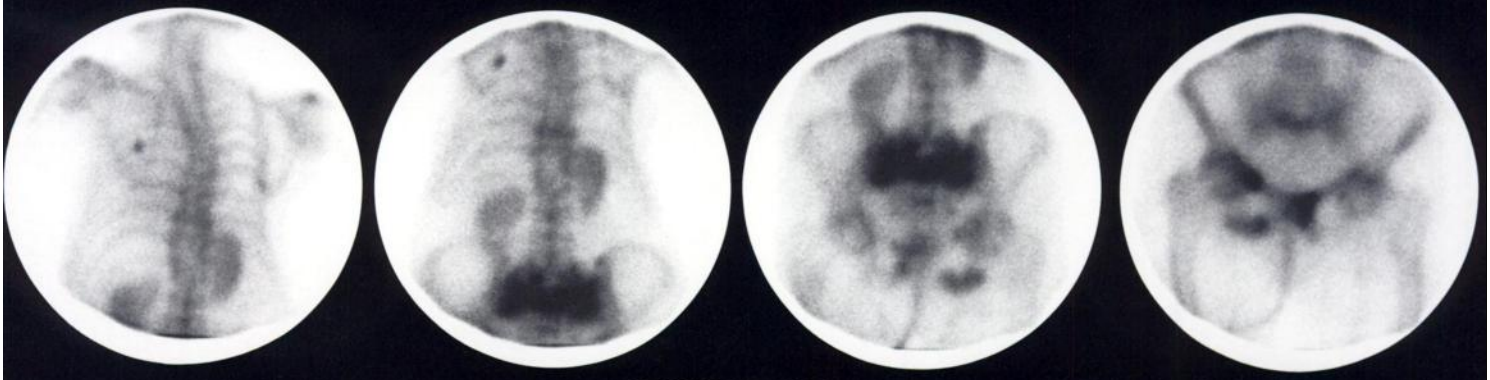
Picker Large Field (15" diameter) Detector



BRAIN STUDIES
$^{99m}$ Tc Sodium Pertechnetate



LUNG STUDY
$^{99m}$ Tc MAA

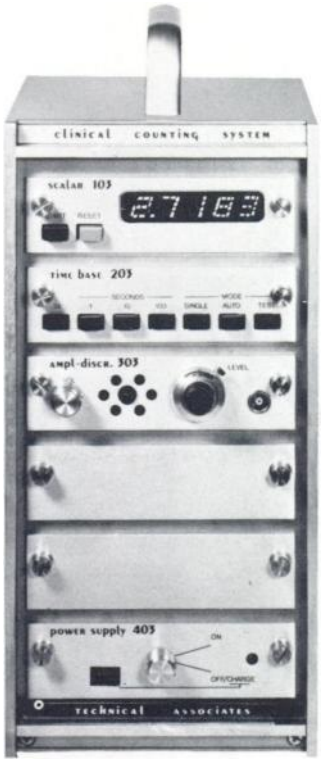


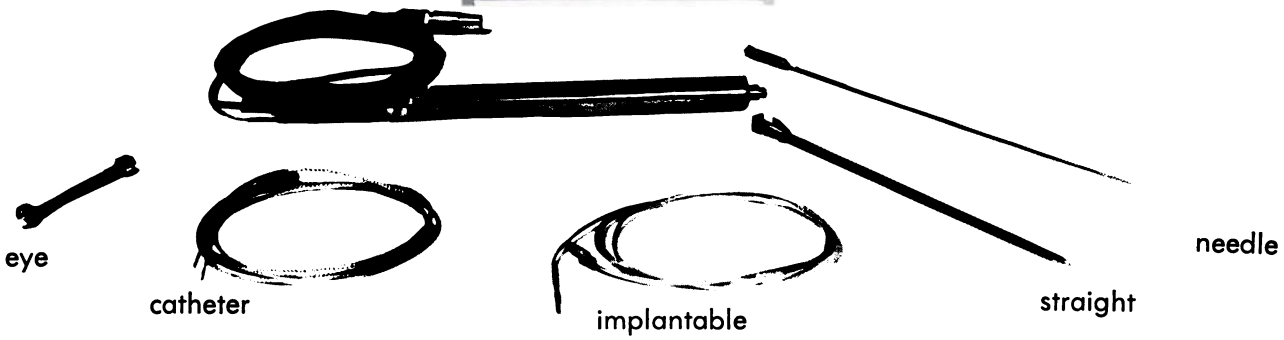
BONE STUDY
$^{99m}$ Tc Diphosphonate

Picker synergy

# the proven clinical counting system

**NEW**
**Thrombus Detectors**
write for details




## Solid State Probes

G.I.

Scintillator

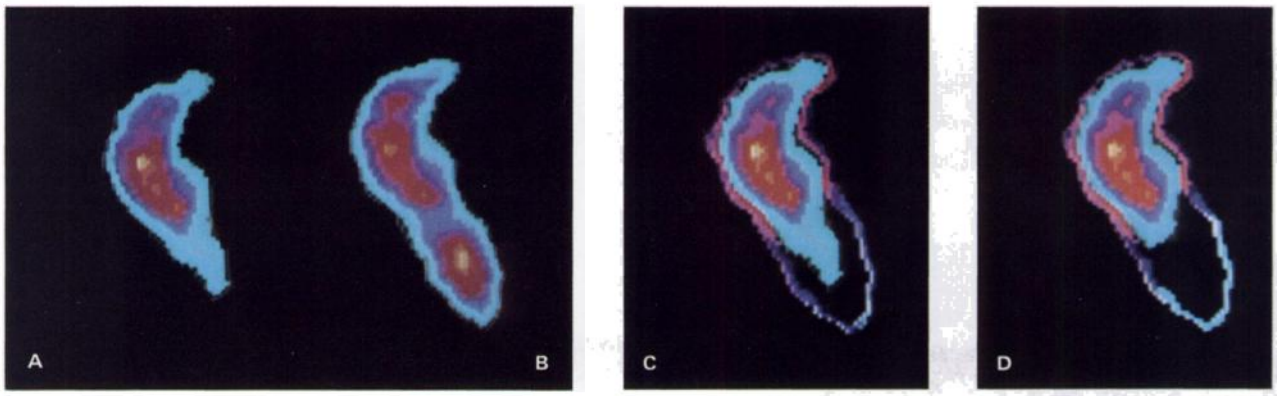
- Operating room design
- In vivo use
- Single, dual and multiple or matrix detectors
- Intracavitary, intraorgan, or surface
- Real time information
- Chart, printer, and computer compatible

**TECHNICAL ASSOCIATES**

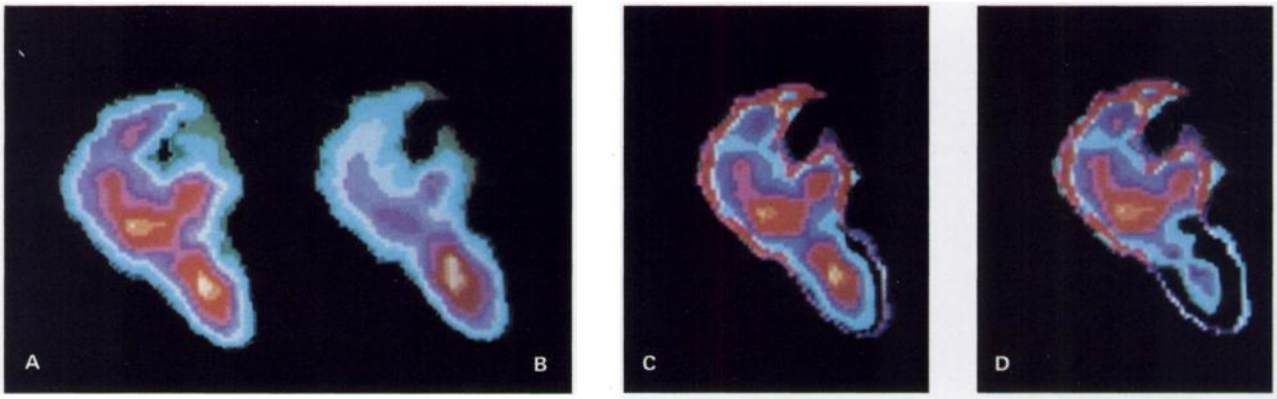
7051 ETON AVE., CANOGA PARK, CA. 91303
(213) 883-7043

# SEVENTY SEVEN REASONS:

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




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




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

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

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

BA BAIRD-ATOMIC

**Home Office:** Baird-Atomic, Inc.,
125 Middlesex Turnpike, Bedford, Mass. 01730
Tel. (617) 276-6000 — Telex: 923491 —
Cable: BAIRDCOBFRD

**International Sales and Service:**
**BAIRD-ATOMIC** (Europe) B.V. Veenkade 26-27-28a, The Hague, Holland.
Telephone: (070) 603807. Telex: 32324. Cable: BAIRDCO HAGUE
**BAIRD-ATOMIC, LIMITED,** East Street, Braintree, Essex, England.
Telephone: Braintree 628. Telex: 987885. Cable: BAIRTOMIC
**BAIRD-ATOMIC,** Ind. E Com., Ltda., Av. Paulista, 2073-14 c/1412, 01311 Sao Paulo, SP, Brazil.
Telephone: (011) 289-1948. Telex: 01122401. Cable: BAIRDATOMIC SPAULO

Pho/Gamma® LFOV™

# Three peaks make a beautiful view

Searle's large field of view scintillation camera, in its standard configuration, is the only instrument of its type which allows you to set window width and energy level on 3 independent analyzers for unique isotopes and special studies...*the only one* which lets you take full advantage of the diagnostic potential in multi-peak nuclides such as Gallium 67. This is a great advantage in soft tissue studies where high sensitivity and superior resolution are vital.

**LARGE SELECTION OF COLLIMATORS**

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.

The large field of view with parallel hole collimation can simultaneously image both kidneys or both lungs. Thus, where a standard field of view camera requires 2 studies, the Pho/Gamma LFOV routinely does the job with only one.

**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**

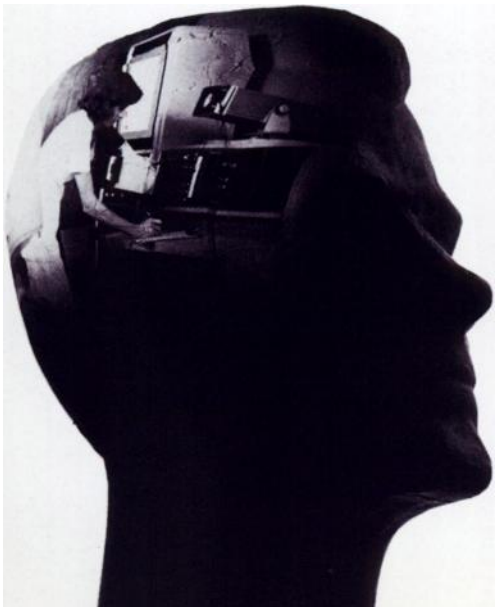
New ratio correction circuitry allows wider window widths, shortens study times, reduces motion artifact and increases patient throughput. Other electronic innovations include pulse-pair pile-up rejection and event buffering circuitry. As a result, the Pho/Gamma LFOV is capable of count rates up to 200,000 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.*

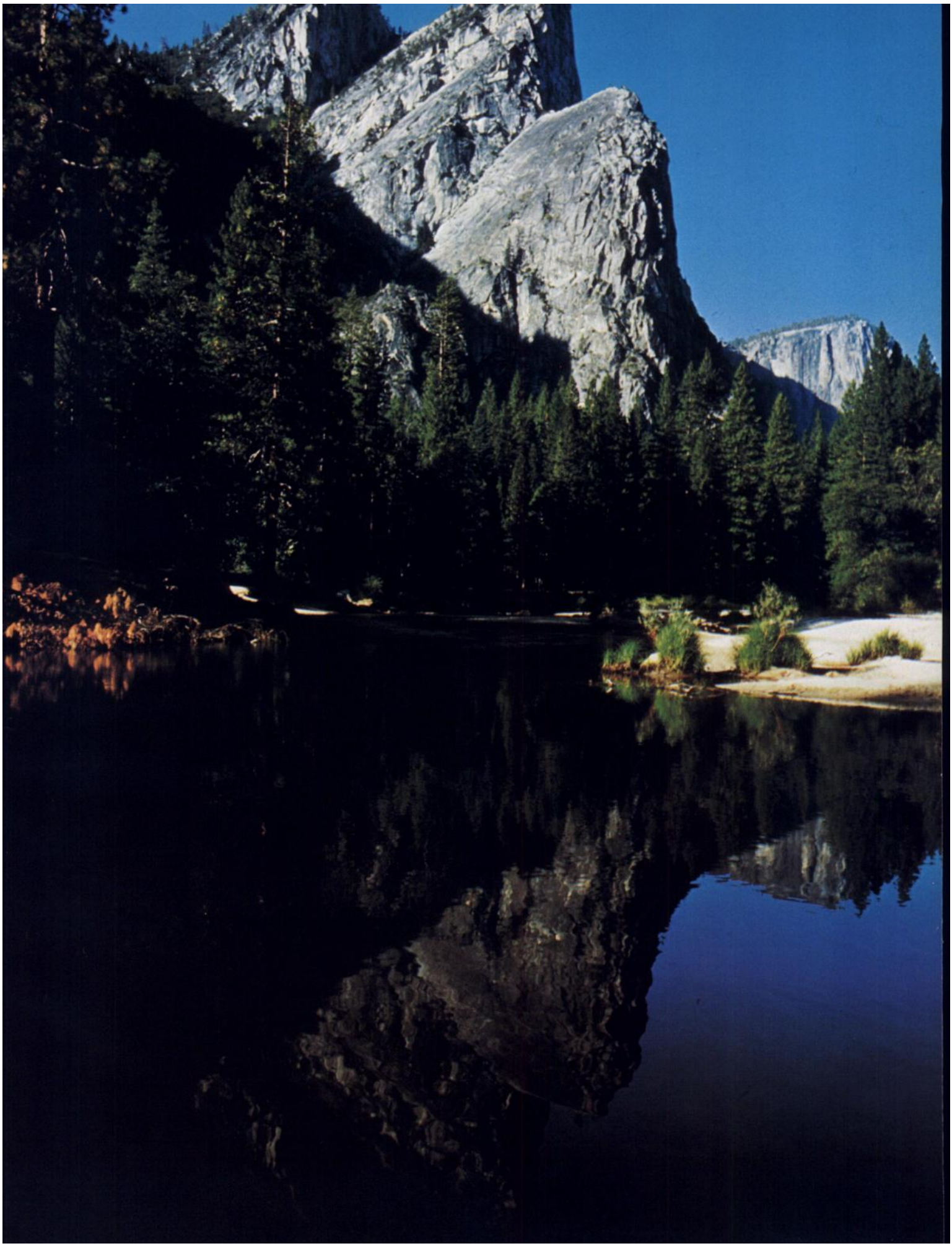


SEARLE

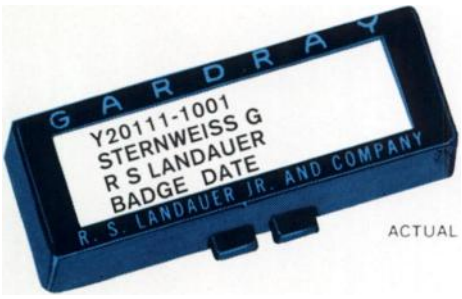
**Searle Radiographics, Inc.**
Subsidiary of G. D. Searle & Co.

IMAGING:
The Living Art

SR 535



# "Make the best available better!"



ACTUAL SIZE

"Work on the ultimate, but in the meantime, make the best available better."

Our people have always accepted the challenge and it's what makes us the leader.

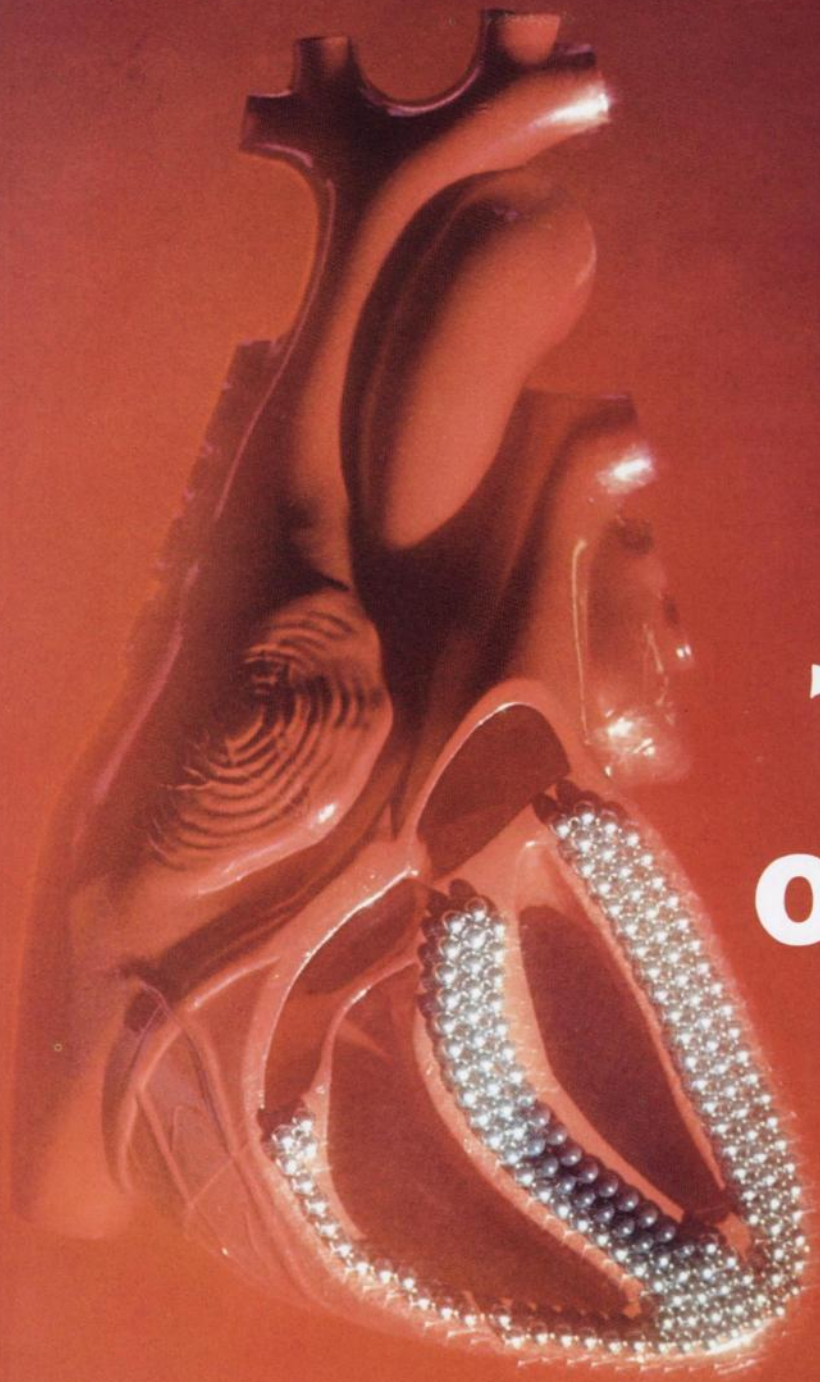
We agree that all things considered the Landauer Gardray 8 film badge system is the best available personnel dosimeter. And, although we are always looking for the ultimate, we have continued to work hard and invest money and time to make it better.

Greatly simplified ordering procedures – permanently encoded unique numbering of film, which is independent of film darkening – new improved techniques for analyzing the film for anomalies that may affect the "meaning" of the exposure and new N.R.C. annual statistical summary reports available now, are just some of the ways our people are working hard to make it better for you.

Write or call for more details.

Landauer

R.S. LANDAUER JR. & CO. A tech/ops COMPANY
Glenwood Science Park
Glenwood, Illinois 60425 . (312) 755-7000



# Tl 201 opens up the heart

With Tl 201 you enter a new era in the diagnostic evaluation of myocardial diseases.
Myocard scintigraphy can now be carried out on a routine basis.
Philips-Duphar supplies Tl 201 wherever you are, whenever you want.

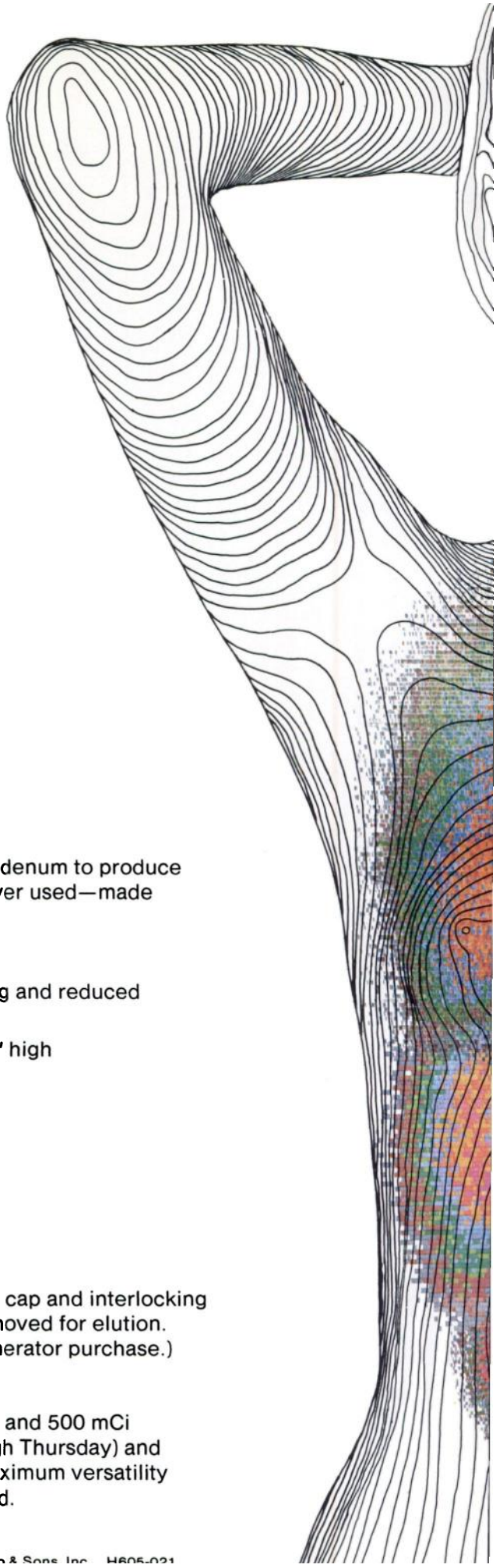
duphar

duphar

PHILIPS-DUPHAR B.V. CYCLOTRON AND ISOTOPE LABORATORIES, PETTEN, HOLLAND.

# WHAT'S NOW SQUIBB?

## On the current nuclear medicine scene

### MINITEC® (Technetium 99m) Generator

The Technetium 99m Generator using fission product molybdenum to produce technetium 99m. MINITEC is unlike any generator you've ever used—made small to make sense.

Designed for easy handling

- MINITEC has its own handle for easy lifting, easy carrying and reduced hand exposure
- Weighs only 24½ lbs., less than 5" in diameter, under 8½" high

Designed for easy elution

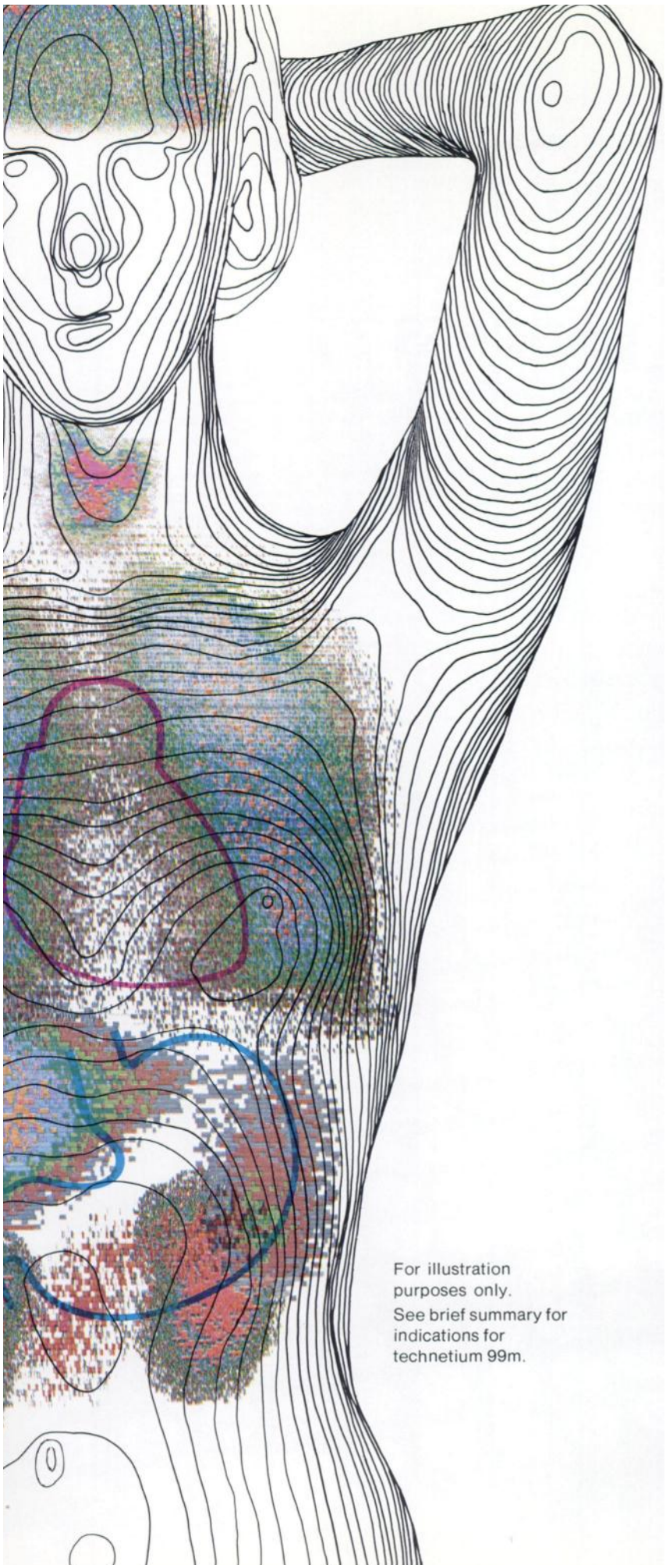
- Sets up in seconds
- Elutes in only 3 minutes after eluent vial has emptied

Designed for safety

- No exposed tubing when eluting
- 1⅝" lead surrounds the MINITEC column
- 1½" of extra lead protection from MAXI-SHIELD™. Base, cap and interlocking half rings easily assembled on site . . . only the cap is removed for elution. (You get MAXI-SHIELD free with your first MINITEC Generator purchase.)

Designed for convenience

- MINITEC Generator is available in 50,100, 200, 300, 400 and 500 mCi potencies. Delivery on Monday AM (precalibrated through Thursday) and Wednesday (precalibrated through Monday) provides maximum versatility to satisfy technetium requirements of your lab's work load.



For illustration purposes only.
See brief summary for indications for technetium 99m.

# Minitec®
## (Technetium 99m)
# Generator

Minitec® (Technetium 99m) Generator provides a means of obtaining a sterile, non-pyrogenic supply of technetium 99m ($^{99m}$Tc) as sodium pertechnetate $^{99m}$Tc.

**Indications:** Sodium pertechnetate$^{99m}$Tc is indicated for brain imaging, thyroid imaging, salivary gland imaging, blood pool imaging, and placenta localization.

**Contraindications:** At present, there are no known contraindications to the use of sodium pertechnetate $^{99m}$Tc.

**Warnings:** Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and safe handling of radionuclides, produced by nuclear reactor or cyclotron, and whose experience and training have been approved by the appropriate federal or state agency authorized to license the use of radionuclides.

This radiopharmaceutical should not be administered to women who are pregnant or who may become pregnant or during lactation unless the information to be obtained outweighs the possible potential risks from the radiation exposure involved. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Since radioactive pertechnetate is secreted in milk during lactation, formula-feedings should be substituted for breast-feedings.

**Important: Since material obtained from the generator may be intended for intravenous administration, aseptic technique must be strictly observed in all handling. Only the eluent provided should be used to elute the generator. Do not administer material eluted from the generator if there is any evidence of foreign matter.**

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

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

**Adverse Reactions:** At present, adverse reactions have not been reported following the use of sodium pertechnetate $^{99m}$Tc.

For complete prescribing information, consult package insert.

**How Supplied:** Minitec (Technetium 99m) Generator is available in potencies of 50, 100, 200, 300, 400, and 500 mCi. Supplied with the generator are vials of eluent containing 5 ml. of a sterile, non-pyrogenic solution of 0.9% sodium chloride in water for injection. Also supplied is suitable equipment for eluting, collecting, and assaying the technetium 99m.

Medotopes®

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

Contains 0.9% benzyl alcohol as a preservative. Made isotonic with sodium chloride. Supplied at a concentration of 100 μCi/ml and a specific activity of 1 to 6 mCi/mg. Sodium hydroxide or hydrochloric acid may be present for pH adjustment.

# Mallinckrodt's L-Selenomethionine Se 75 Injection

## The *controlled* process product–the No. 1 choice.

At Mallinckrodt we produce Selenomethionine Se 75 through a process of chemical synthesis. We believe this method allows us to institute better "control" over the production process. We also believe that this extra "control" minimizes final product variation from lot to lot and should aid in obtaining more consistent imaging results.

Will you experience greater success in pancreas visualization or observe greater detail with our product? Clinical data does not exist which would allow us to make such a claim. We are only sure of one thing—nuclear medicine personnel order our Selenomethionine 75 more often than any other—by a substantial margin. We believe that our production know-how is an important reason for this popularity.

For ordering information contact your Mallinckrodt representative or call direct to our Order Department 800-325-3688—Missouri customers call 314-291-5574.

Mallinckrodt®
NUCLEAR
RADIOPHARMACEUTICALS
675 Brown Rd.
Hazelwood, Missouri
63042

# L-Selenomethionine Se 75 Injection

## DESCRIPTION
Selenomethionine Se 75 Injection is supplied as a sterile non-pyrogenic aqueous solution containing 0.9% benzyl alcohol as a preservative. The solution is made isotonic with sodium chloride and may contain hydrochloric acid or sodium hydroxide for pH adjustment.

## INDICATIONS
Selenomethionine Se 75 is indicated for pancreas scanning as an aid in the diagnosis of suspected pancreatic disease.

## CONTRAINDICATIONS
None.

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

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

The transplacental transport and long biologic half-time of this agent may result in significant radiation exposure to the fetus. Since Selenomethionine Se 75 is secreted in milk during lactation, formula feeding should be substituted.

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

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

Fasting prior to administration of Selenomethionine Se 75 may enhance hepatic uptake of the agent which may result in degradation of pancreatic image quality.

## ADVERSE REACTIONS
Adverse reactions have not been reported following the administration of Selenomethionine Se 75 Injection.

See package labeling for information on dosage and administration, physical characteristics and radiation dosimetry.

Mallinckrodt, Inc.
675 Brown Rd.
Hazelwood, Missouri 63042

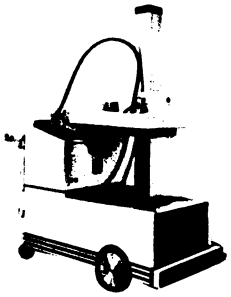
Mallinckrodt® NUCLEAR

RADIOPHARMACEUTICALS

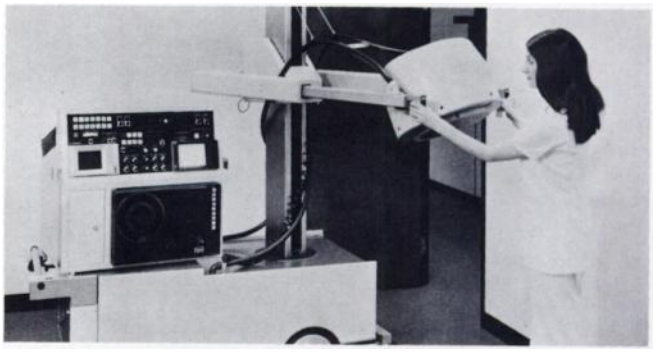
# mobility and dependability

# with no loss in resolution

**Wherever the need arises, in ICU, CCU, the Emergency Room, or within the NM Department, the Series 120 Mobile Camera is immediately available to generate high quality diagnostic information. And like all Ohio-Nuclear equipment, it is simple to operate.**

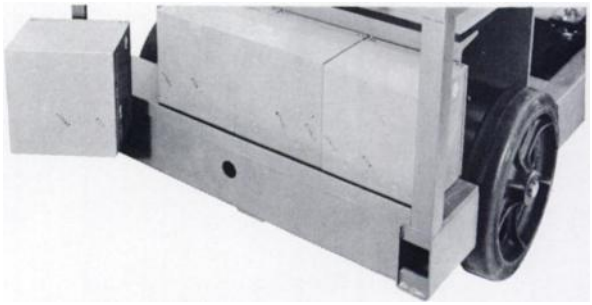


**Mobility.** The self-propelled Series 120 will travel at about 150′ per minute, and negotiate a 10% incline under its own power, or it will creep for accurate patient positioning, all while maintaining full HV power to its photomultiplier tubes. This permits operation as soon as the unit is in place.



**Positioning.** Column, yoke, and head rotation movements are all performed manually. Yoke extension is also manual, to a maximum "reach over bed" distance of 22" (to center of collimator). Vertical yoke movement is motor driven, two speed, and controlled by the hand grips on the hand control.

**Capabilities.** The Series 120 is virtually identical to our well-known Series 100 Camera. And the 120 may be equipped with an optional Series 75M storage and retrieval system. This combination permits later re-evaluation, manipulation, and diagnosis of data sometimes captured under critical conditions.



**Battery Power.** Spill Proof Gel Cell Batteries, with negligible production of hydrogen, are automatically maintained by the system, charging whenever needed, as long as the AC line is plugged in. The batteries, DC, constantly maintain HV supply to the PM tubes, independently of the AC power.

**Collimators.** All collimators are insert type and weigh approximately 23 pounds each. A variety of collimators is available. They may be easily and quickly changed by your technologist.

**ohio-nuclear, inc.**

6000 COCHRAN ROAD • SOLON, OHIO 44139
PHONE (216) 248-8500 • TWX NO. 810-427-2696
(U.K.), Radix House, Central Trading Estate, Staines, Middlesex, England • Phone Staines 51444