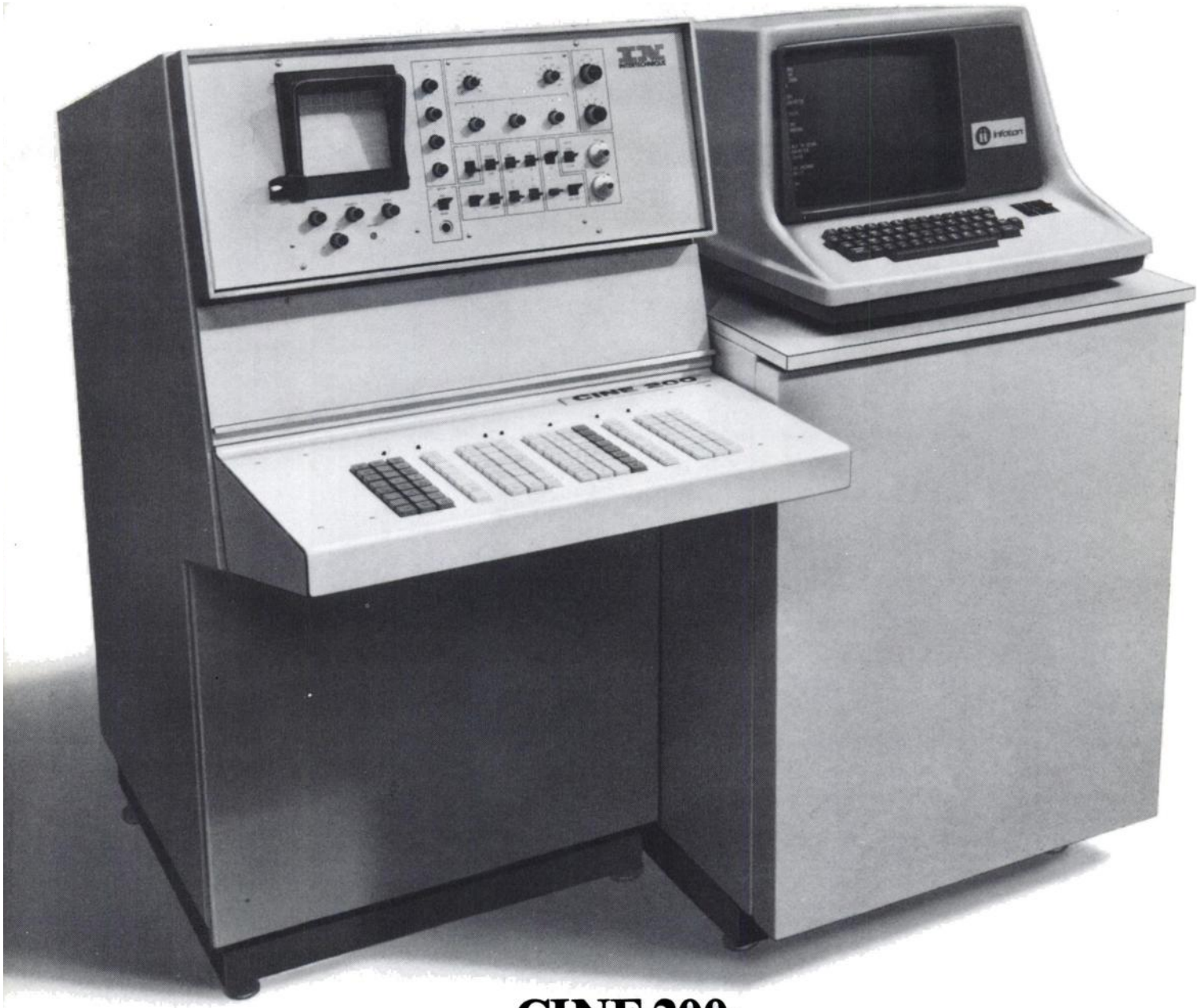


CINE 200:
The image-data processor for cameras and scanners that speaks your language.

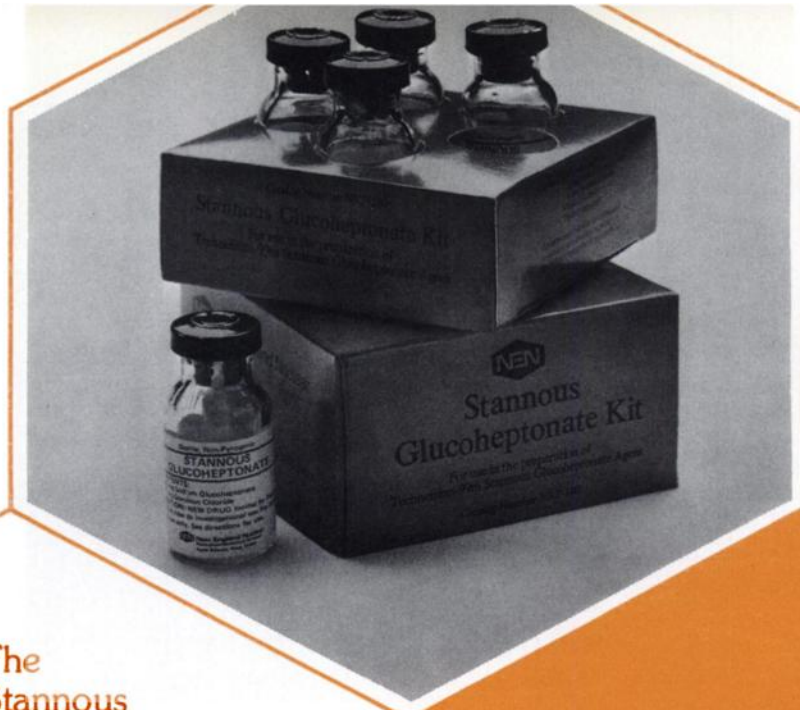
Acquisition, recall and processing operations — all on a single console — with single-button, clearly-labeled controls. This unique CINE 200 feature allows rapid selection of parameters and functions without the use of a teletype or similar I/O device. Elimination of computer access codes permits ordinary language operation by any radioisotope technologist.

Specifically designed for use with any Anger-type gamma camera or rectilinear scanner, CINE 200 provides simultaneous acquisition from two imaging devices — or simultaneous acquisition and processing. And it's priced within your budget.

CINE 200 from Intertechnique — just about the most versatile image-data processor ever developed. Sold and serviced in the U.S. exclusively by Raytheon Company. For complete information, contact Raytheon Company, Medical Electronics, Fourth Avenue, Burlington, Massachusetts 01803. 617-272-7270.

INTERTECHNIQUE

RAYTHEON



The
NEN Stannous
Glucoheptonate Kit
provides lyophilized stannous glucoheptonate to be used in preparing technetium Tc 99m stannous glucoheptonate agent by the injection of technetium pertechnetate sodium Tc 99m. The resulting diagnostic agent, upon intravenous administration, is being studied for its usefulness for kidney and brain imaging and perfusion studies.

Kidney/Brain Imaging Agent

☐ Send for additional information

Name_____

Affiliation_____

Address_____

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NEN New England Nuclear
Radiopharmaceutical Division

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

Canada: NEN Canada Ltd., Dorval, Quebec, H9P-1B3, Tel: (514) 636-4971, Telex: 05-821808
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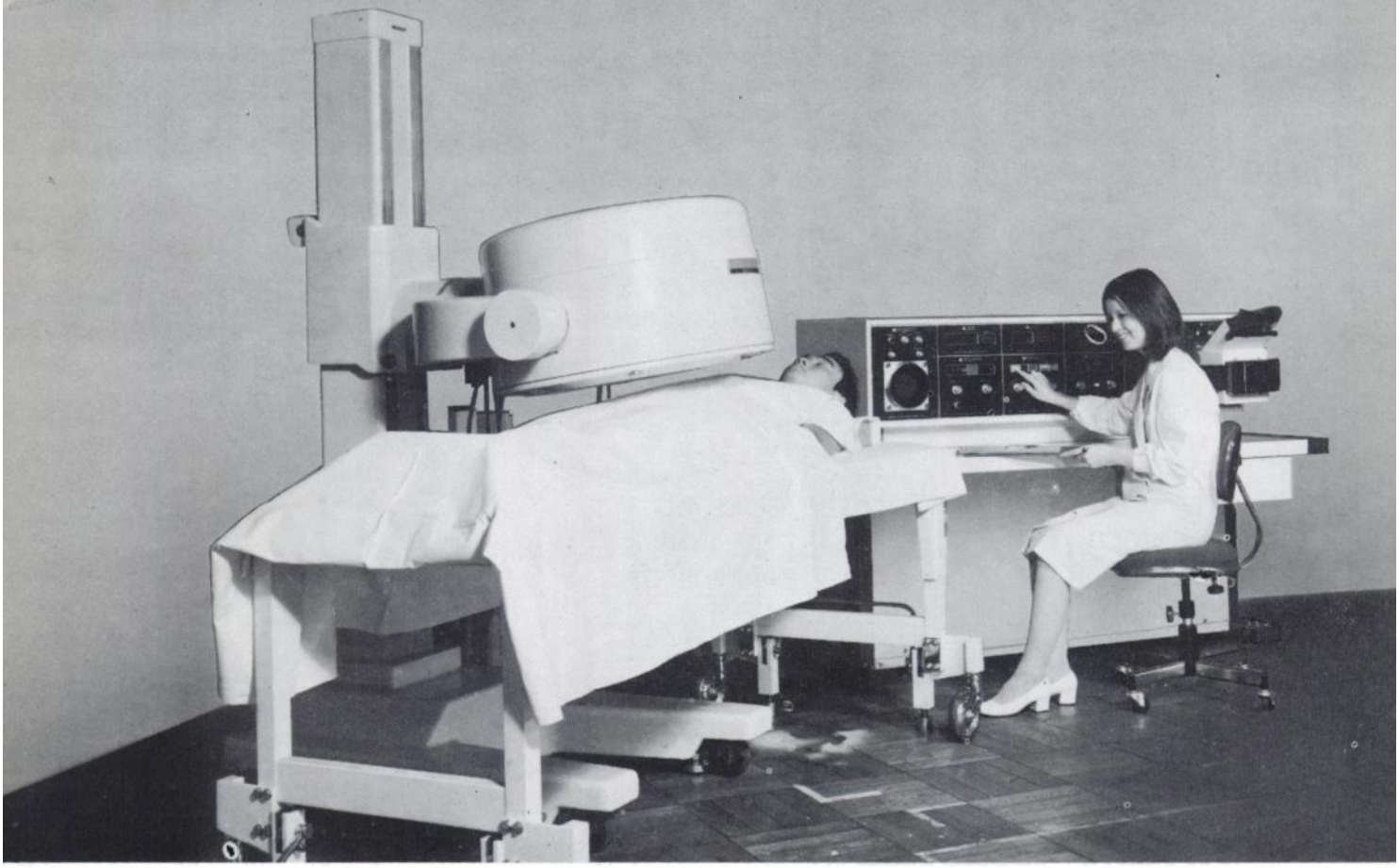
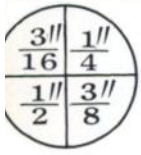
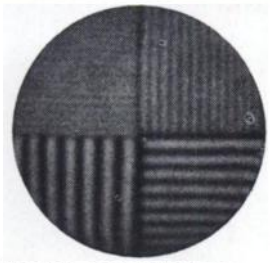
A MAJOR ADVANCE IN NUCLEAR MEDICINE BY TOSHIBA

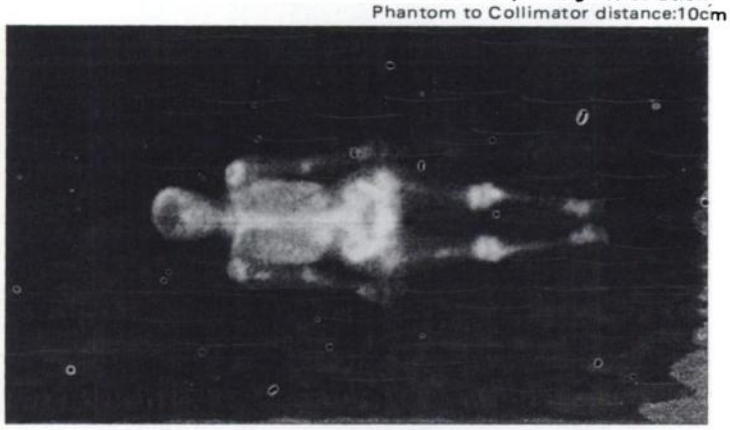




INTRINSIC RESOLUTION
^{99m}Tc, 999 K-counts, Window 20%



OVERALL RESOLUTION
^{99m}Tc, 999 K-counts, Window: 20%
Collimator: Super High Resolution
Phantom to Collimator distance: 10cm



Toshiba's Jumbo Gammacamera, model GCA-202, has an effective field of view 350mm in diameter. Other features include:

* The ability to image a large organ alone or in combination with smaller organs.
* No divergent collimator is needed.
* Images with high resolution and sensitivity without distortion.

The Jumbo Gammacamera and its Whole Body Adaptor make whole-body-imaging possible in only ten minutes. Other advantages:

* You get more time for other tests and diagnosis.
* More accurate diagnosis.
* Patients don't have to go through time-consuming examinations.

SORRY U.S.A.—*GCA-202 is not available in your country.*

Toshiba **TOSHIBA**

TOKYO SHIBAURA ELECTRIC CO., LTD.

Producer Goods Export Division
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Test kit for the determination
of TBC (Thyroxin-binding capacity)
in serum

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Do you know any other test saving more of your time: pipette once incubate for 1 hour automatic phase separation measure.

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12 calibrated tubes with 3,4 ml Thybon® each (J-125)-solution
Total activity: 3 uCi J-125
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1 ml standard serum of defined TBG capacity
The reagents are exclusively for in-vitro capacity
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STABILITY
8 weeks at proper storage
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on the package.

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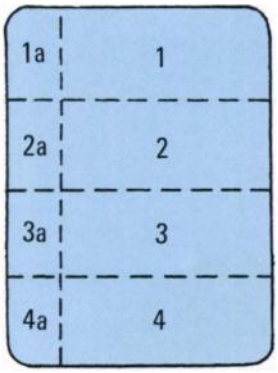
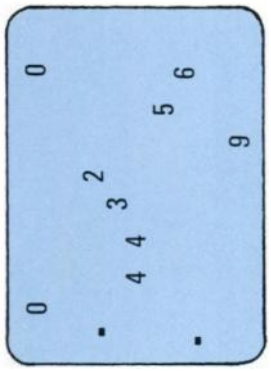
Lh 82139

Some Plain Talk About Radiation Monitoring.....

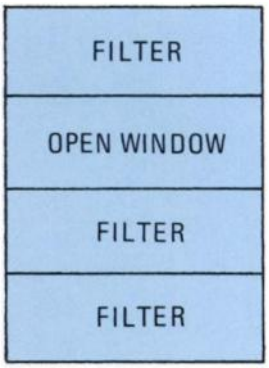
THE RADI-GUARD MULTI-AREA DOSIMETER



Multi-area dosimeter. 4 main readout areas (1, 2, 3, 4) and 4 backup areas (1a, 2a, 3a, 4a).



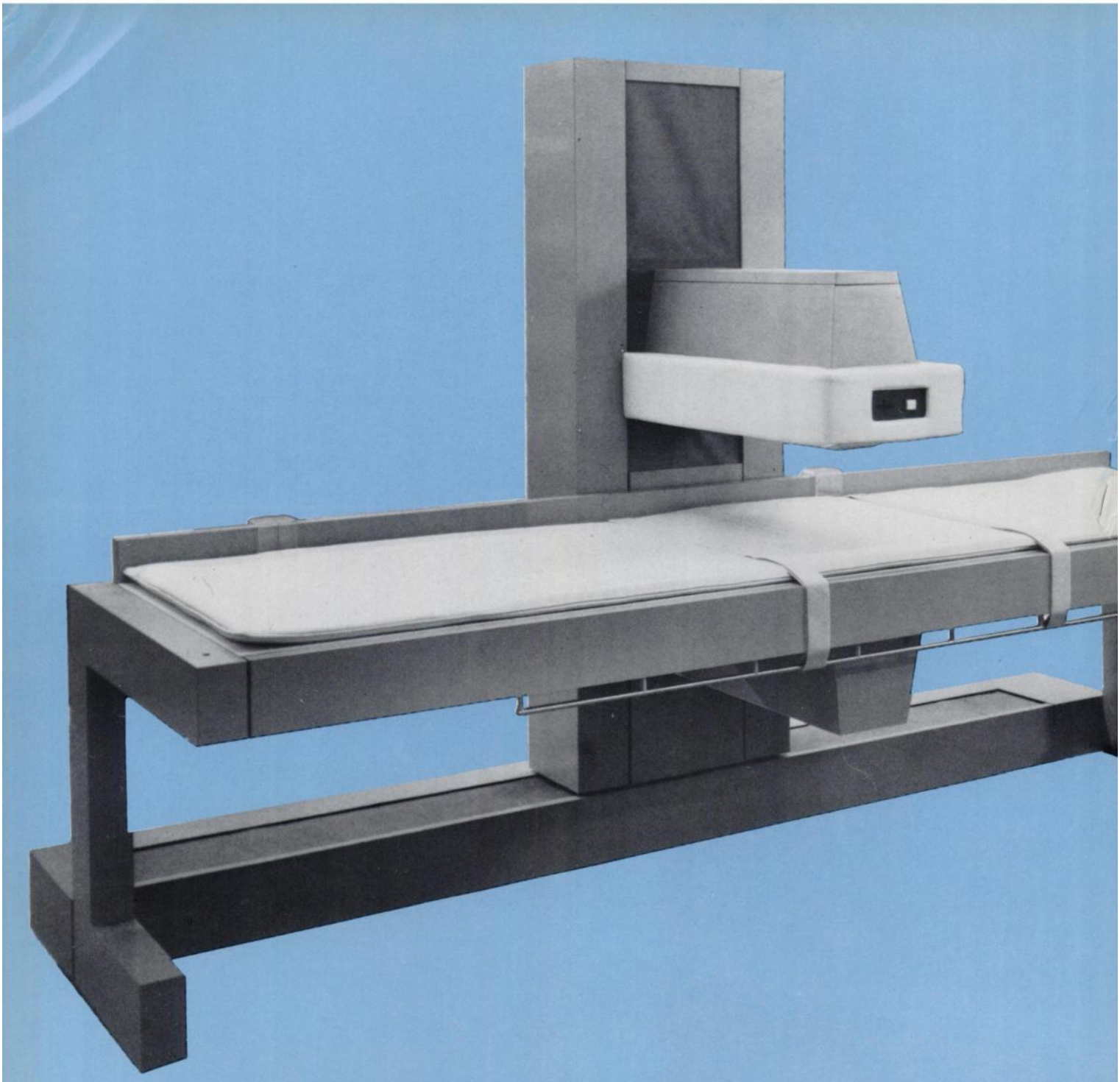
Rear view of dosimeter with identification numbers. 2 dots insure dosimeter is properly inserted in reader.



Standard personnel badge filter array.

- Has 4 backup areas for verifying reading from main areas.
- 9 digit identification number permits use of person's social security number.
- Has all the advantages of film plus the advantages of a solid state detector.
- Can be reused up to 100 times.
- Has all the mechanical properties of Teflon and is insensitive to extreme environmental conditions.
- Can be oven annealed if desired.
- Due to its size-shape characteristics, it is a direct replacement for film presently in use at various facilities. Size — 31.75 mm x 44.75 mm x 0.4 mm.
- Radi-Guard dosimeter can be loaded with the following phosphors:
  - 15% LiF-7 for personnel monitoring.
  - 30% LiF-7 for environmental monitoring.
  - 30% Ca SO_4:Dy for environmental monitoring.

    The Ca SO_4:Dy phosphor has an extremely high sensitivity and low fading characteristic making it ideal for environmental monitoring.

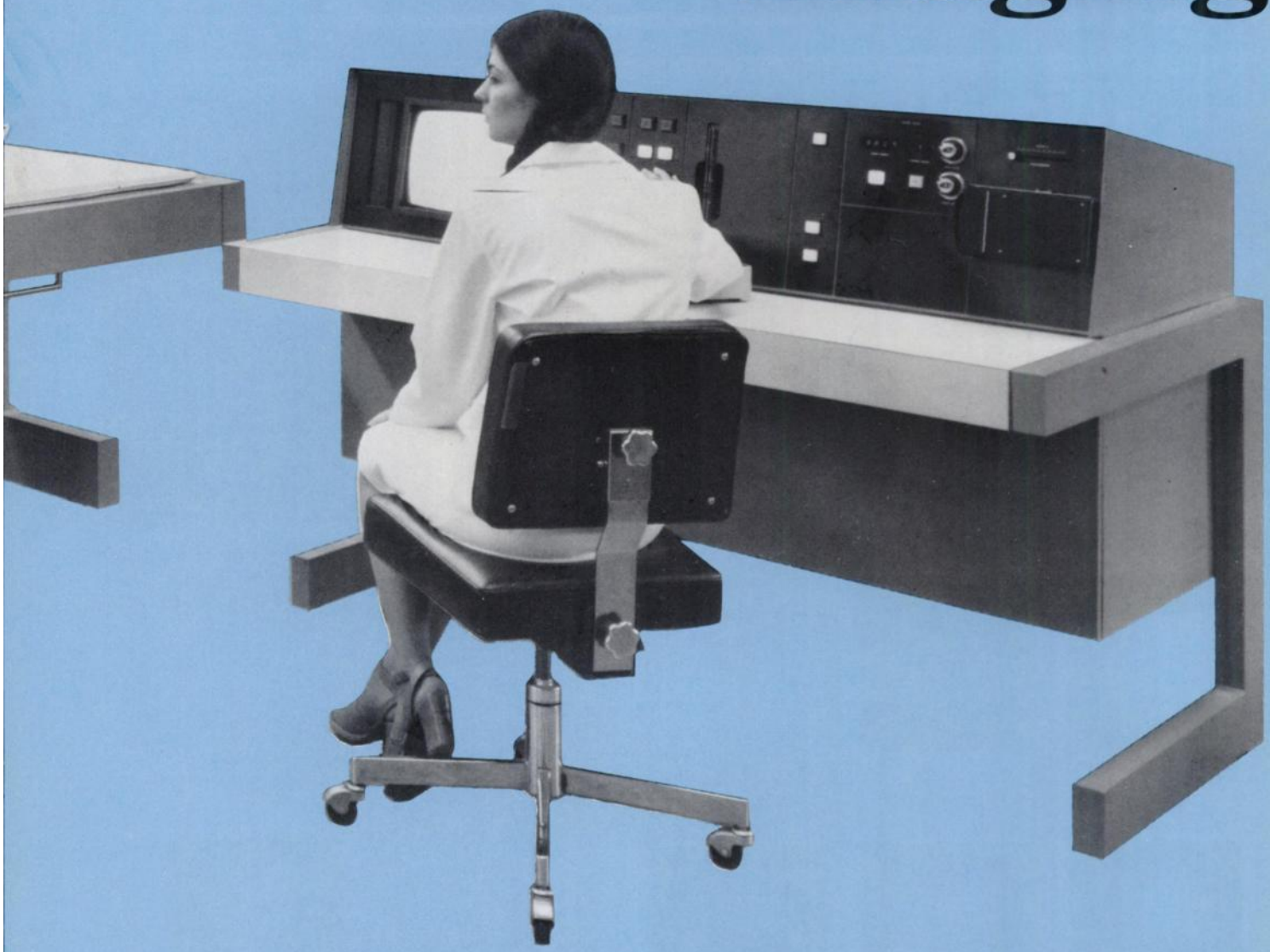


Cleon Corporation's new Whole-Body Imager, now in clinical operation, makes whole-body and organ imaging *more informative* for the clinician, *more productive* for the hospital, *more comfortable* for the patient, and *simpler* for the technician. Here's how:

Unique opto-electronic design eliminates the cross-body movement of a scanner head. The whole-body image is produced by a one-time, slow, noiseless sweep of the 24-inch wide crystal array from head to foot of the patient. Time to scan this 24-inch by 76-inch area is reduced to as little as five minutes (adjustable to 40 minutes, maximum). The patient spends less time on the couch and is relieved of the anxiety caused by a rapidly moving scanner head.

Large crystal area (109 square inches) gives high information density and reproducible results for selected scan times. Display and recording options include: video screen; 8″ x 10″ x-ray film; Polaroid film; magnetic disk record with playback; keyboard entry of patient data; continuous digital readout of

A Quiet Revolution in Whole-Body Imaging

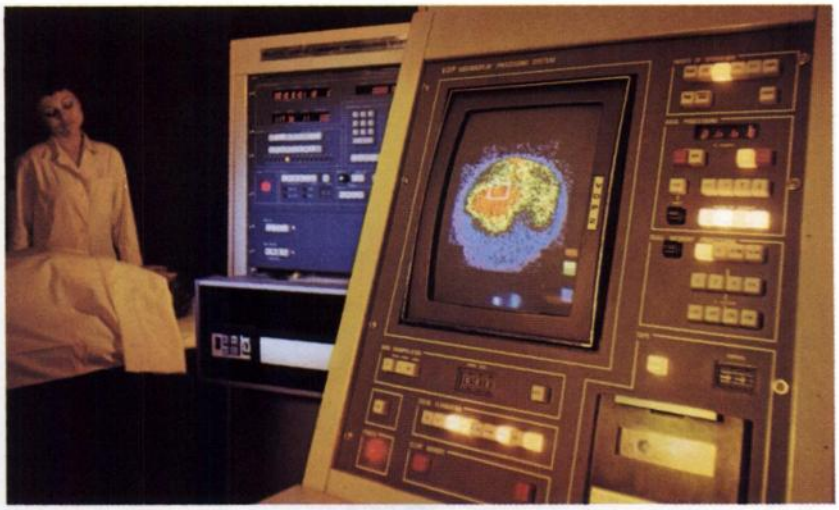


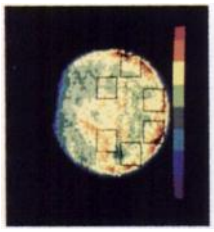
count density; video magnification of selected image areas. Controls are few and simple; set-up time is minimal; technicians can learn to use the equipment on the day it's installed.

For technical specifications, clinical data, price and delivery information, call or write:

cleon
CORPORATION **15 Tech Circle, Natick, Massachusetts 01760/Telephone 617/235-7708**

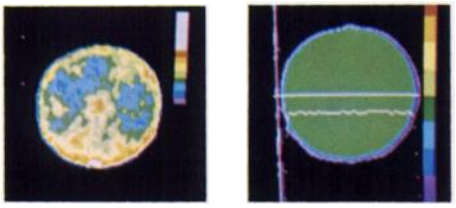
Connect Elscint's new color nuclear camera... and get possible... it's that easy to use and that definitive!



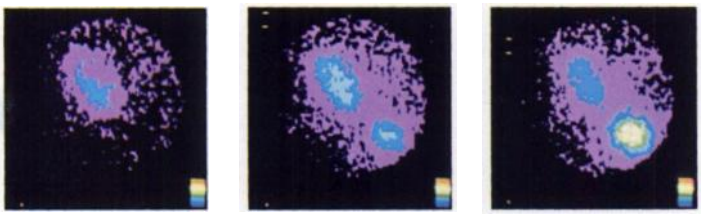


Six rectangular regions of interest defined for brain flow study.

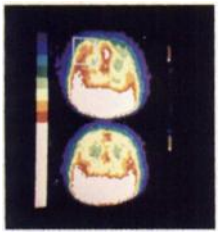
Elscint's advanced image processor displays static, dynamic or time function studies on a large color or black and white TV screen with color directly related to, and continuously updated by, radiation count levels. Display resolution is exceptional as a result of several built-in image enhancement features. This powerful system receives, processes and stores images with unexcelled speed in a broad variety of modes of operation. Its availability means that now you can see and do things never before possible in this field. But, even with its sophistication, Elscint has made it easy to use. No programming or computer knowledge is required and the simple operation is mastered by any technologist in 2-3 hours. Thus, you spend less time obtaining patient data and more time studying it. Look over the Image Processor's many features then write or call our nearest facility for detailed information.



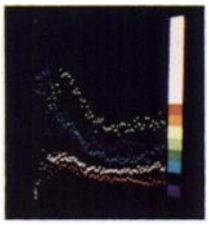
Flooded field image before and after uniformity correction.



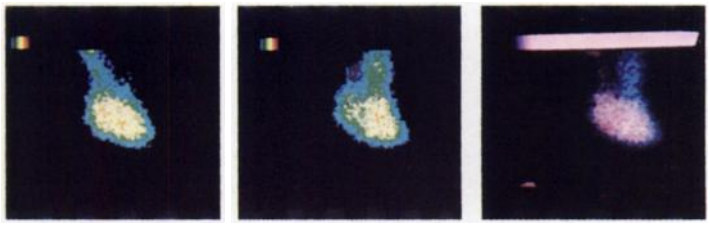
Dynamic study images of clearance by transplanted kidney.



"Brain Tumor" in uncorrected display eliminated by uniformity correction.



Multicolor Histogram time function display of cardiac study over five regions of interest (96 frames).



Bolus of ^{99m}Tc-Albumin entering right atrium (left frame) and leaving (center frame). On the right, superimposed dual color display of the two frames.

image processor to your the most precise patient data

ADVANCED DATA PROCESSING AND LARGE COLOR DISPLAY FACILITATE PRECISE PATIENT DIAGNOSIS.

Processed count information is displayed in 8 colors or monochrome shades of black. To maximize image resolution and permit study of small details the Elscint Image Processor offers several image enhancement features.

• Two unique calibration techniques correct image artifacts resulting from non-uniformities in the electronics of the camera. • Statistical variations in the image can be reduced by an on-line smoothing function. • Images at low count rates can be strengthened by adding as many as 99 frames to the display. • Color elimination pushbuttons blank colors for isocount line determination. • Background subtraction clarifies image appearance. • In dual-isotope studies, off-line subtraction can be performed by pushbutton with the process in view on the TV screen. All these features add up to the sharpest, most accurate, easy-to-read display of patient count data.

MODULAR DESIGN PERMITS SYSTEM EXPANSION AT LOW COST.

Elscint's Image Processor is comprised of a camera interface, the videodisplay and one of three data processors. The lowest priced processor is designed for static or slow dynamic studies. The two more complex systems offer the added capability to perform fast dynamic studies plus several additional modes of operation. The most advanced of these two systems enables complete time function data analyses to be done. It includes a built-in mini-computer (8K, 16 bit; 32 bit optional) and a complete battery of clinical programs. Time function data are displayed on a scope and printed out on a teletype or optional line printer. Thus, with no programming knowledge you can study regional blood flow, cardiac output, mean pulmonary transit time, clearance rates, rhenography, and so forth. All systems are fully compatible with one another and each can be expanded with any of several available options to give you supplementary image processing capability as required.

LARGE FAST-ACCESS MEMORY SPEEDS IMAGE RETRIEVAL.

Up to 200 discrete (400 optional) images are received and stored on a magnetic disc at a rate of up to 10 frames per second. Average search and readout time for stored images is only 5 ms in forward or reverse — a real timesaving feature in multiple frame reviews. Dual disc memory cartridges speed date manipulation and leave original data untouched. Frame acquisition can be by preset limits or by physiological triggers which can also be used for time delay photographs.

SIMPLE PUSHBUTTON OPERATION FREES YOU FOR DATA ANALYSIS.

Use of the Elscint Image Processor may be learned easily in just a few hours by any of your technologists. Built-in safeguards prevent accidental loss of data and lighted buttons keep track of all processing underway. Image enhancement activities are noted with lighted indicators for each frame. Study and patient data for each image is easily entered and is thereafter displayed concurrently with the image.

SIX REGIONS OF INTEREST MAXIMIZE DATA EVALUATION.

Six fully-positionable overlapping areas which appear on the screen, plus output from two external scalers may be selected for further digital evaluation. Time function histograms for all regions are displayed simultaneously, each in a different color.

SYSTEM OPTIONS EXTEND APPLICATIONS.

A computer interface is available, an optional larger capacity magnetic disc extends the system's memory to 400 image frames, an optional twin memory is available for dual isotope studies, a telephone interface permits communication with similar remote processors and a camera facilitates obtaining permanent records of displays.

Note: Information given refers to several different Image Processor Systems. All models do not include all features described.

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☐ Please send me more information. ☐ I do not have an ECG Machine, send information on a suitable machine.

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- ☐ Count *in* test unit. No pre-count transfer.
- ☐ Minimum refrigeration and shelf space.
- ☐ No time or temperature correction.
- ☐ Limited transfer of radioactive material.
- ☐ Suitable for large or small laboratory.
- ☐ Oxford controls available separately.
- ☐ You may send out self-contained test unit for counting. It's unbreakable, leak-proof and disposable.

Easy, reproducible procedures!

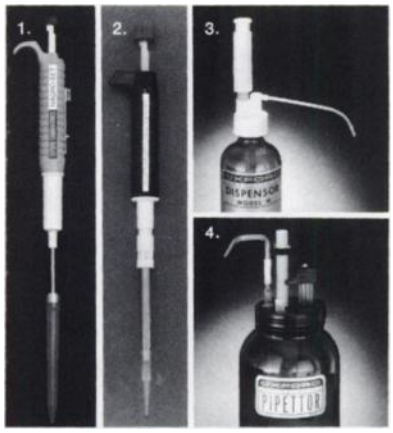
StaT$_3$— 20 Minutes

1. Add 200 μl serum, using an Oxford® SAMPLER® Micropipetting System.
2. Add 3 ml distilled water, using an Oxford® Model M Dispensor.
3. Mix well and let stand 10 minutes, then centrifuge.
4. Count the liquid phase inside the test unit, using a gamma counter.
5. Simple calculations. Standard curve.

StaT$_4$— 40 Minutes

1. Add 200 μl serum, using an Oxford® SAMPLER® Micropipetting System.
2. Add 3 ml extractant, using the reverse mode of an Oxford® MACRO-SET Transfer-Pipetting System. *Do not mix.*
3. Centrifuge 5 minutes and invert.
4. Decant and discard liquid portion.
5. Add 3 ml adsorbent, using the reverse mode of the Oxford® MACRO-SET instrument.
6. Mix well on vortex mixer. Let stand 10 minutes at room temperature.
7. Centrifuge 5 minutes and invert.
8. Count the liquid phase inside the test unit, using a gamma counter
9. Simple calculations. Standard curve.

The Timesavers' Aids



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New diphosphonate bone scanning agent offers high target to non-target ratio, rapid blood clearance

Your confidence in detecting bone lesions depends on the ability of the imaging agent you use to deliver consistently excellent scans. Three hours post injection, 40-50% of ^{99m}Tc-labeled OSTEOSCAN has been taken up in the skeleton. Only 6% remains in the blood. The remainder is excreted in the urine. Together with the agent's low soft tissue uptake, the high target to non-target ratio and rapid blood clearance result in clear delineation of skeletal lesions.

OSTEOSCAN consistently provides high labeling efficiency (greater than 95%*). Because of its stable P-C-P bond, OSTEOSCAN resists *in vitro* hydrolysis and *in vivo* dissociation. This helps to minimize soft tissue uptake that can impair diagnoses.

Result: Consistently excellent scans—and confidence that detectable bone lesions will be imaged.

For product and ordering information, call Mr. Arnold P. Austin at (513) 977-8547 or write: *Procter & Gamble, Professional Services Division, P.O. Box 171, Cincinnati, Ohio 45201.*

*Thin Layer Chromatography (Cellulose acetate/85% methanol)

A. 15 mCi ^{99m}Tc-OSTEOSCAN
Scanned 3.5 hr post injection
Low-Energy, All-Purpose Collimator
Speed: 32 cm/min, Length: 173 cm, Width: 60 cm
Anterior: 834,518 counts/1070 sec (17.8 min)
Comments: Metastatic meningioma

B. 15 mCi ^{99m}Tc-OSTEOSCAN
Scanned 4 hr post injection
High Sensitivity Collimator
Speed: 32 cm/min, Length: 170 cm, Width: 60 cm
Posterior: 961,752 counts/1054.3 sec (17.6 min)
Comments: Cancer of breast. Polaroid image; posterior view taken with detector under table

C. 15 mCi ^{99m}Tc-OSTEOSCAN
Scanned 4 hr post injection
Low-Energy, All-Purpose Collimator
Speed: 48 cm/min, Length: 175 cm, Width: 60 cm
Anterior: 927,833 counts/737.4 sec (12.3 min)
Comments: Patient being treated for a lymphoma

(Above scans made with Searle Radiographics Pho/Gamma Scintiscan™)

GAMMA CAMERA CALIBRATION KIT

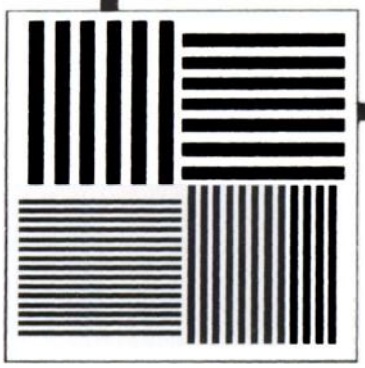
The radioactive sources and phantom of the AECL Gamma Camera Calibration Kit provide an effective means of routinely checking the vital characteristics of your camera system.

Sources are safe, light and easy to carry in the attractive carrying case provided.

Sources are approved for licensing in U.S.A. and Canada.

FLOOD FIELD SOURCE

A rapid and convenient way of making the daily check of your camera response. It is a flat plastic disc 12 inches in diameter containing 3 mCi of Gadolinium-153 (100 KeV photopeak, 242 day half life) dispersed uniformly to give an output better than ±5% over the whole surface.



BAR PHANTOM

Used with a Flood Field Source to provide an efficient check of the inherent and system resolution of your camera system. It can also be used to check image size and linearity.

The Bar Phantom consists of four groups of lead bars embedded in a plastic holder 13.5 inches square and 0.37 inches thick. The bars are 0.125 inches thick and 0.500, 0.375, 0.250 and 0.187 inches wide respectively. The spacing between the bars is equal to the width of the bars for each group.

RESOLUTION REFERENCE SOURCE

A convenient way of checking the resolution of your gamma camera and scanner. The source contains a grid of radioactive lines which vary in spacing. Most cameras should be able to resolve the finest part of the grid. By adjusting the distance of the source from the collimator, the depth resolution of your camera can also be measured. Total activity of the source is 3 mCi of Gadolinium-153.

74 -1

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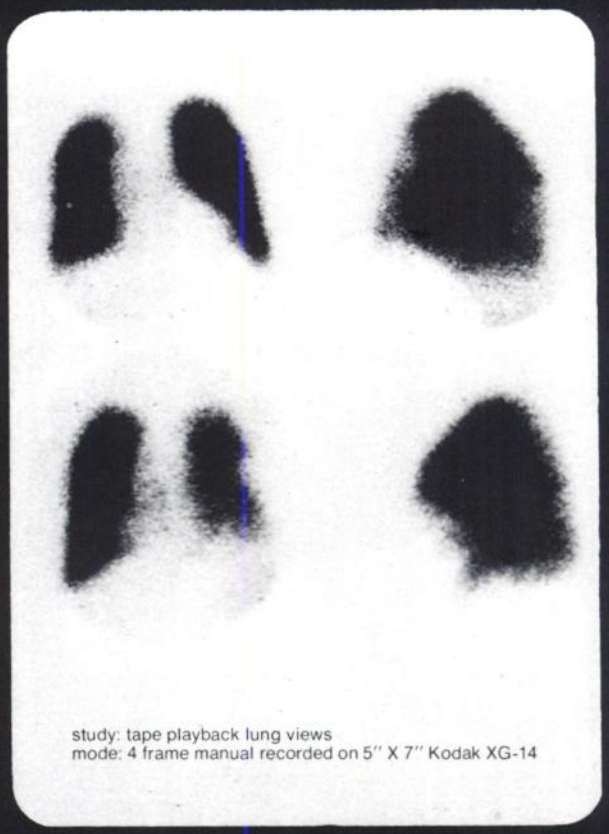
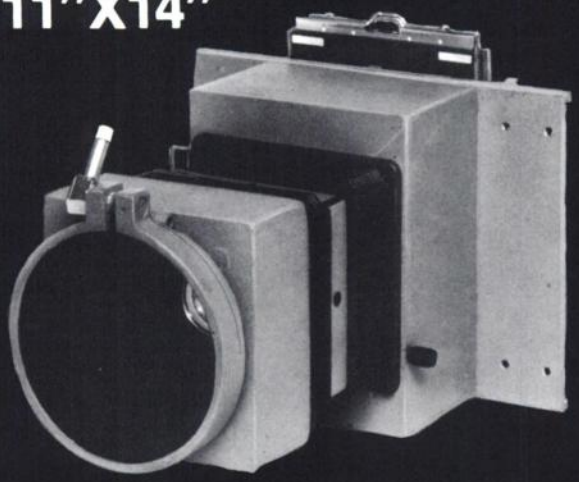
#1...Multi-Imager System

The complete system for static, dynamic, whole body, and physiological function gated imaging.



study: tape playback lung views
mode: 4 frame manual recorded on 5" X 7" Kodak XG-14

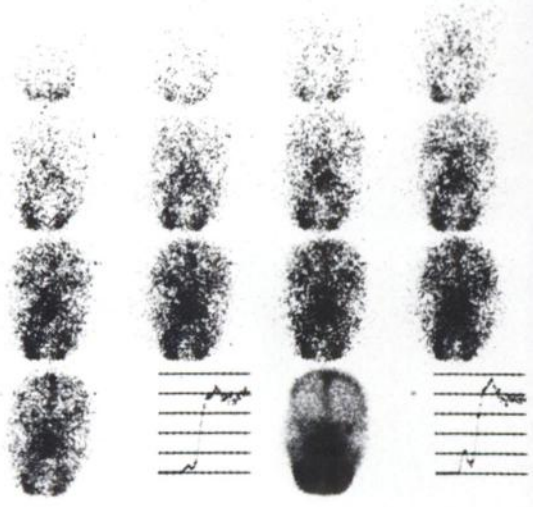
Three film size formats for optimum imaging versatility:
4"X5"
5"X7"
11"X14"



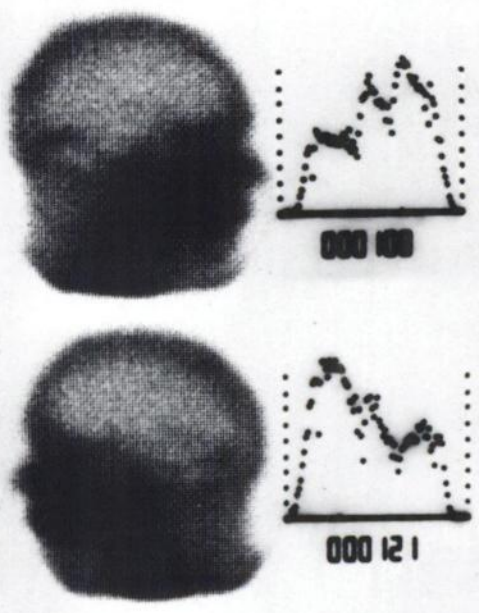
study: Tc 99 m pertechnetate renal flow
exposure: 0.8 seconds/frame
mode: 16 frame dynamic recorded on 11" X 14" X-ray film

 # MATRIX INSTRUMENTS

Mail coupon to receive actual size sample studies.



study: tape playback cerebral flow with histogram curves
exposure: 1 second/frame
mode: 16 frame recorded on 5" X 7" DuPont SF-2



study: digital mode brain views with slice profile curves
mode: 4 frame manual recorded on 5" X 7" DuPont SF-2

The Multi-Imager System offers

- **Up to 36 image frames on a single sheet of film**
- **Physiological gating permitting imaging of predetermined multiple phases of the respiratory and/or cardiac cycles in separate frames**
- **Electronic frame advance without any moving mechanical components**
- **Electronic frame advance dead time of less than one μ second**
- **Film cost savings of up to several thousand dollars per year**
- **Compatibility with all scintillation cameras**

The Multi-Imager System is designed for use with scintillation cameras to provide dynamic, static, whole body, and physiological function synchronized imaging. The system operates by altering the CRT deflection signals, changing the size, location, and duration of the image on the display scope. Frame advance is achieved electronically, yielding sequential exposures with essentially no data loss.

THE ONLY SYSTEM THAT CAN RECORD BOTH END-SYSTOLE AND END-DIASTOLE SIMULTANEOUSLY

The Cardiac Gate accessory records both end-systolic and end-diastolic images simultaneously, using a two frame format. The Multi-Imager System alternates exposures between the two frames synchronous with the patient's cardiac cycle. The Cardiac Gate is a complete ECG instrument, including a heated stylus strip chart recorder that records both the cardiogram and the exposure gates.

The Respiratory Gate accessory records both inspiration plateau and expiration plateau images simultaneously, using a two frame format. The Multi-Imager System alternates exposures between the two frames synchronous with the motion of the organ being imaged. The Respiratory Gate operates without attaching any sensors to the patient. Either the gamma camera split crystal mode or areas of interest are used to sense organ motion.

Cardiac and respiratory gating can be combined to simultaneously record in a four frame format all four possible combinations: end-systole/inspiration plateau, end-systole/expiration plateau, end-diastole/ inspiration plateau, and end-diastole/expiration plateau.

Matrix Instruments, Inc., 2 Penn Plaza, New York, N.Y. 10001
Please send Multi-Imager System literature and sample studies.

Name _____ Title _____
Hospital _____ Department _____
Address _____ City _____
State _____ Zip _____
Phone _____

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Sensitivity and specificity

Sensitivity refers to the smallest amount of antigen that is distinguishable from no antigen. The specific activity of the radioactive antigen is most important to the sensitivity of the assay. MDI utilizes a high specific activity antigen, thereby reducing the mass needed for reaction with the antibody, and increasing the sensitivity of the assay.

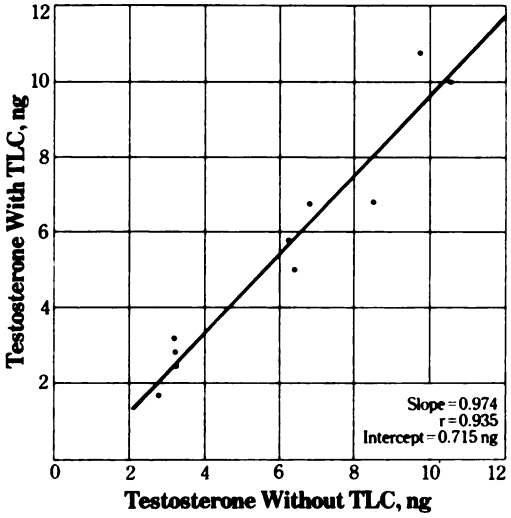
Each MDI antibody is highly specific, thereby minimizing the problem of cross-reactivity. The cross-reactivity of a typical lot of MDI testosterone first antibody is shown in the table below.

Steroid	Relative Activity
Testosterone	1.000
Andosterone	.0003
Progesterone	.0001
Hydrocortisone	<.0001
Cortisone	<.0001
Cholesterol	.000059
Dihydrotestosterone	.31
19-Nor-Testosterone	.15

Eliminates chromatography prior to assay

High specificity of MDI antibodies makes chromatography of the test sample prior to assay unnecessary. Values are compared from replicate MDI assays of the same testosterone samples with and without thin layer chromatography:

Testosterone Values of Pooled Sera Correlation of Values With and Without Thin Layer Chromatography



A further advantage: MDI double antibody procedures are highly reliable and reproducible. Once equilibrium is attained, reactions are not time dependent...unlike some R.I.A. procedures demanding precise timing.

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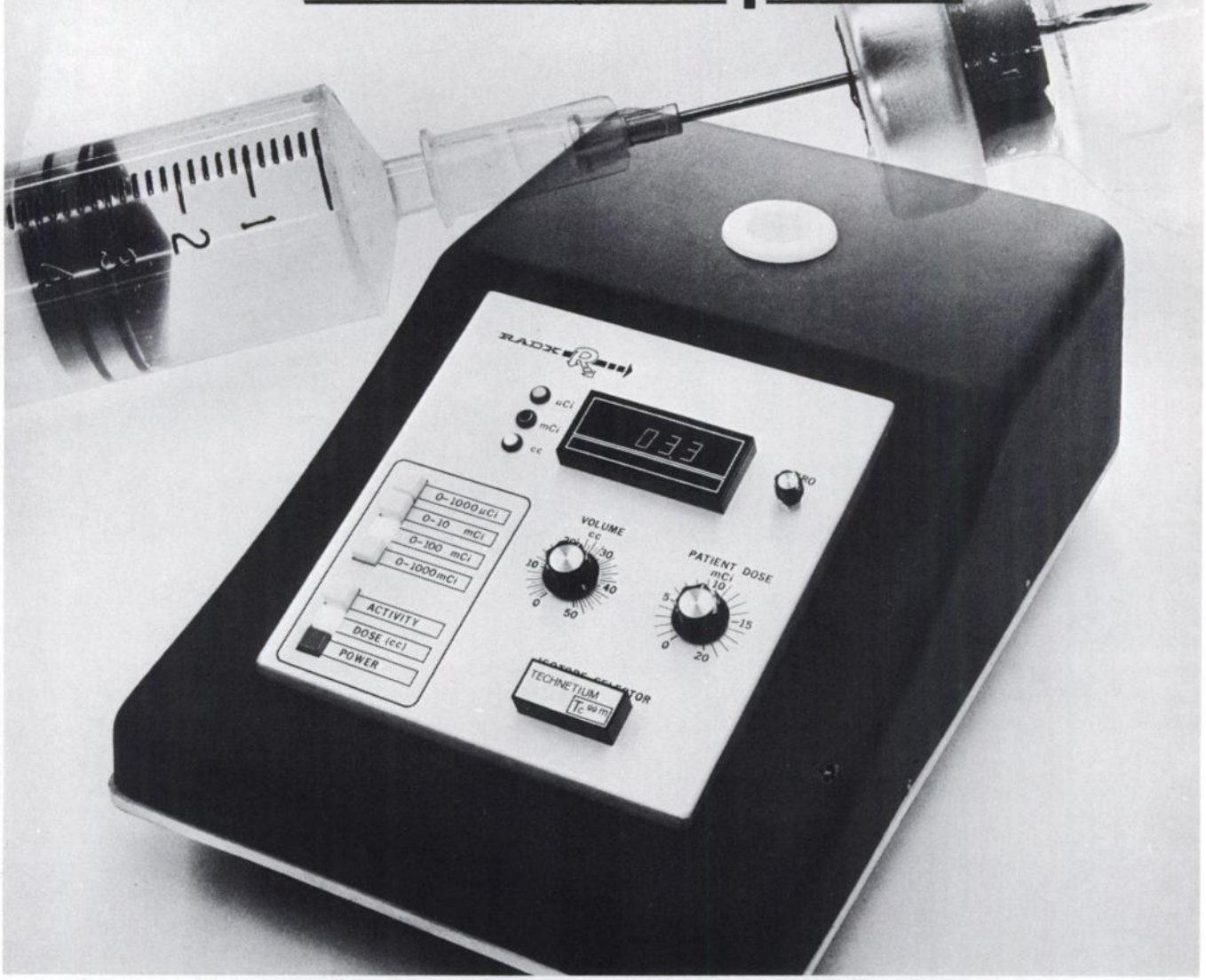

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The RADX Mark V was designed specifically for Nuclear Medicine departments, with digital read-out and an oversize well-type ionization chamber for high statistical accuracy. No geometric errors. Impervious to barometric pressure changes.

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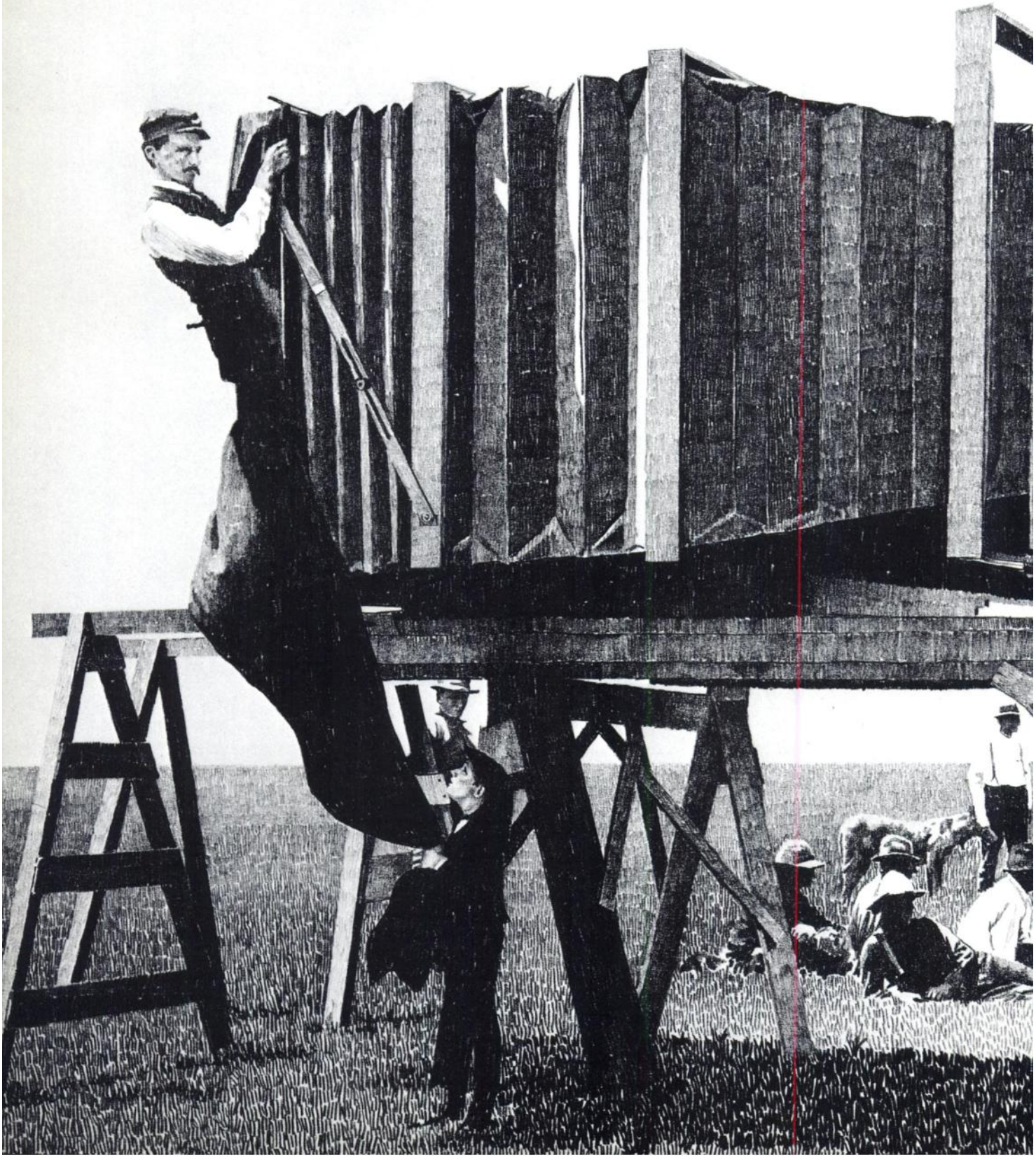

The system 750 Multi-Format Camera, designed by Dunn Instruments for a single purpose . . . to produce superior scintiphotos on X-ray film. The 750 provides images of the size of your choice on the film of your choice . . . for static and dynamic studies.

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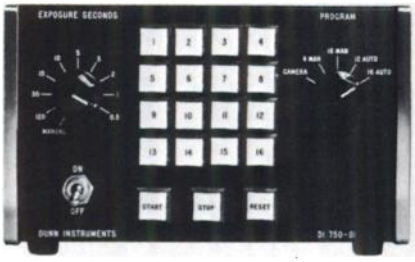

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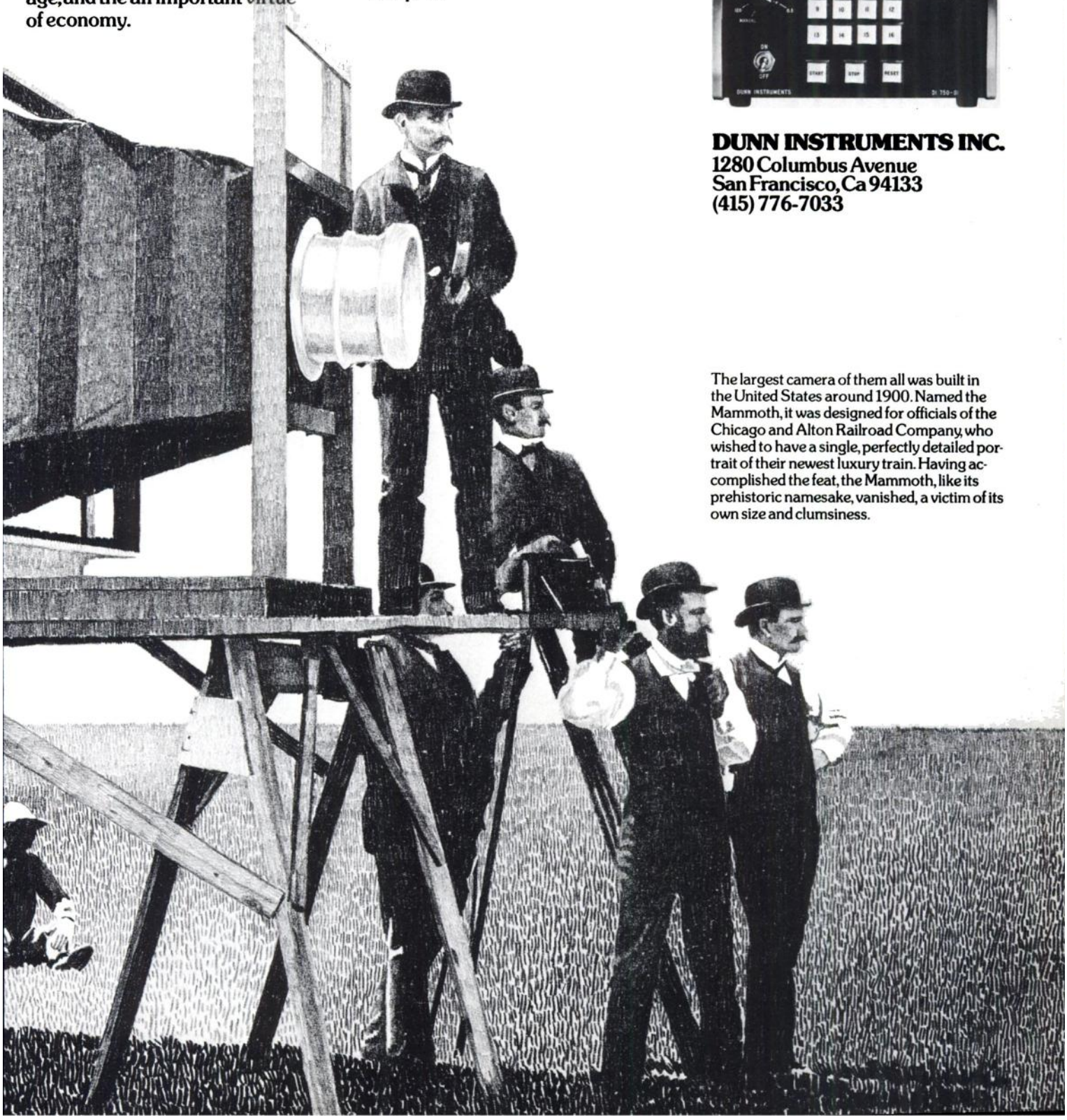
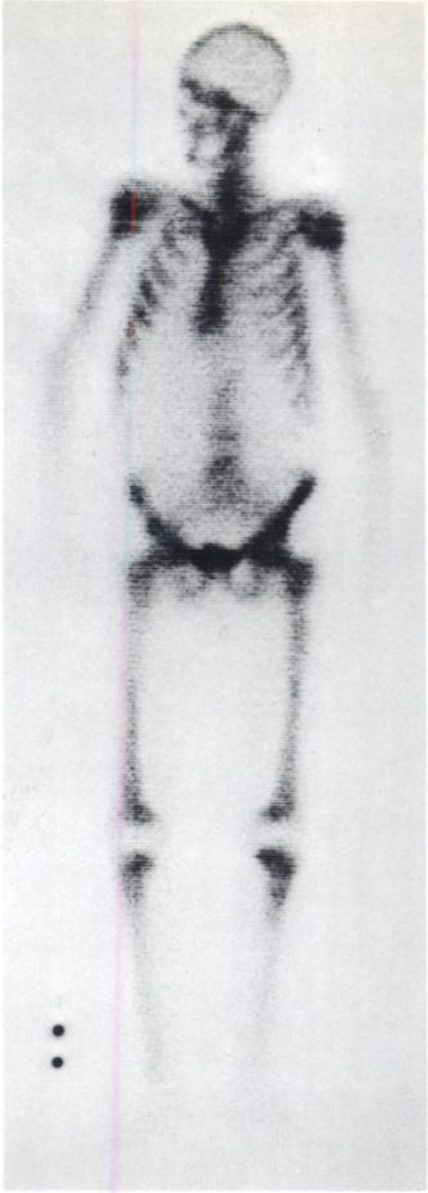
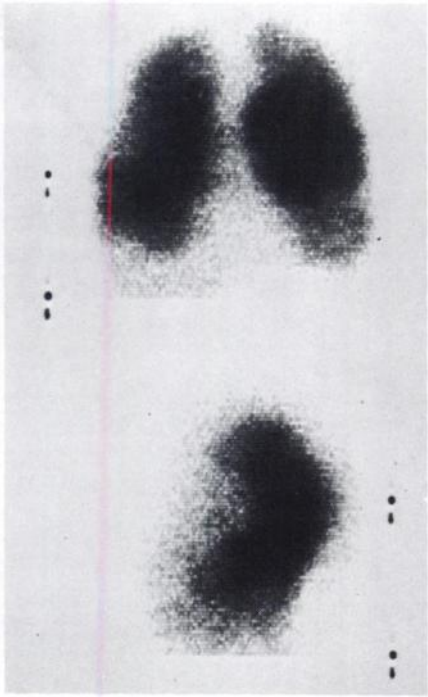


The largest camera of them all was built in the United States around 1900. Named the Mammoth, it was designed for officials of the Chicago and Alton Railroad Company, who wished to have a single, perfectly detailed portrait of their newest luxury train. Having accomplished the feat, the Mammoth, like its prehistoric namesake, vanished, a victim of its own size and clumsiness.

Tomorrow's scanning loads make the Maxiscan system worth looking into today.





If you're thinking of doing whole body scans with a gamma camera and attachments, beware. What begins as 2 to 3 whole body scans per week soon accelerates to 3 or more per day. With the camera tied up with these scans, other exams must be delayed, and department scheduling grossly disrupted.

Consider the GE alternative: The Maxiscan™ 2-probe whole body scanner. In a single pass, it can deliver 2 coincident views of definitive diagnostic information, without moving the patient. And instrument component cost analysis demonstrates lower cost per scan.

Skeletal surveys cover a full 24 x 79 inches to include elbows and feet. The image, minified 2:1, 3:1, 4:1 or 5:1, will fit 14 x 17 inch film, thus permitting location and diagnosis of bone metastases without a series of small area scans. Life-size images of single organs are also possible.

Tiltable top and bottom probes optimize brain scans. Vertical scan option allows scanning of seated patients and vertex views of the brain. Available is a table which can be adjusted to cot height to ease patient transfer and to accommodate various focal distance collimators. The table can be removed for direct-access collimator changes.

Arrange to see the Maxiscan system's total performance in a movie, and in-hospital case studies. Call your GE representative.

General Electric Medical Systems, Milwaukee and Toronto.
In Europe,
Elscint GmbH, Wiesbaden;
Elscint France SARL, Buc.

GENERAL ELECTRIC

Videodisplay Processor
To view and quantify patient count information in black and white or fully functional color, Maxiscan can be combined with GE's Videodisplay and Processing Unit. Images are displayed on a video monitor; count data is stored in the unit's electronic memory, and can be manipulated to enhance desired details and to aid interpretation and diagnosis. Enhanced VDP data may be played back to Maxiscan and recorded on 14 x 17 inch film. Scans can also be recorded on cassette tape for off-line playback and teaching purposes. Count information, obtained from any scanner or camera, can be transmitted from one VDP to another over regular telephone lines.

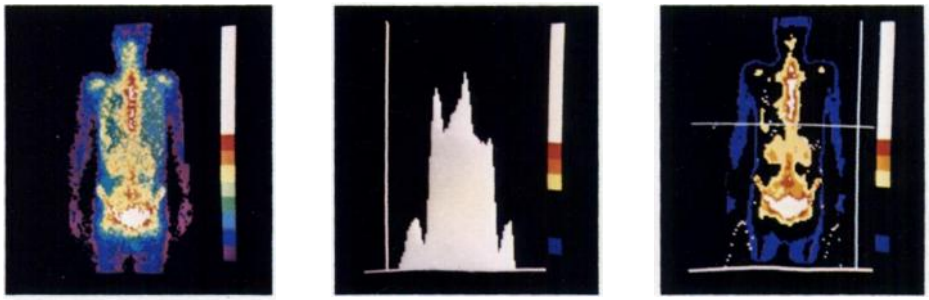
GENERAL ELECTRIC

Here's the information hospitals are getting with Maxiscan...

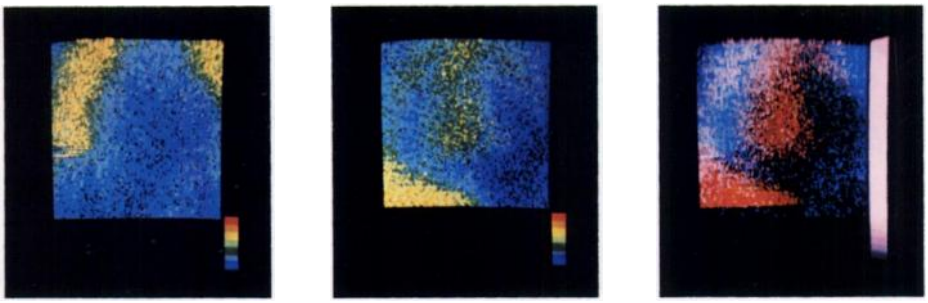
Hospitals report scanning performance like this from the Maxiscan system:

These reproductions of scans, from clinical examinations, illustrate the range of diagnostic information possible with Maxiscan and the Videodisplay Processor.

A GE motion picture demonstrates the full capability of both units. Ask your GE representative to schedule a desk top showing, at your convenience.



These three images, from a single whole body scan, demonstrate how manipulation of data stored in the VDP electronic memory can enhance desired details and aid diagnosis. The isotope used was ^{99m}Tc Polyphosphate. At left, an anterior view displays raw, unmanipulated data from the memory. At right, smoothed data is shown with a Y axis electronic slice through the area of suspicion. The count profile superimposed over this image and shown separately, center, confirms greater uptake on the right side. The photorecorded image showed only a suspicion of greater isotope uptake.

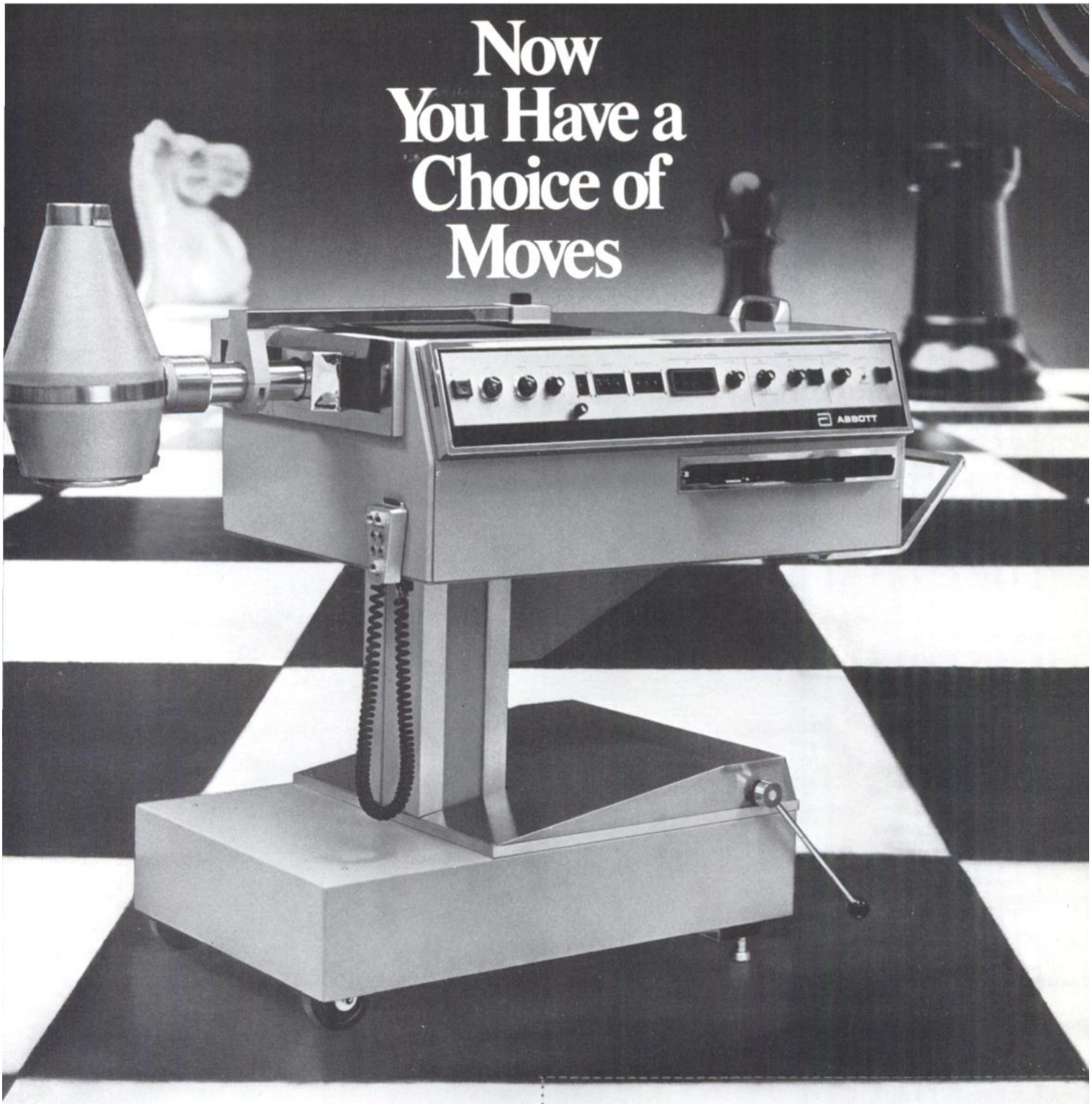


In a case of suspected pericardial effusion, a transmission scan (left) of the chest was obtained using an Iodine 131 source. An emission scan (center) of the same region was simultaneously obtained with the same probe, 15 minutes after an intravenous injection of ^{99m}Tc labeled albumin. The heart and liver are outlined. Note how the intracardiac activity (central area of center scan) fails to fill the large mediastinal shadow (central blue area of left scan). This discrepancy, between heart size and that of the mediastinum, is more easily seen when these two scans are superimposed (right); a technic easily accomplished on the VDP. The resulting diagnosis, a large pericardial effusion which appears to be predominantly left-sided, was confirmed by the aspiration of 1800 ml. of fluid from an encysted pericardial effusion.

Scans courtesy of Dr. M. J. Chamberlain, University Hospital, London, Ontario.

General Electric Medical Systems, Milwaukee and Toronto.
In Europe, Elscint GmbH, Wiesbaden; Elscint France SARL, Buc.

GENERAL ELECTRIC



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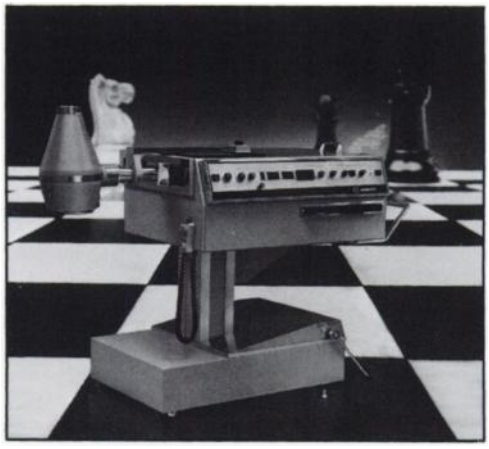
The GRAPHIC™ Rectilinear Scanner



No Extra Space Needed

Use the space you have—present facilities become nuclear scanning facilities. No need for a special diagnostic room or department. Simply move the GRAPHIC into the room where it's needed . . . GRAPHIC has room-to-room mobility. Turn a corridor into a temporary nuclear scanning lab . . . GRAPHIC will go with you, anywhere. Then push it into a nearby closet—even a corner—when you're finished.

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Our professional representatives will show your technician how to get high-quality scans easily with GRAPHIC. *And GRAPHIC is simple to operate* . . . little technical skill is required. A minimum of training will teach your technician to get excellent scans from your GRAPHIC time after time.

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Bring the advantages of nuclear medicine anywhere you want: intensive care unit, operating room, emergency room . . . now the scanner will come to the patient—allowing further diagnostic aid to those not-to-be-moved patients. With GRAPHIC, you now have a choice of moves

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The superior performance of a GRAPHIC scanner can go anywhere—even by van. Because GRAPHIC has:

- low physical profile
- lower center of gravity
- compact-size dimensions

GRAPHIC fits easily into *small vans*—with *no counterbalancing necessary.*

Mobility—Just One Of Many Advantages

The portable GRAPHIC Scanner has room-to-room mobility, *plus* it's

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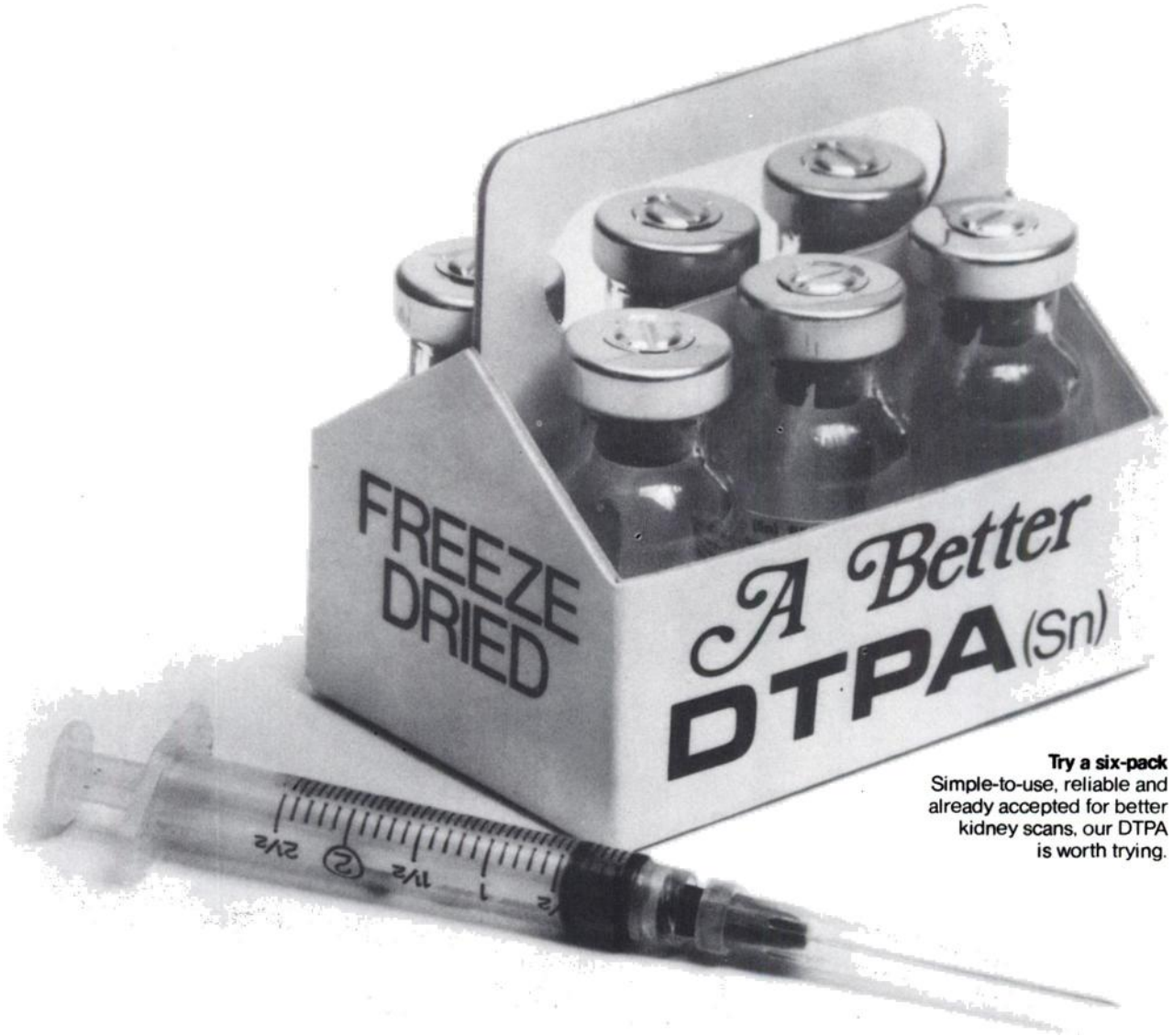

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Simple-to-use, reliable and already accepted for better kidney scans, our DTPA is worth trying.

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JOURNAL OF

NUCLEAR MEDICINE

TECHNOLOGY

Volume 2, Number 2

(JUNE 1974)

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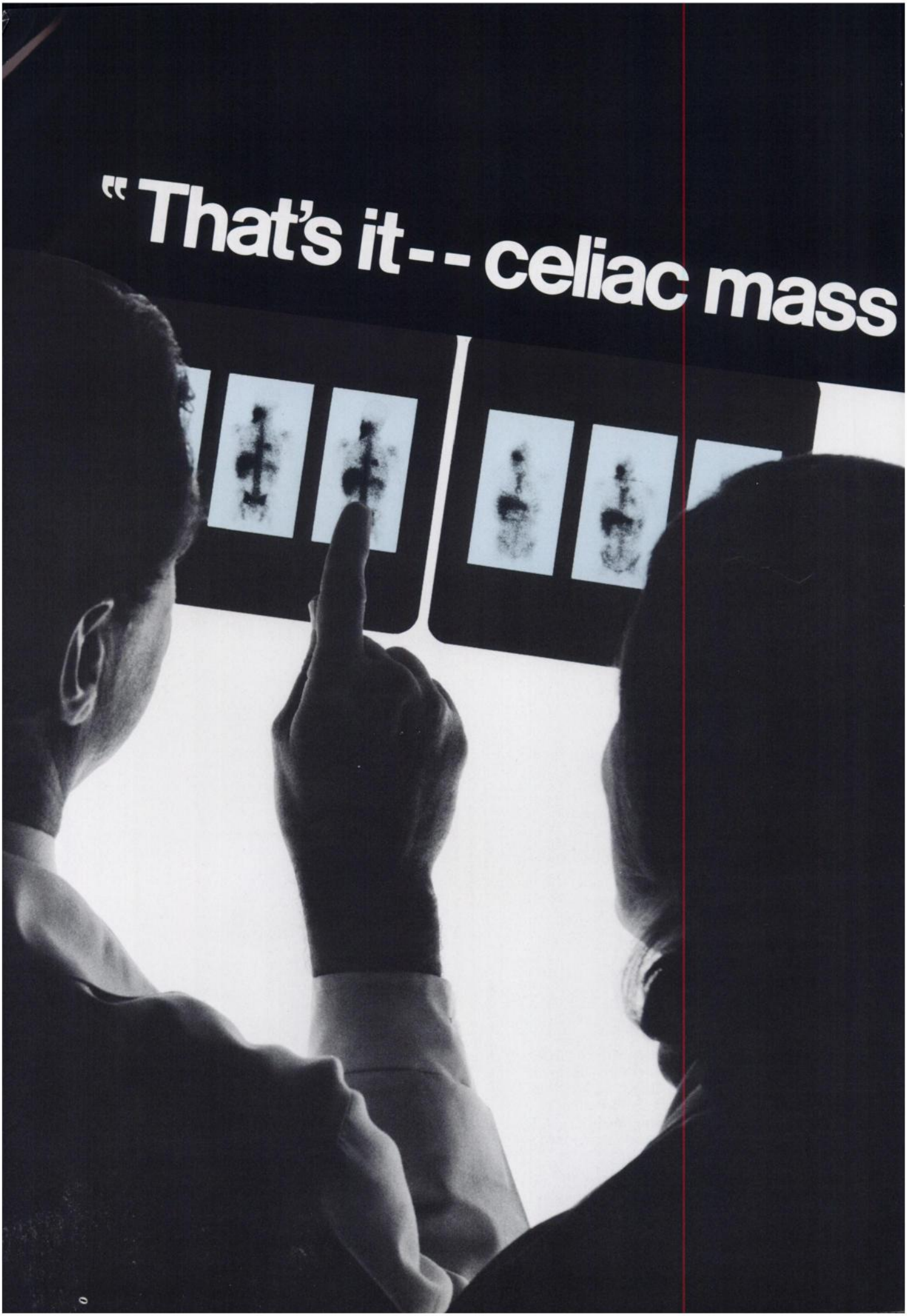
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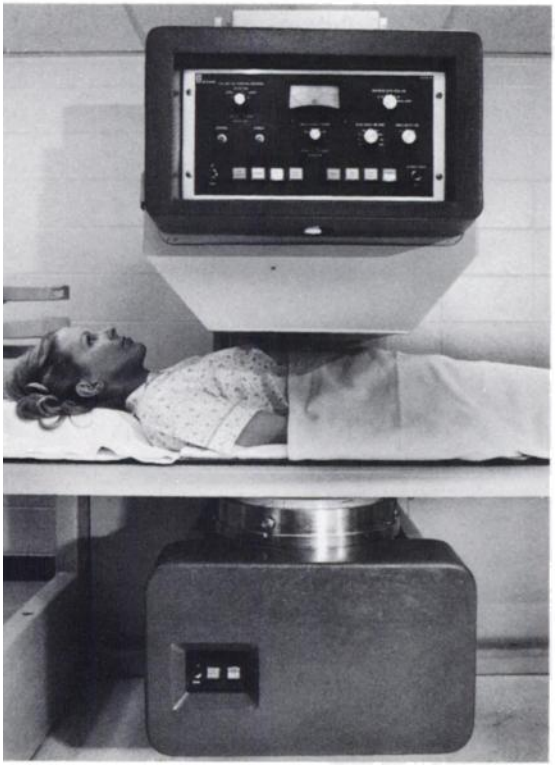

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And the PHO/CON will not be easily obsolesced. Its operating range of 70 KEV to 511 KEV can handle any current or foreseeable isotopes.

PHO/CON is ready to prove its diagnostic value in teaching hospitals and cancer clinics worldwide. For complete information on its use in your own facility, write or phone:

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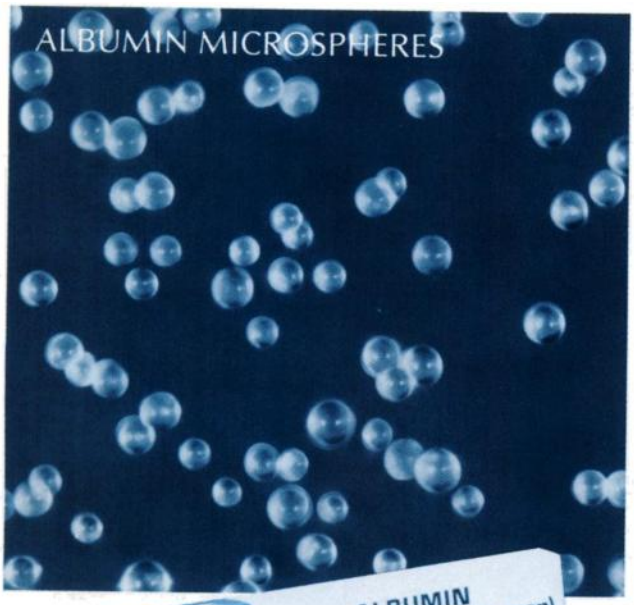
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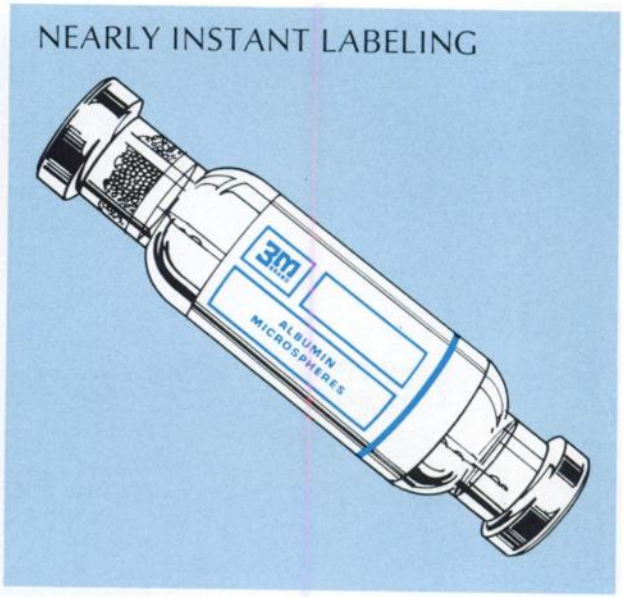
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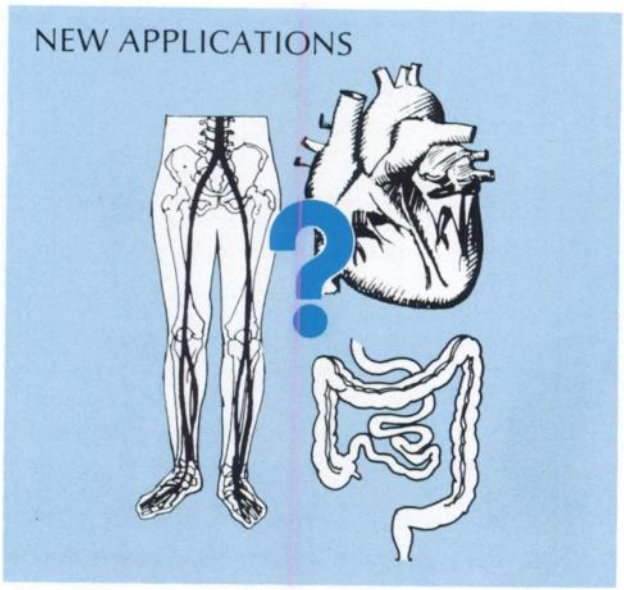
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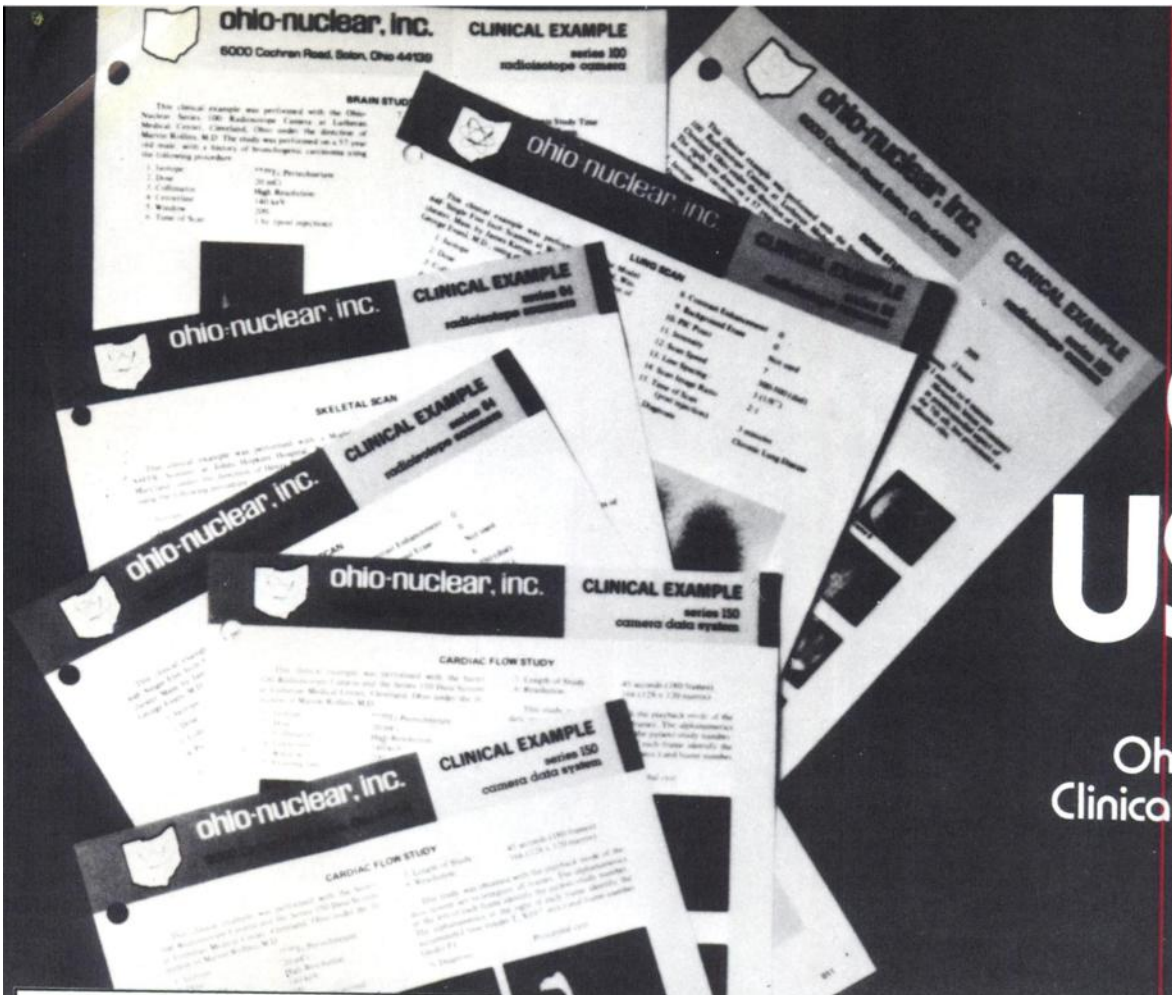
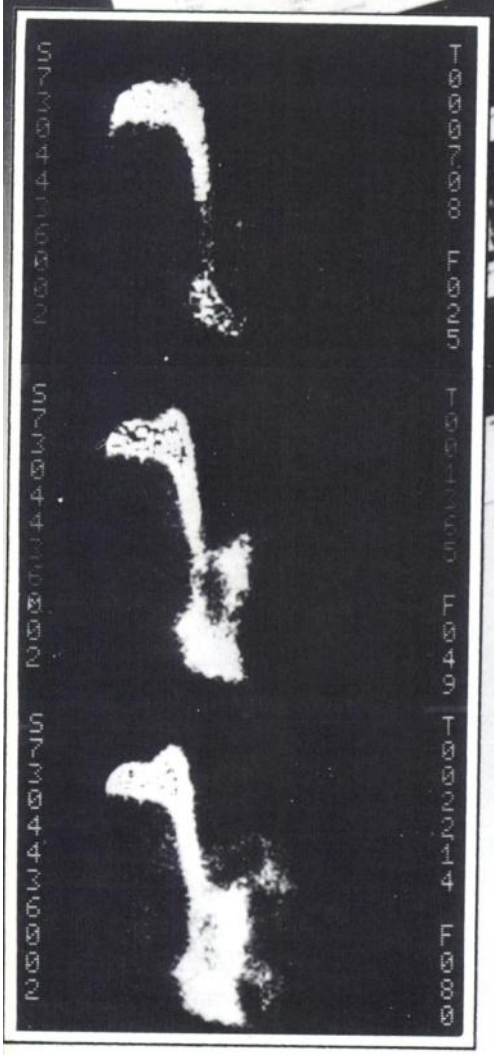


FOR OUR USERS

Ohio-Nuclear's Clinical Example Progra



Nuclear Medicine procedures a
constantly changing and improvin

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2 BASIC STEPS* TO PREPARE FOR LUNG IMAGING

*Appropriate shielding should be maintained at all times.

Introducing from Squibb

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Aggregated Albumin [Human]

for labeling with technetium-99m

Simplest and quickest to prepare of three technetium-labeled lung imaging agents. No waiting, heating or involved routines.

Stable for 8 hours after labeling if stored between 2° C. and 8° C. Won't agglomerate in the vial; loses virtually no labeling while standing. No need to resuspend or rewash after standing. Just shake gently again and inject the next patient.

Uniform particle size for good imaging. Over 90% of particles in the range of 10-100 microns. Lung clearance half time about four hours. High labeling efficiency, high lung/liver ratio.

COMPARISON OF BASIC STEPS IN PREPARATION OF THREE TECHNETIUM-LABELED LUNG IMAGING AGENTS*

MACROTEC® Aggregated Albumin (Human)	Albumin Microspheres (human)	Other competing brand aggregated albumin (human)
1. Add $^{99m}TcO_4^-$ to product vial	Add $^{99m}TcO_4^-$ to product vial	Shake ampul, open and withdraw aggregate
2. Shake gently	Agitate in boiling water	Introduce product to reaction vial
3.	Withdraw supernatant and discard	Add $^{99m}TcO_4^-$ to reaction vial
4.	Add rinsing/suspending solution to reaction vial	Shake thoroughly
5.	Agitate ultrasonically	Incubate at least 30 minutes
6.		Shake vigorously

*Based on manufacturers' product information

Macrotec®
Aggregated Albumin [Human]

BRIEF SUMMARY

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

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

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

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

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

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

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

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

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

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

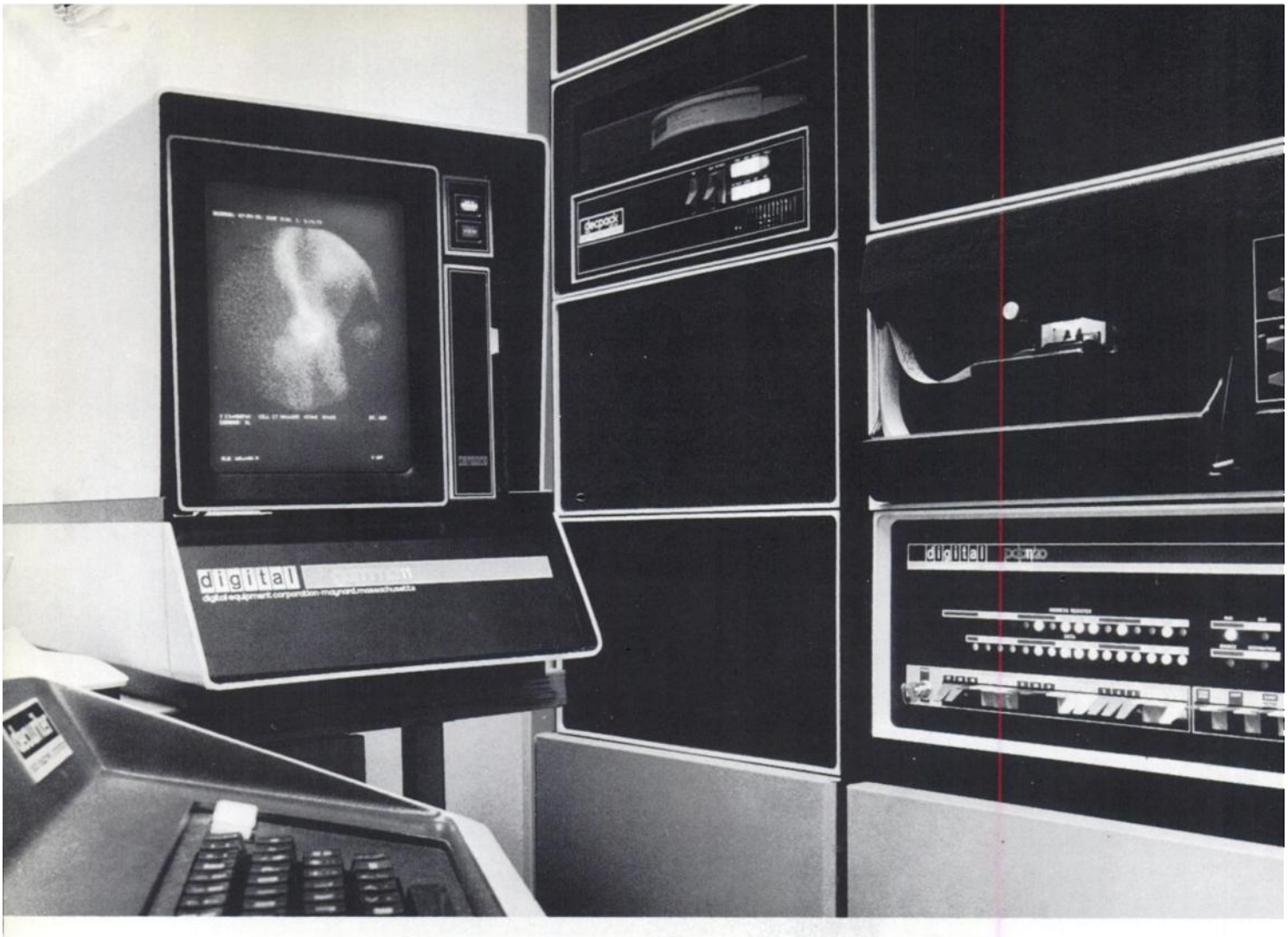
ADVERSE REACTIONS: At present, adverse reactions have not been reported following the administration of this product.

For full prescribing information, consult package insert.

HOW SUPPLIED: In boxes of 5 vials.

Medotopes®

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



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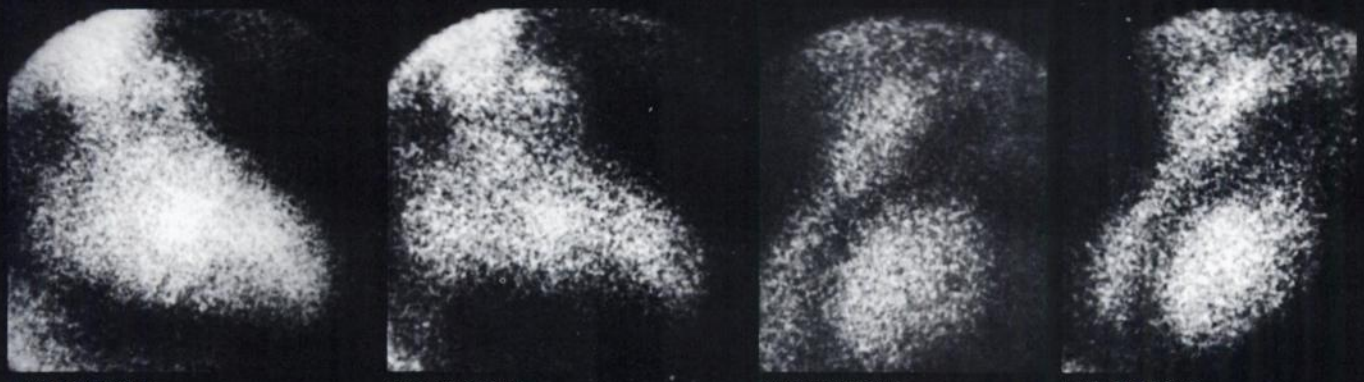
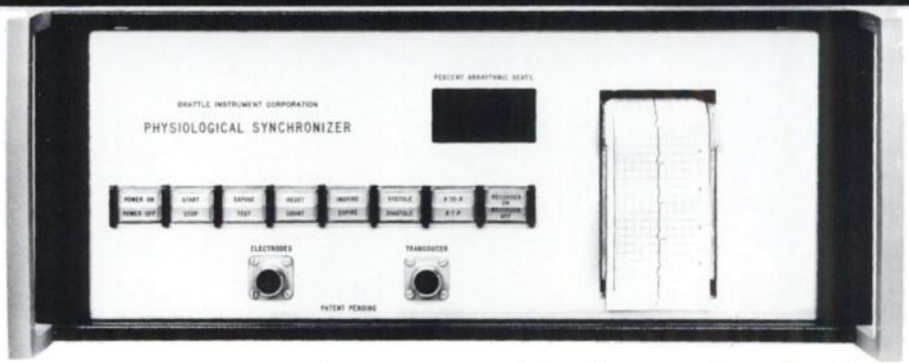


RAO, DIASTOLE RAO, SYSTOLE LAO, DIASTOLE LAO, SYSTOLE

The RAO view shows akinesis of the lower antero-lateral wall and apex; and contraction of the inferior wall and high up the antero-lateral wall. The LAO view shows good contraction posteriorly and akinesis of the septal chamber. 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 two years—very good hospitals have them
And we have lots of sample clinical pictures which we'll gladly show you. If you want the names of some users, we'll supply them, as well as references on effectiveness, reliability and safety, and a bibliography on ten years' worth of medical uses of synchronization.

What's the next step? Write or call
Yes, write us. Or call. We'll send you data (on this and other models, applications) and the name and phone of our man in your area (39 states so far, and growing). He can show you samples, give you a demo and arrange for you to have a machine of your own. (This is the best part of our story.)

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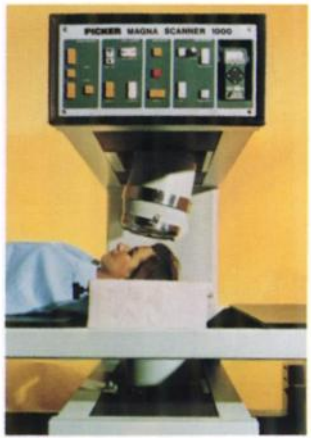

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Many standard features are exclusive to Magna Scanner 1000. Fastest scanning speed (to 1000 cm/min)... widest choice of minifications (1:1 up to 1:10) for whole-body or single-organ procedures...automatic hotspot locator that finds (and remembers) hotspot location...a sliding-average computer (statistically smoothes out image input data)...and collimation specifically designed for 99mTc labeled phosphate compounds for skeletal imaging.

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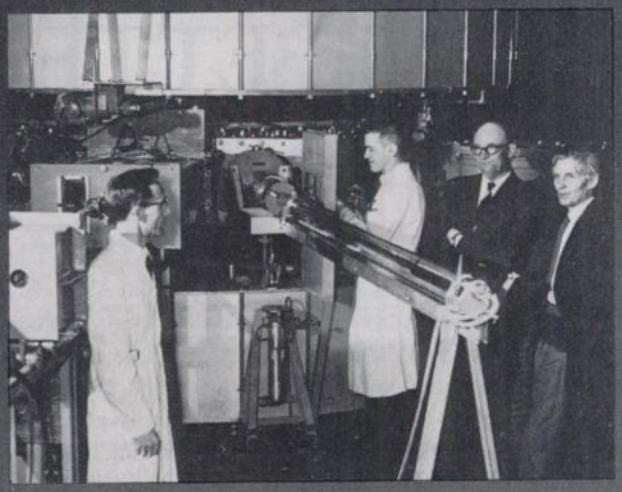
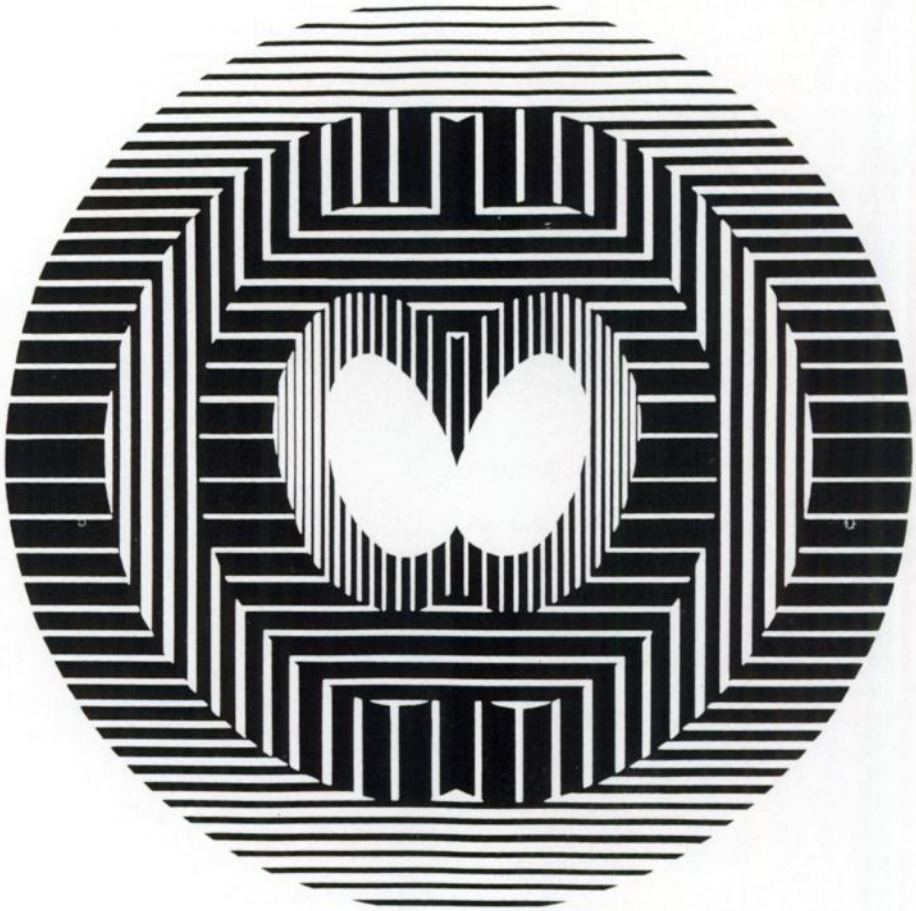


1947: LKB's 200MeV synchrocyclotron being installed at Uppsala University, Sweden.

The Only Gamma Systems With A Full 2 YEAR WARRANTY!

"Iodine 123 is a nearly 'ideal' radionuclide for thyroid imaging."[1]



In 1962, Myers and Anger stated: "Calculations indicate radiation exposures will be less than 5% as great when I-123 is substituted for I-131, in procedures where radioiodide ion is administered. This reduction stems chiefly from two properties: (1) I-123 emits no β-particles, per se, like I-131 does; (2) The ≈14-hour half-life of I-123 is only 7% that of I-131. However, this half-life is adequate for most diagnostic procedures."[2] ■ In 1973, Atkins concluded simply: "Iodine 123 is a nearly 'ideal' radionuclide for thyroid imaging."[1] ■ Medi+Physics makes Iodine 123 for delivery Monday through Thursday. Iodine 123 is limited by Federal law to investigative use only. For product and licensure information, call toll free (800) 227-0483 (outside California) or (800) 772-2446 (inside California).

1. Atkins et al, *Am J Roentgenol Radium Ther Nucl Med*, 117(1): 195-201, 1973. 2. Myers and Anger, *J Nucl Med*, 3(5): 183, 1962.

medi+physics

jnm / PLACEMENT

POSITIONS OPEN

REGISTERED RADIOLOGICAL TECHnologist with registry or eligibility for certification in nuclear medicine—immediate opening for 140-bed Oxford-Lafayette County Hospital in a college town. Attractive salary. Contact O. W. Hyman, Jr., M.D., Radiologist, Oxford, Mississippi.

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CHIEF TECHNOLOGIST. LARGE PRIvate hospital with medical school affiliation seeks supervisor for expanding nuclear medicine laboratory with a full complement of instrumentation, including several scintillation cameras. Reply to: SNM, Box 801, 475 Park Avenue South, New York 10016.

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REGISTERED NUCLEAR MEDICINE Technologist: Registered, registry eligible or experienced nuclear medicine technician is needed for 900-bed hospital. Will perform scanner and gamma camera operations. Salary commensurate with education and experience. Send resume to: Director of Personnel, St. Francis Hospital, 929 N. St. Francis, Wichita, Kans. 67214. An Equal Opportunity Employer.

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MS WITH GOOD EXPERIENCE IN major nuclear medicine lab seeks to manage your lab, including administration, instruction and expansion, in the south Florida area. Please reply to Box 803, SNM, 475 Park Ave. South, New York, N.Y. 10016.

ARRT NUCLEAR MEDICINE TECHnologist desires change. Graduate of Duke University School of Nuclear Medicine with several years field experience. Versed in opening and managing nuclear division. Please reply to Box 804, SNM, 475 Park Ave. South, New York, N.Y. 10016.

JNM CLASSIFIED PLACEMENT SERVICE SECTION

This section in the Journal of Nuclear Medicine contains "Positions Open", "Positions Wanted", and "For Sale" listings. Nondisplay "Positions Wanted" ads by members of the Society are billed at 30¢ per word for each insertion with no minimum rate. Nondisplay "Positions Wanted" ads by nonmembers and all nondisplay "Positions Open" and "For Sale" ads by members and nonmembers are charged at 65¢ per word, with a minimum of $15. Display advertisements are accepted at $50 for ⅛ page, $90 for ¼ page, $165 for ½ page, and $295 for a full page. Closing date for each issue is the 15th of the second month preceding publication. Agency commissions and cash discounts are allowed on display ads only. Box numbers are available for those who wish them.

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JOURNAL OF NUCLEAR MEDICINE
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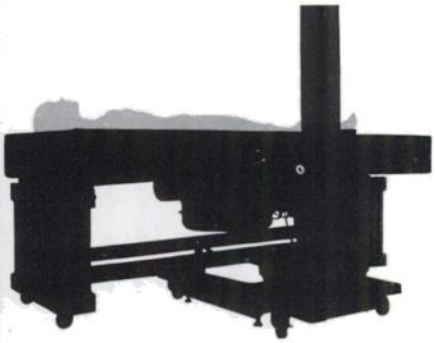

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Guest faculty will include Gopal Subramanian, Ph.D., Upstate Medical Center, Syracuse, New York; Rodney Ice, Ph.D., University of Michigan Medical Center; and Walter Wolfe, Ph.D., University of Southern California.

Additional information and applications may be obtained by contacting: H. J. Dworkin, M.D., Chief, Department of Nuclear Medicine, William Beaumont Hospital, Royal Oak, Michigan 48072.

Registration is limited.

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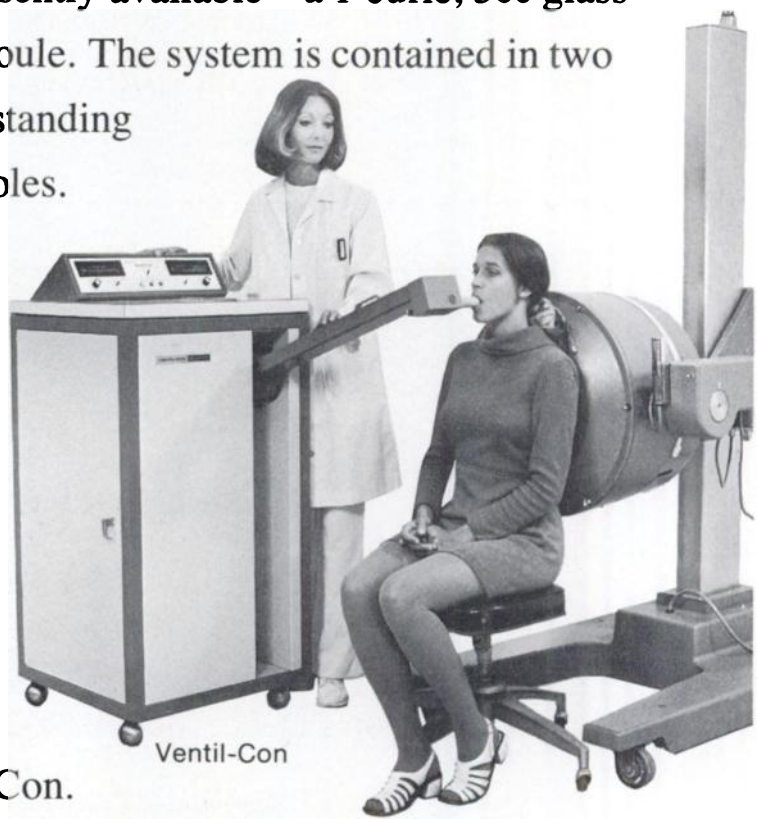
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1. Dunn, R.T. and Foster, L.B.: Radioimmunoassay of thyroxine in unextracted serum, by a single antibody technique, **Clinical Chemistry 19**:1063, (September) 1973.

*based on run of 30 assay tubes; for each additional 10 tubes, add 15 minutes

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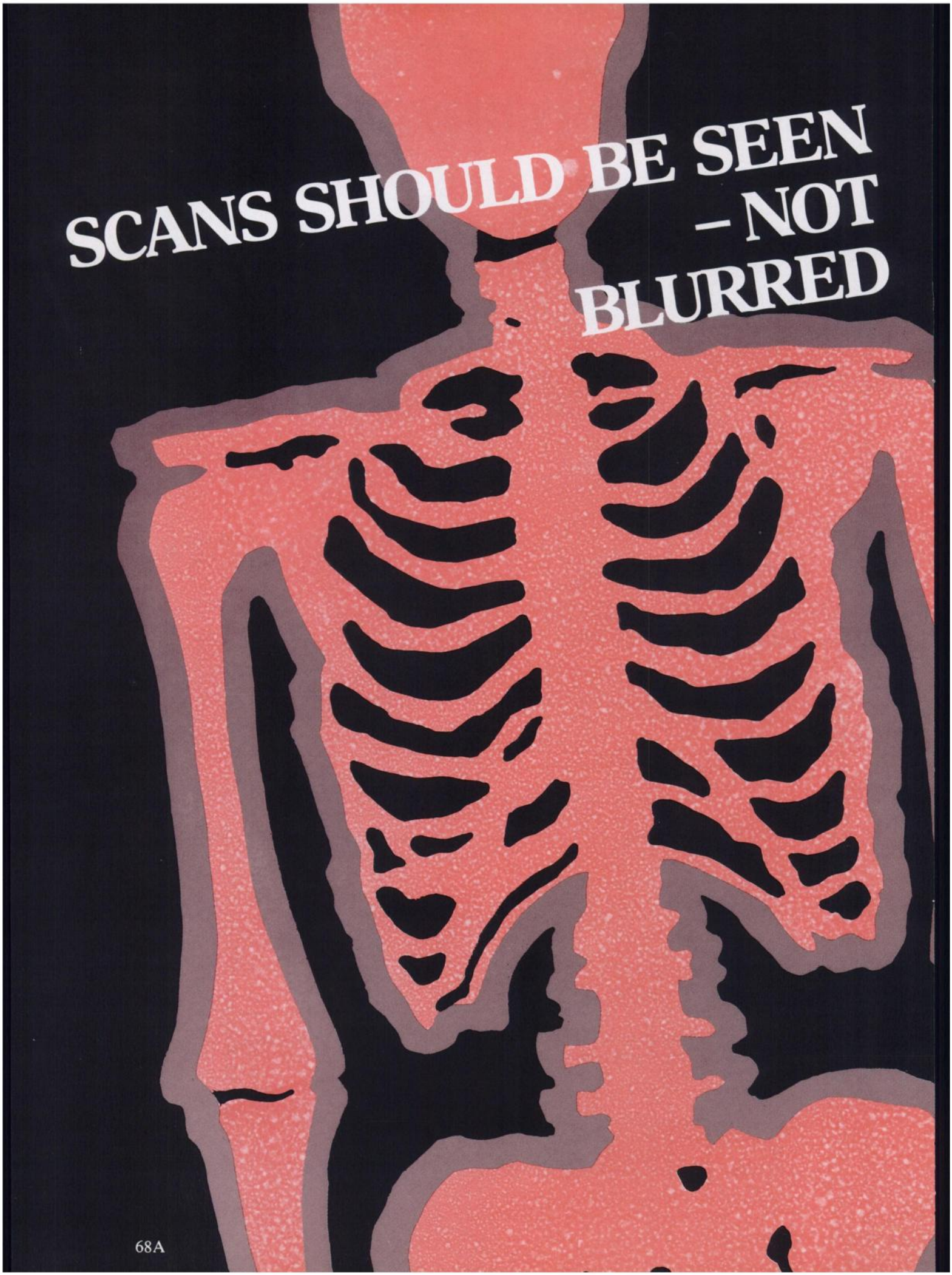
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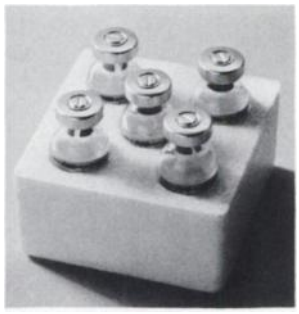
A superior bone imaging agent because:



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Excerpts from recent 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)* (Italics 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)

'In summary, ^{18}F seems to be the best radiopharmaceutical for bone scanning. Technetium-labeled pyrophosphate gives better results than polyphosphate of higher molecular weight, and the availability of these two compounds makes bone scanning easier." (3)

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-Fluoride for Skeletal Imaging. J Nucl Med 14: 375, 1973 *Abst.*
3. Bok B, Perez R, Panneciere C, DiPaola R: Bone Scanning Radiopharmaceuticals: A Comparison of Three Products. J Nucl Med 14: 380, 1973 *Abst.*

TechneScan™ PYP™ KIT
(STANNOUS PYROPHOSPHATE)

Mallinckrodt NUCLEAR

SEE FOLLOWING PAGE FOR PRESCRIBING INFORMATION

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.

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.

DOSAGE AND ADMINISTRATION

The recommended adult dose of **TechneScan PYP** Tc 99m is 5 to 15 millicuries (1 to 14 milligrams of stannous pyrophosphate). **TechneScan PYP** Tc 99m is injected intravenously over a 10- to 20-second period. For optimal results, bone imaging should be done 1 to 6 hours following administration.

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

DIRECTIONS FOR PREPARATION

Procedural Precautions

All transfer and vial stopper entries must be done using aseptic techniques.

Procedure:

1. A reaction vial is removed from the refrigerator and approximately five (5) minutes are allowed for the contents to come to room temperature.
2. Affix "Caution—Radioactive Material" label to boxed area of reaction vial label.
3. Sodium pertechnetate Tc-99m solution (1 to 10 milliliters) is added to the **TechneScan PYP** reaction vial. In choosing the amount of technetium-99m radioactivity to be used in the preparation of the **TechneScan PYP** Tc 99m (Technetium Tc 99m Stannous Pyrophosphate), the labeling efficiency, number of patients, administered radioactive dose, and radioactive decay must be taken into account. The recommended maximum amount of technetium-99m to be added to the **TechneScan PYP** reaction vial is 100 millicuries.
4. Shake the reaction vial sufficiently to bring the lyophilized material into solution. Allow to stand for five (5) minutes at room temperature.
5. Using proper shielding, the reaction vial should be visually inspected. The resulting solution should be clear and free of particulate matter. If not, the reaction vial should not be used.
6. Calculate the radioactivity concentration of the **TechneScan PYP** Tc 99m and fill in the appropriate information on the string tag.

HOW SUPPLIED

Catalog Number—094 **TechneScan PYP** Kit

Kit Contains:

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

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

5—Radioassay Information String Tags.

Reaction Vial Contains:

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

TechneScan™ PYP™ KIT

(STANNOUS PYROPHOSPHATE)

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Unchanged on the outside, updated on the inside: The 150-sample capacity Model 2425 Tri-Carb/**Request Bulletin 1117.**

Unchanged on the outside, updated on the inside: The 450-sample capacity Model 2450 Tri-Carb/ **Request Bulletin 1177.**

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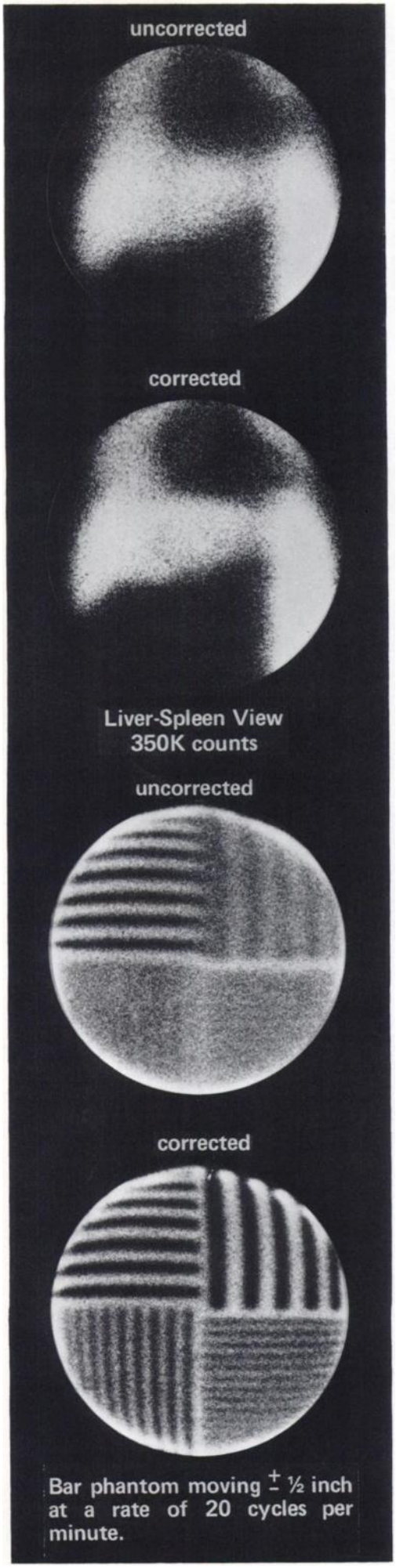
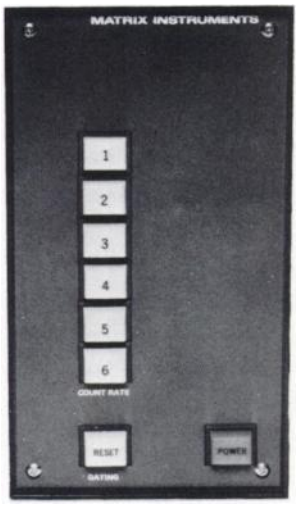


Increase the resolution of your gamma camera and ultrasound scanner by correcting organ motion effects without attaching anything to the patient or increasing the study time.



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Opti-Imager electronically tracks and corrects organ motion effects. The centroid position of the organ is electronically determined and the x- and y-coordinate signals of the gamma camera or ultrasound scanner are corrected to bring the image displayed on the photographic scope back to the centroid position. Thus, even though the organ moves, the image on the display scope is held stationary.

Since Opti-Imager does not gate the display scope, all the available information is corrected and displayed. The time required to obtain a statistically good image is the same as for an uncorrected scintigram. Opti-Imager is a fully automatic system that operates without attaching any sensors to the patient and requires no calibration from patient to patient.

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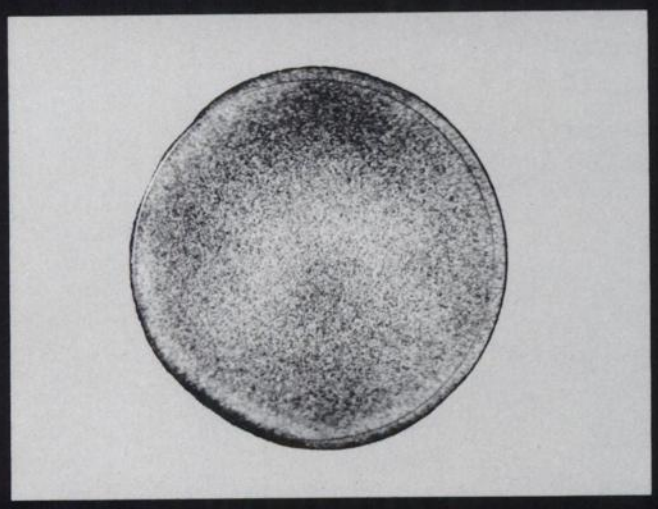

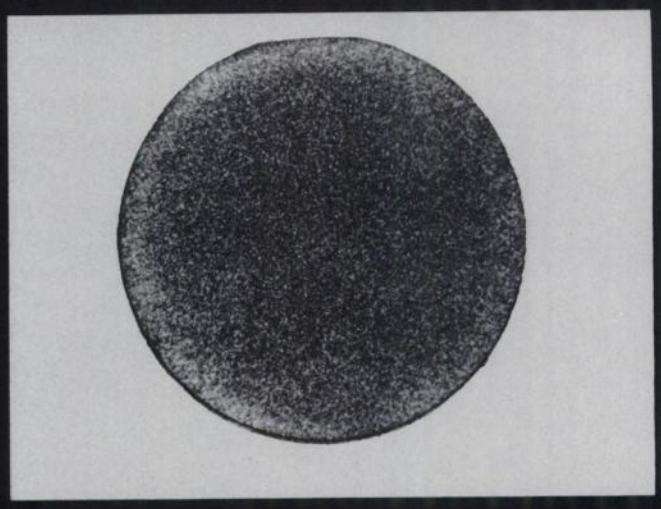

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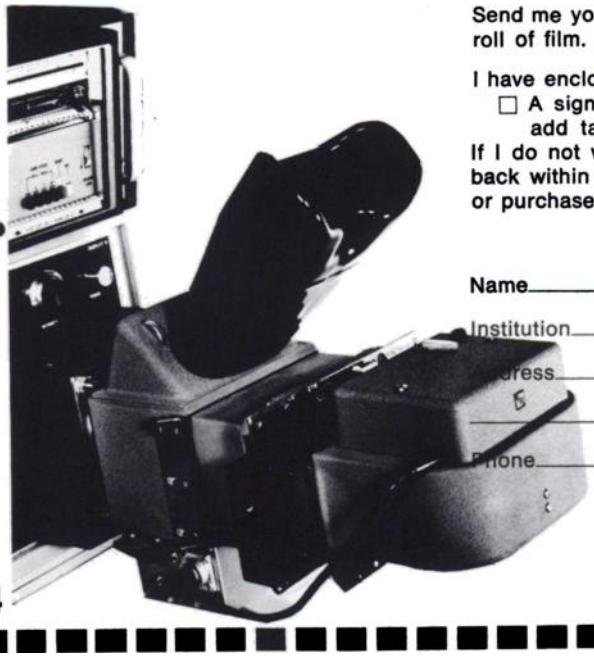

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Engineers for Life Science

In 1974 the estimated incidence of new internal cancer cases in the United States will reach approximately 655,000 persons. Moreover, within this year 355,000 Americans will die of malignancy, a large portion of which is potentially curable.[1] Survival trends are inversely related to the extent of the disease—the less involvement, the better the chances of therapeutic success.[1,2]

This problem of detecting cancer has long absorbed researchers. Now, ten years after the basic investigations were begun, the blending of the sciences of immunology and radiochemistry has resulted in...

CEA-ROCHE ROCHE

Carcinoembryonic Antigen assay

A new *in vitro* test to aid in the management and diagnosis of cancer

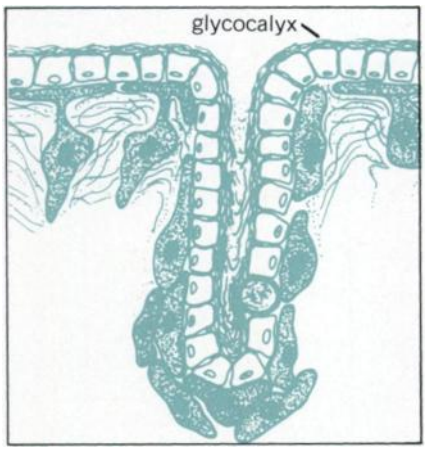
the discovery of carcinoembryonic antigen

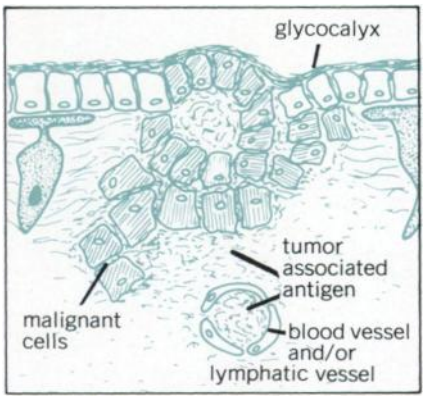
The term carcinoembryonic antigen (CEA) was first used in 1965 by Gold and Freedman of the Montreal General Hospital to describe a glycoprotein which is a constituent of the glycocalyx of embryonic entodermal epithelium; it is also present in extracts of carcinoma cells.[3-6]

The embryonic gene responsible for CEA synthesis is expressed by many carcinoma cells; however, preliminary experiments suggest that the amount of CEA in different carcinomas varies, indicating gene expression is not an all-or-none phenomenon.[7,8]

As the carcinoma disrupts the normal tissue architecture, cells penetrate the underlying tissue, and glycocalyx components including CEA enter the vascular system.

Diagrammatic representation of microscopic section of fetal colon. CEA is present in glycocalyx which faces lumen of colon.





Diagrammatic representation of primary adenocarcinoma of colon. As underlying tissue is invaded by tumor cells, CEA is released and diffuses into the vascular bed.

a long-term commitment to cancer research

Roche has long had a serious commitment to cancer research which has resulted in the development of such important chemotherapeutic agents as Fluorouracil (5-fluorouracil), FUDR (floxuridine), Efudex®(fluorouracil) and Matulane® (procarbazine HCl).[9]

Working in conjunction with the original Canadian researchers and with investigators at over 100 leading medical centers and research institutions throughout the United States, England and Canada, Roche Research has adapted, refined and evaluated this test for carcinoembryonic antigen (CEA) found in a variety of cancerous and noncancerous states.

CEA-ROCHE, a radioimmunoassay, employs the Hansen Z-gel method which is capable of detecting and measuring plasma levels of CEA in the nanogram (one billionth of a gram) range. The sensitivity of the assay has been shown to be 0.5 ng/ml of CEA.[10]

an extensive clinical evaluation

During the initial studies with CEA, it became clear that in order to obtain the reproducibility necessary to make the CEA assay an important and reliable diagnostic tool, strict standardization of procedure and reagents was required. Therefore, Roche embarked upon a unique investigational program. More than 35,000 assays using standardized CEA-ROCHE reagents and procedure were run on samples from over 10,000 patients at over 100 leading medical centers and research institutions. Identical protocols and reporting methods were also utilized, thereby subjecting the CEA-ROCHE assay to one of the most thorough and well-controlled evaluations made on a diagnostic test.

Using the CEA-ROCHE assay, elevated CEA titers have been detected in carcinomas of entodermal and nonentodermal origin; in noncarcinomatous malignancies; in such nonmalignant diseases as emphysema, inflammatory bowel disease and colorectal polyps; and in some healthy individuals, particularly chronic smokers. The following data were derived from these studies.[11]

Patients	No. of Pts.	CEA Titer Ranges 0-2.5 ng/ml	2.6-5.0 ng/ml	5.1-10 ng/ml	>10 ng/ml
Healthy Subjects					
Nonsmokers	892	97%	3%	0%	0%
Former smokers	235	93	5	1	1
Smokers	620	81	15	3	1
Colorectal Carcinoma	544	28	23	14	35
Pulmonary Carcinoma	181	24	25	25	26
Pancreatic Carcinoma	55	9	31	25	35
Gastric Carcinoma	79	39	32	10	19
Breast Carcinoma	125	53	20	13	14
Other Carcinoma	343	51	28	12	9
Noncarcinoma Malignancy	228	60	30	8	2
Nonmalignant Disease					
Benign Breast Disease	115	85	11	4	0
Rectal Polyps	90	81	15	3	1
Cholecystitis	39	77	17	5	1
Alcoholic Cirrhosis	120	29	44	25	2
Active Ulcerative Colitis	146	69	18	8	5
Pulmonary Emphysema	49	43	37	16	4

CEA-ROCHE ROCHE

Carcinoembryonic Antigen assay

Clinical applications
Limitations

CEA-ROCHE as an aid in the management of cancer

When used in conjunction with other tests in the diagnostic armamentarium, this highly sensitive and quantitative radioimmunoassay has been shown to be useful as an aid in the management of the cancer patient

- by monitoring the effects of surgery, radiotherapy and chemotherapy,
- by providing a basis for re-evaluating therapy,
- by determining the probable presence of metastatic disease,
- by providing an early indication of the recurrence or progression of malignant disease.

Decreases in CEA titers were reported to be associated with effective therapy.[12-17] Serial determinations of CEA proved to be of value in assessing the condition of the patient during therapy.[13-16, 18] Persistent increases in titer were associated with a lack of response to therapy or a recurrence of disease; in some cases, the titer rise preceded clinical signs by as much as three months.[19, 20] Except for primary pancreatic and colorectal carcinoma, titers above 20 ng/ml were, with very rare exceptions, associated with the presence of metastatic disease.[20] However, metastatic disease may also occur when the CEA titer is below 20 ng/ml.

CEA-ROCHE as an aid in the diagnosis of cancer

The CEA-ROCHE assay has also been shown to be of value as an aid in cancer diagnosis. When used as an adjunct to other tests and procedures, the CEA-ROCHE assay has proven to be most useful

- in patients with signs, symptoms and clinical history suggestive of a diagnosis of cancer,
- in patients with such diseases as ulcerative colitis, pulmonary emphysema, alcoholic cirrhosis and gastric and duodenal ulcers in which the risk of developing cancer is greater than in the corresponding normal population.

These nonmalignant inflammatory diseases in their active state may give rise to CEA titers above 2.5 ng/ml. These titers usually drop below 2.5 ng/ml when these diseases are in remission.[17, 20-22]

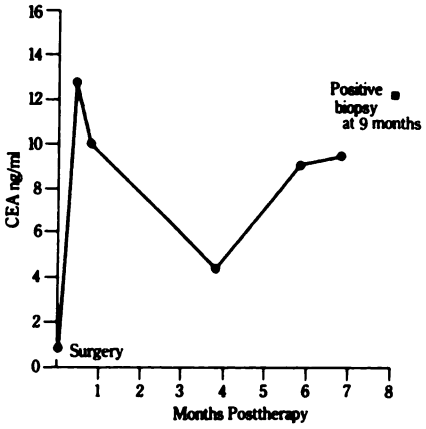
In a special study of 883 patients, cigarette smoking with titer elevations were associated with atypical sputum cytology.[23] Decreases in CEA titer often occurred within 30 to 60 days after cessation of smoking.

It must be stressed that test results and data arrived at using the CEA-ROCHE assay cannot be compared with results obtained by any other method or reagents.

limitations of CEA-ROCHE

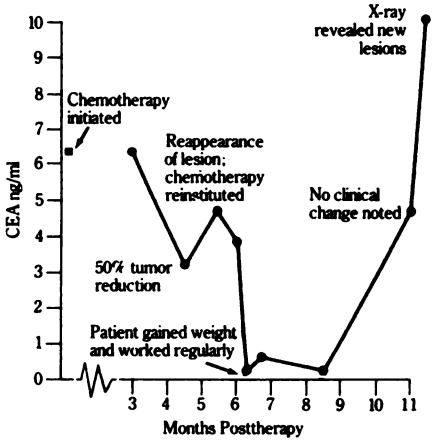
CEA-ROCHE is not recommended as a screen to detect cancer. CEA titers are not an absolute test for malignancy, nor for a specific type of malignancy. In the management and diagnosis of the patient suspected or known to have cancer, all other tests and procedures must continue to be given emphasis. CEA titers less than 2.5 ng/ml are not proof of the absence of malignant disease.

representative case history of patient being treated for malignancy without known metastases



A 42-year-old woman presented with a squamous-cell anal carcinoma. CEA-ROCHE level at time of surgery was 0.6 ng/ml. CEA titer rose to 12.6 ng/ml 10 days later and was still 9.8 ng/ml 20 days after surgery. Upon discharge three months later CEA level was 4.1 ng/ml and there was no clinical evidence of disease. Six weeks later titer had risen to 8.8 ng/ml and then to 9.3 ng/ml after another 30 days without any clinical sign of disease. Patient was hospitalized three months later and biopsy was positive for recurrence of cancer. In spite of initial low CEA value preoperatively, titer levels accurately reflected patient's condition and gave evidence of recurrence some 4 months prior to clinical signs.

representative case history of patient being treated for malignancy with metastases



Chemotherapy was initiated in a 37-year-old man presenting with synovial sarcoma and metastases to the lungs. The first CEA-ROCHE titer was performed three months later. Titer level was 6.2 ng/ml. In six weeks CEA titer dropped to 3.0 ng/ml and a 50% reduction of tumor in the right upper lobe of the lung was noted. One month later titer rose to 4.6 ng/ml and there was a reappearance of a left upper lung lesion.

Chemotherapy was reinstituted and assays run at 2, 3, 5, 12 and 20 weeks. There was no change in radiologic appearance of metastases. Patient gained weight and worked regularly. The CEA titers during this period were 3.8, 0.0, 0.5, 0.0 and 4.6 ng/ml respectively. One and one-half weeks later, CEA titer rose to 10.0 ng/ml and a review of x-ray films revealed appearance of new lesions.

The above representative case histories, using actual CEA-ROCHE titer readings and timing of assays, illustrate the correlation of results with published clinical studies.

CEA-ROCHE
Carcinoembryonic Antigen assay

A significant contribution to the management and diagnosis of cancer

availability of CEA-ROCHE

The CEA-ROCHE™ assay may be obtained through your hospital, institutional and private clinical laboratory obtaining the necessary reagents and procedure in a kit developed by Roche Diagnostics or as a direct reference service of Roche Clinical Laboratories, Inc.

And, as with all our pharmaceutical agents, this assay may be obtained for your patients who are unable to afford it through the Roche Indigent Patient Program.

comprehensive information available

Because of the clinical significance of CEA-ROCHE and the critical area of medicine involved, a comprehensive Clinical Monograph containing in-depth information on the nature of the assay, its applications and interpretation as well as an extensive summary of the collaborative study has been prepared.

It is recommended that this brochure be consulted before ordering or interpreting the CEA assay. You may obtain a copy by completing and returning the coupon below.

☐ Please send me the CEA-ROCHE Clinical Monograph, an in-depth brochure on this test.

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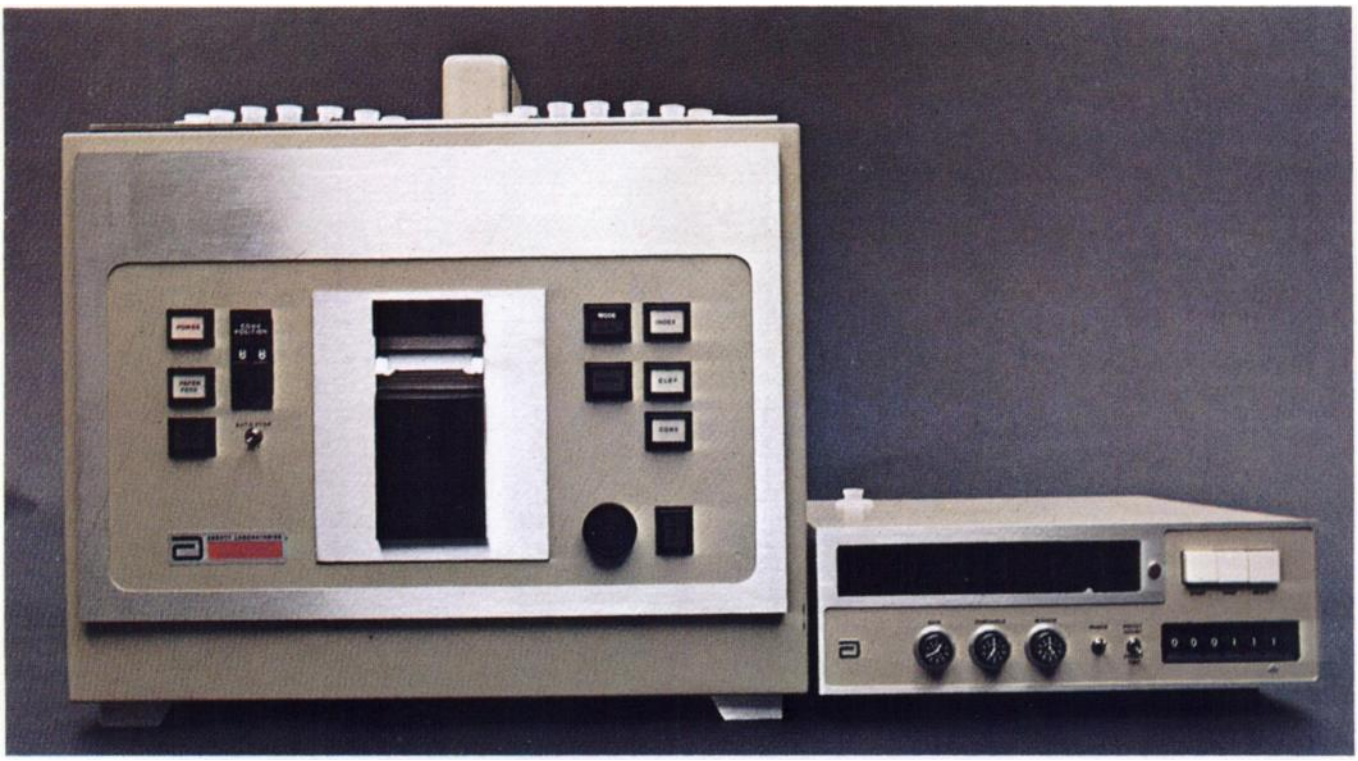

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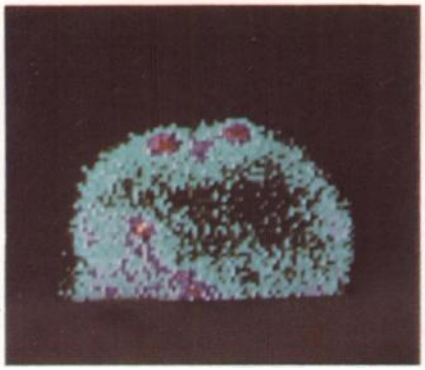
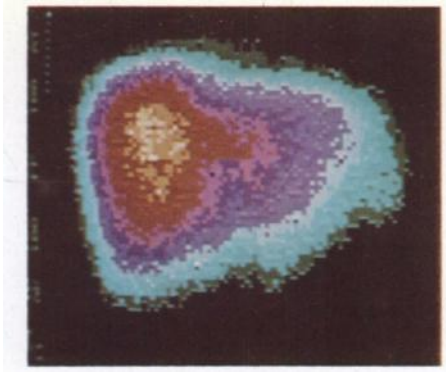
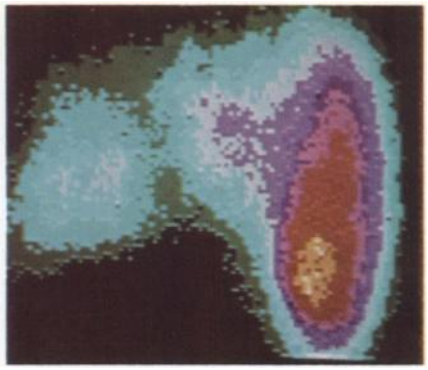


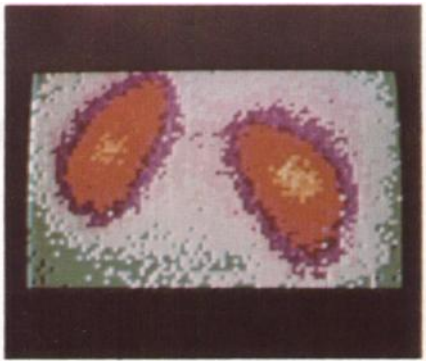
Abnormal Lt. Lat. brain-bone scan



Normal ant. liver scan

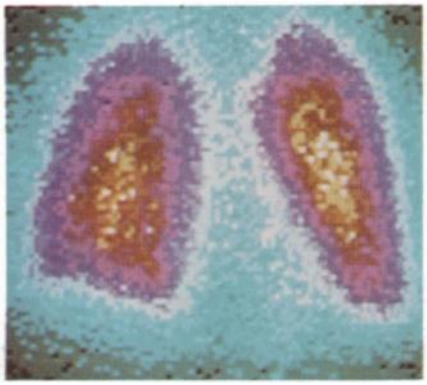


Ant. cirrhotic liver scan



Normal kidney scan

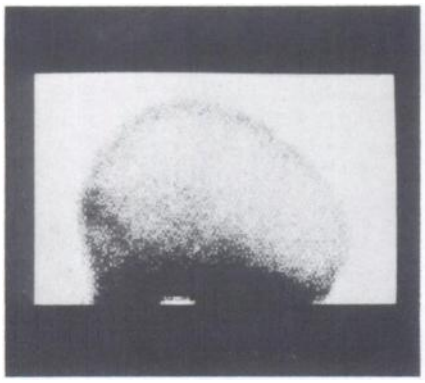
system 70 the camera



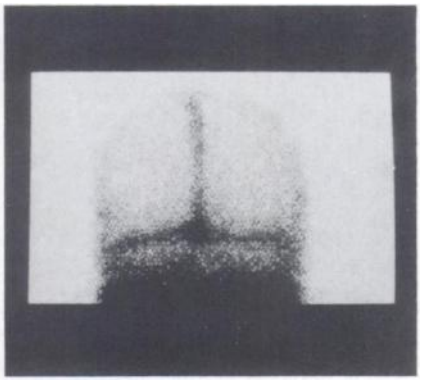
Normal ant. lung scan

Nuclear medicine is predominantly a visual discipline. Static imaging represents 50-70% of the daily patient work-load. Baird-Atomic, recognizing this need, offers in its SYSTEM SEVENTY not only the best static resolution available today, but also the most versatile in image presentation, viz., digital color, black-and-white Polaroid, 70mm, 35mm, and multi-imaging on X-ray film.

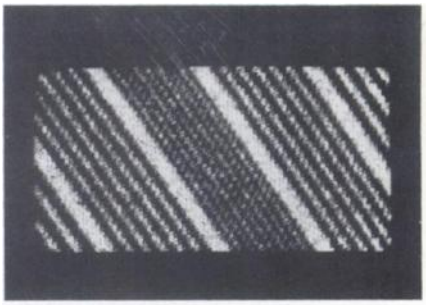
In the past, the difficulty of rapid data analyses of quantitative dynamic function studies has inhibited their growth. However, nuclear medicine is developing, and quantitative brain, kidney, and heart dynamics are becoming a valued part of the nuclear diagnostic work-up. Hence, the need for a camera which can



Normal Rt. Lat. brain scan



Normal post. brain scan



For the physicist! Study of the "original" bar phantom showing excellent resolution of the 4/32" bars.

for all reasons

deliver these fast analyses and grow with your department, whichever direction it takes.

Baird-Atomic, with its computerized camera, allows dynamic function studies to be produced routinely . . . another plus factor added to your diagnostic procedures.

SYSTEM SEVENTY is, indeed, the camera which supplies both capabilities and is "the camera for all reasons."

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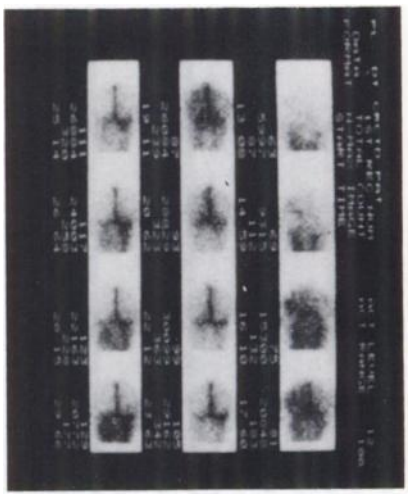
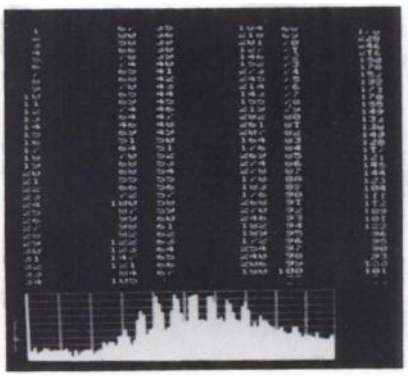
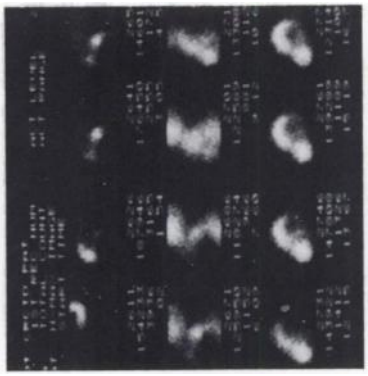


Cerebral blood flow study demonstrating delayed perfusion in the right hemisphere.

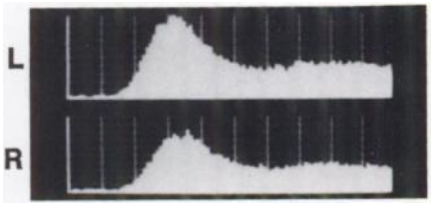


Normal Lt. ventricular curve ejection fraction .60



Normal cardiac blood flow

Quantitative brain dynamic showing 30% decreased perfusion on right side.



Curves produced in less than 30 seconds after conclusion of patient study.

Searle puts it all together...with the new Micro Dot Imager.

A new Multi Imager that produces up to 80 images on a single film.

It's taken us some time but at last we can offer Pho/Gamma users a display system that puts it all together. Gone is the expensive and tediously inaccurate pulling of Polaroids. Gone is the unreliable and complicated 35 or 70 mm mechanical transport system.

The new Micro Dot Imager electronically minifies and manipulates the images across the CRT screen and displays them on a choice of three different conventionally sized X-ray films... handled and processed with conventional techniques.

In addition the new Micro Dot Imager provides the following exclusive benefits.

Clinically Oriented

- Choice of either 5 x 7 or 8 x 10 X-ray film sizes as well as the competitively available 11 x 14 film size.
- Built in whole body imaging with choice of each view presented in dual intensity on the film to facilitate diagnosis or the more economical two views with single intensity.
- Highest cine sequential time per frame resolution of up to 80 frames/study.
- Organ-specific push buttons automate, standardize and speed the proper exposure settings for routinely performed studies.

Simplified Operation

- Light emitting diode (LED) display indicates system status and exposures available for format selected as well as exposures remaining on the individual film.
- Absolute exposure control insures consistent day to day and week to week exposure levels on a separate but built in high resolution, high uniformity CRT.

Economical Operation

- A variety of film sizes guarantees the lowest operational cost of any imager offered.
- System designed lightweight, low cost cassettes with future daylight unloading capability.
- Built in view-box saves space as well as steps.

And what's more, the Micro Dot Imager's inherent reliability is backed by a team of factory trained service engineers that perform on-site service for your total camera system. There is no longer any need to be concerned about system service responsibility, or here today, gone tomorrow..."pack it in the box and we'll service it at our factory" suppliers.

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