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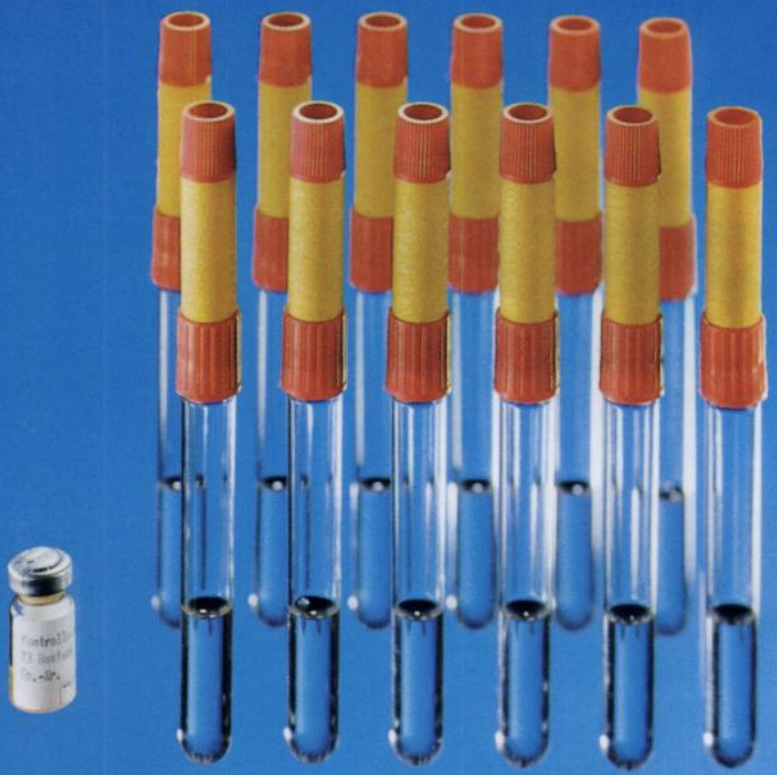
Radiodiagnostics

T3-Test kit

easy – safe – rapid
Test kit for the determination
of TBC (Thyroxin-binding cap acity)
in serum



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

CONTENTS
12 calibrated tubes with 3,4 ml Thybon® each (J-125)-solution
Preservative: 0,02 % Sodium azide Total activity: 3 uCi J-125
1 ml standard serum of defined TBG capacity 12 adsorption tubes
The reagents are exclusively for in-vitro capacity
Order No.: J 5113, 1 package (12 tes
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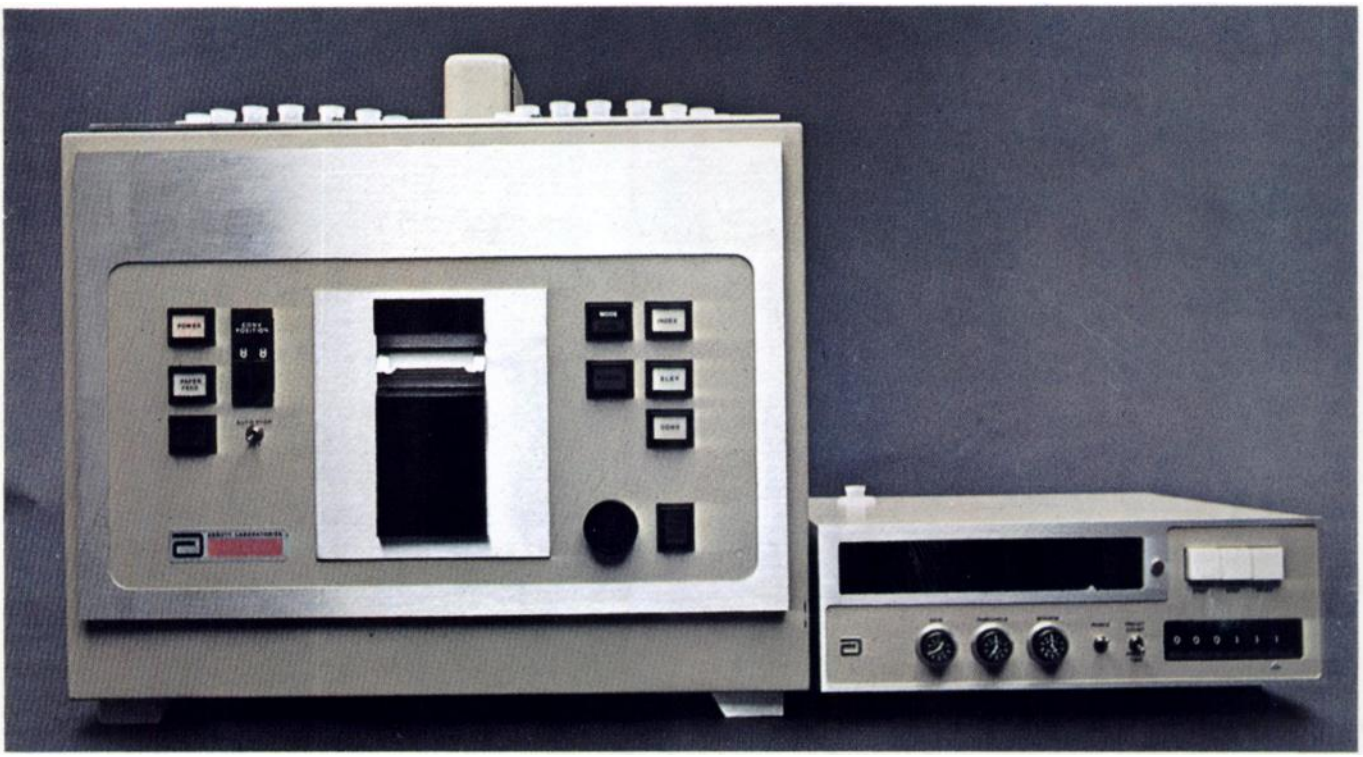

Advanced Gamma

Fast, Compact, Automatic

Meet your lab's needs for quick, accurate, automatic gamma counting . . . with the Auto-LOGIC™ 100 or Auto-LOGIC™ 50—Abbott's new automatic sample changers.

Maximize lab throughput with the Auto-LOGICs: two or more Auto-LOGICs can count at least twice as many samples in a given time as a single high-capacity changer. Scheduling can be easier too . . . use one Auto-LOGIC in the Thyroid Test area, another for Hepatitis B Antigen RIA's and a third for CEA studies.

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Automatic Auto-LOGIC Sample Changers offer these advanced features:

- 4.5-second cycle time (5.5 seconds at 50 Hz line frequency)
- printout of each sample number, plus corresponding time or counts
- automatic low-count sample rejection to prevent long-term counting of empty sample tubes (in preset count mode)
- choice of isotope selection switch or operator-adjusted energy window, threshold and gain controls
- availability of integrated manual well back-up
- audible jam signal to alert operator and avoid accidental delays in lab work schedule

Auto-LOGIC options include:

- dual isotope counting
- single or dual channel teletype
- binary-coded sample cap reader/identification
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Meet your gamma counting needs with compact, fast, time-saving automatic sample changers . . . the Auto-LOGIC approach and performance make good sense.

Auto-LOGIC . . . from Abbott

For further information, call toll free: 800/323-9100

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Note to current owners of Logics: The Auto-LOGIC 50 and Auto-LOGIC 100 Sample Changer mechanisms are fully compatible with your Logic Models 101, 111 or 121, after these units have been modified by Abbott. Please ask your Abbott Diagnostics Representative for specifics.

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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.

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RIAFLUOR is the first liquid scintillator formulated expressly for use with samples provided by RIA techniques. It accommodates inorganic salts, such as alkali metal phosphates, human and other serums, and blood fractions such as bovine serum albumin.

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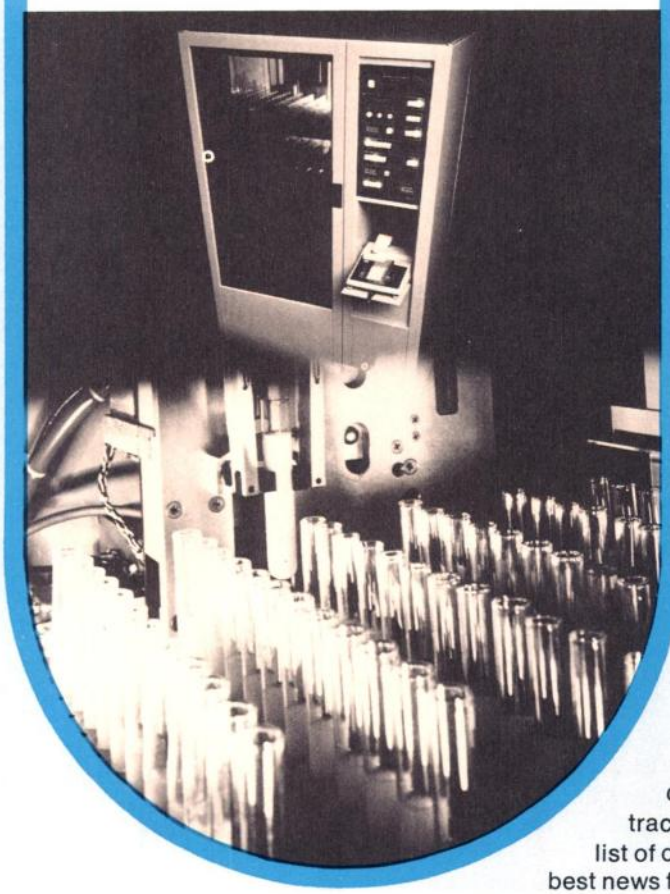

The new Elscint Automatic Radioimmunoassay Analyzer gives you major advantages. Both in performance and price.

The Elscint RA-125 handles up to 1260 samples in 105 racks* which are compatible with auto pipettes and centrifuges. So you'll save valuable lab time. Not to mention needless work.

Instead of confining itself to one type of test tube, the RA-125 handles a wide range of them (10 to 16 mm diameter, 50 to 100 mm long).

Automatic printout is another Elscint plus. A built-in unit in the RA-125 prints labels for patient charts including sample number counts, time, CPM and ratio . . . for each of your samples. Ratios can be obtained between any number of samples and any standard sample or between any two test tubes.

Also, the RA-125 corrects for non-specific binding; lets you choose any of 3 modes of operation (Automatic, Manual, Recycle) with illuminated pushbuttons; and combines preset statistical accuracy and preset counting; preset timing, background subtraction, selectable low-count reject and a long list of other advances. And we've saved some of the best news for last:

The Elscint RA-125 costs only about half as much as its competitor.

Its modular design allows you to start with an inexpensive unit and expand it as required up to its full 1,260 sample capacity. Doesn't it make sense to contact Elscint for full details . . . before you buy any RIA analyzer?

*1260 tubes arranged in 7 trays; 15 racks/tray; 12 test tubes/rack.

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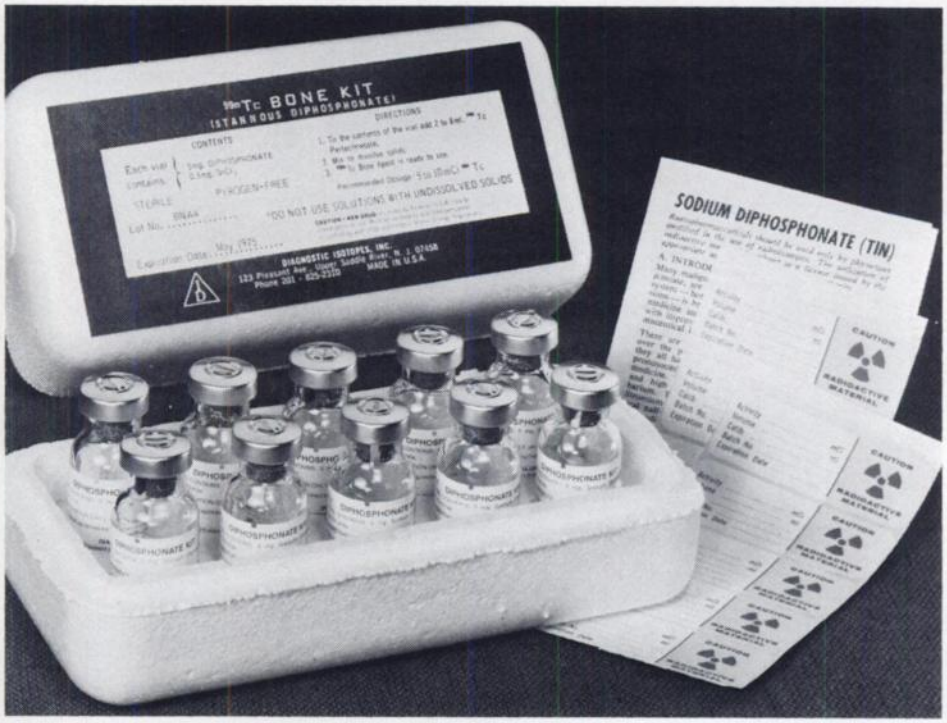

- ^{99m}Tc DIPHOSPHONATE-TIN
- ^{99m}Tc POLYPHOSPHATE-TIN
- ^{99m}Tc PHYTATE
- ^{99m}Tc DTPA-TIN
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- Xenon-133 IN SALINE
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Field of View. The useful field is a hexagon that is 14.5″ (36.8cm.) across the flats.

Resolution. With the high resolution low energy collimator installed, 5/32″ (4.0mm) Pb bars separated by 5/32″ (4.0mm) spaces can be resolved using ^{99m}Tc.

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Area Scan. Permits rapid trunk and whole body scans. Fits in area 10′ x 10′ (3.05m.)

Economy. Reduced set up time. Reduced study time. Photomultiplier tube gains balanced by your technologist, eliminating need for serviceman.

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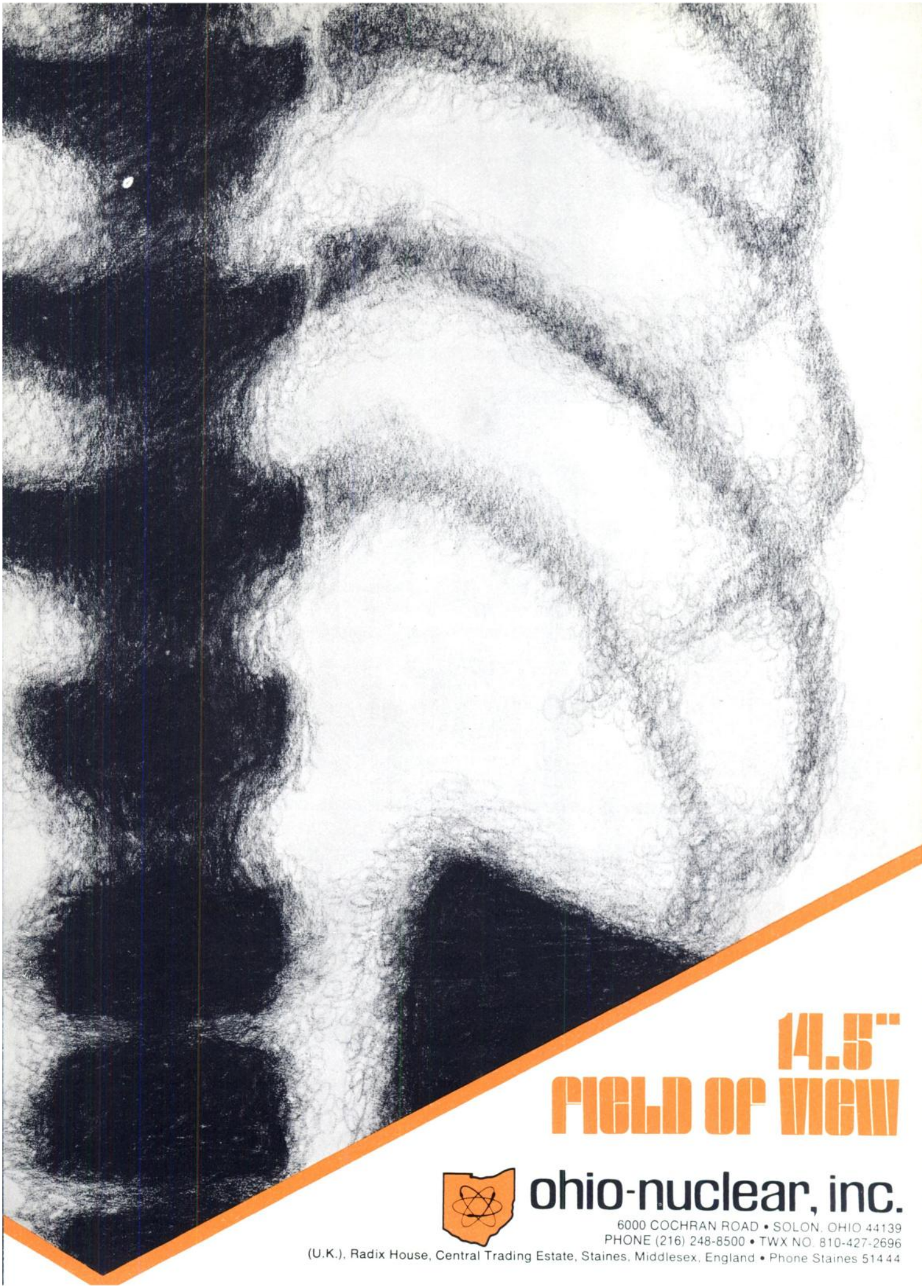

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GAMMA CAMERA CALIBRATION KIT

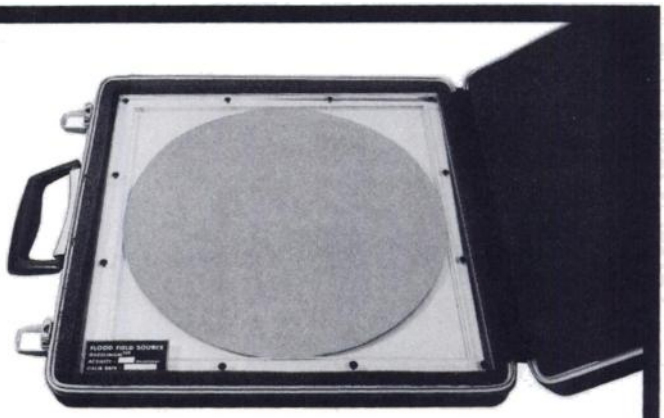
The radioactive sources and phantom of the AECL Gamma Camera Calibration Kit provide an effective means of routinely checking the vital characteristics of your camera system.

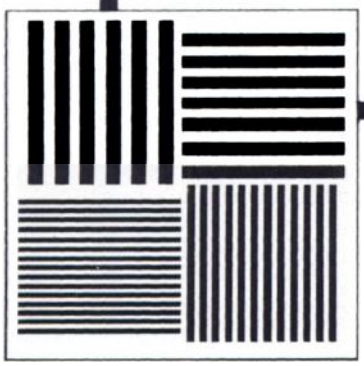
Sources are safe, light and easy to carry in the attractive carrying case provided.

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.





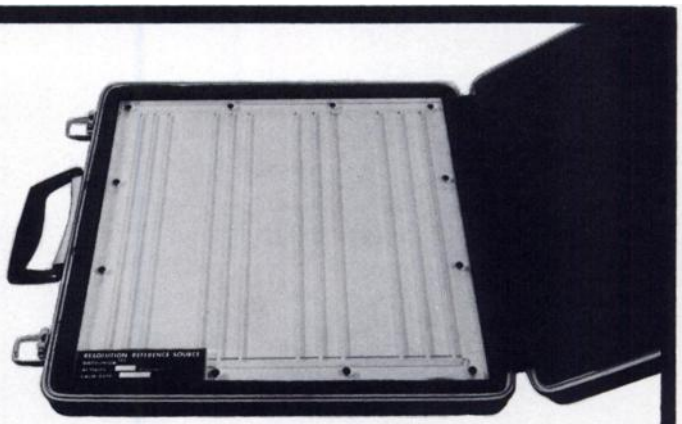
BAR PHANTOM

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.



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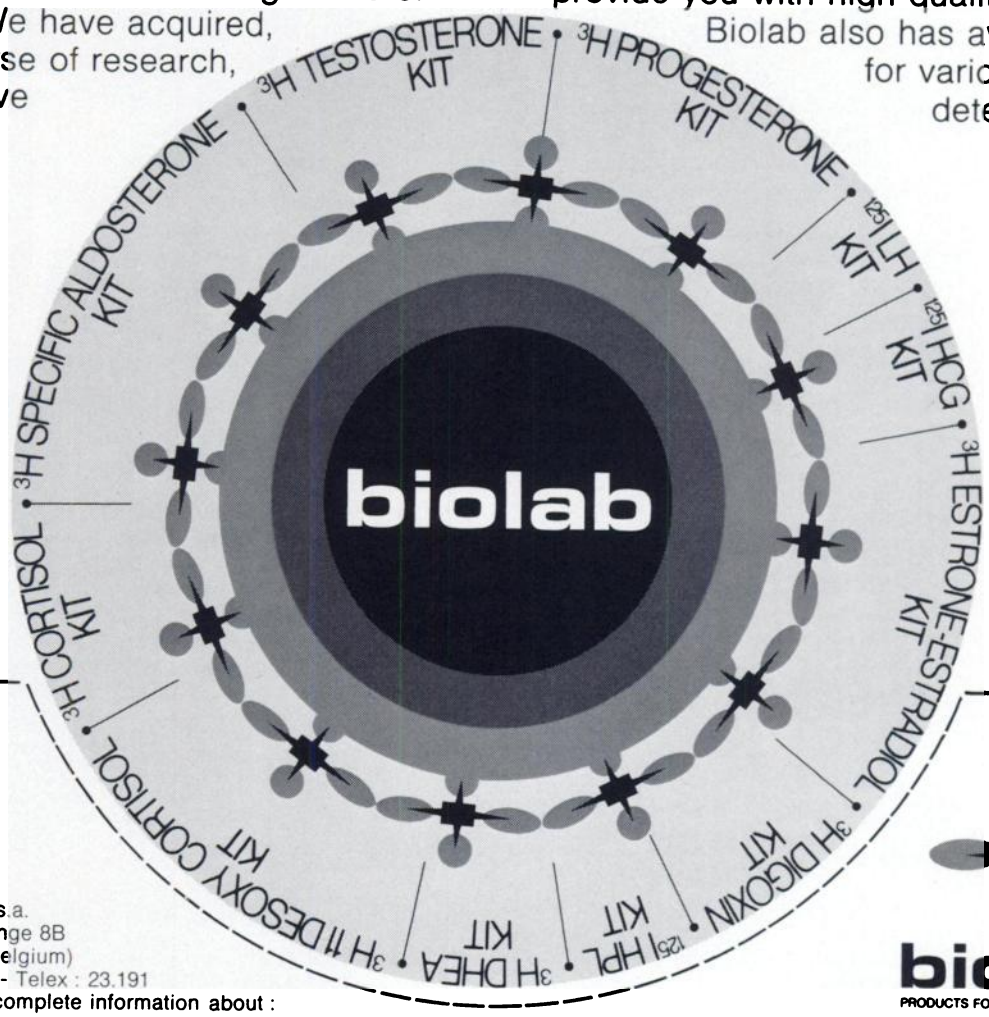

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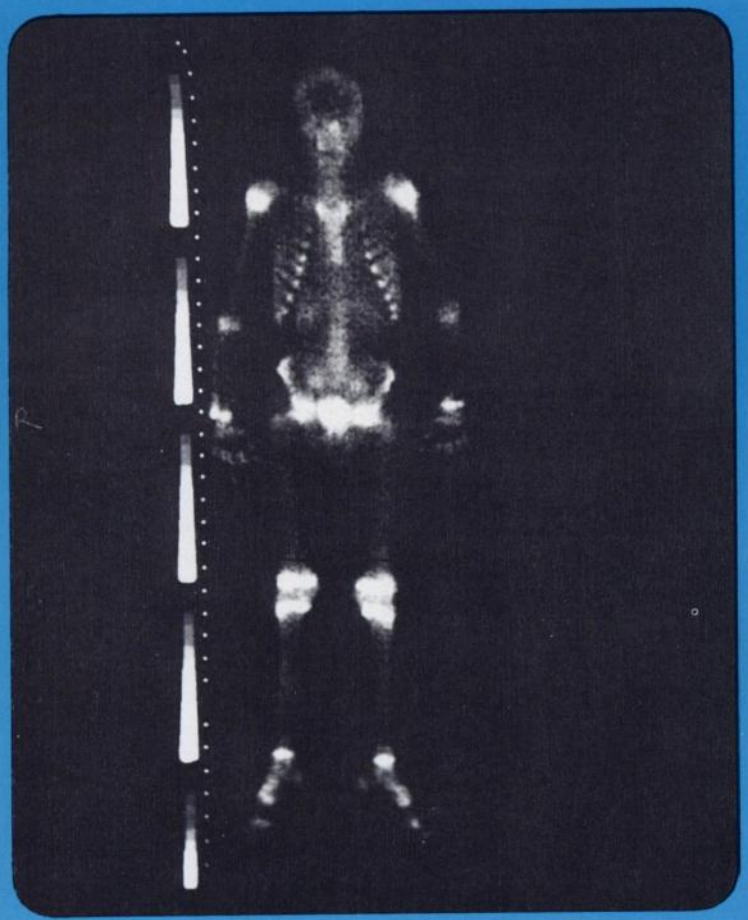
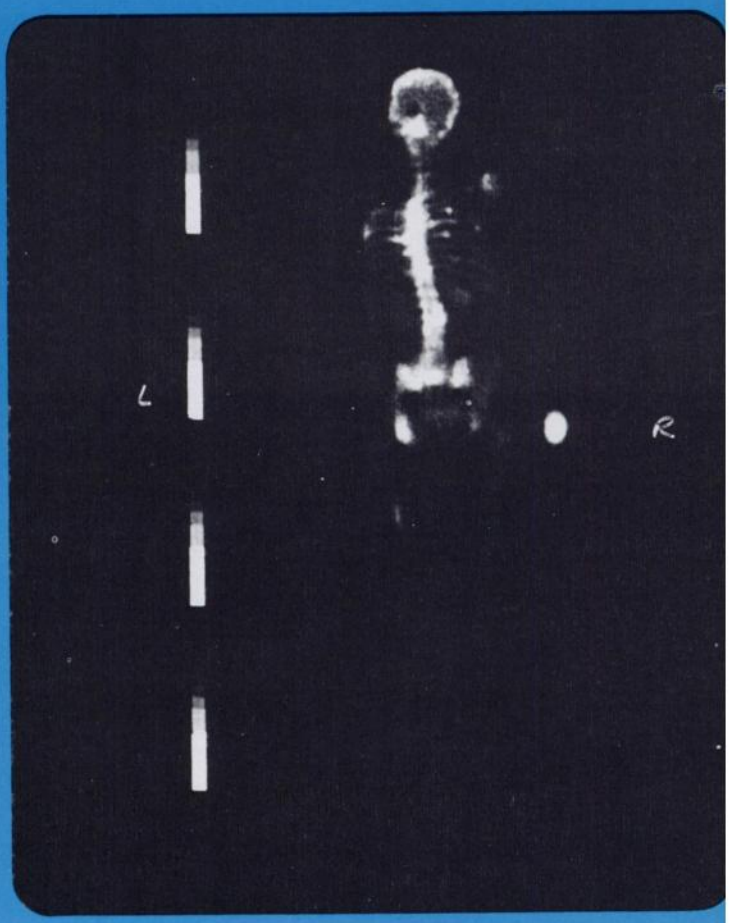
Cleon Whole-Body Imager produces patient studies like these... IN 16 MINUTES OR LESS

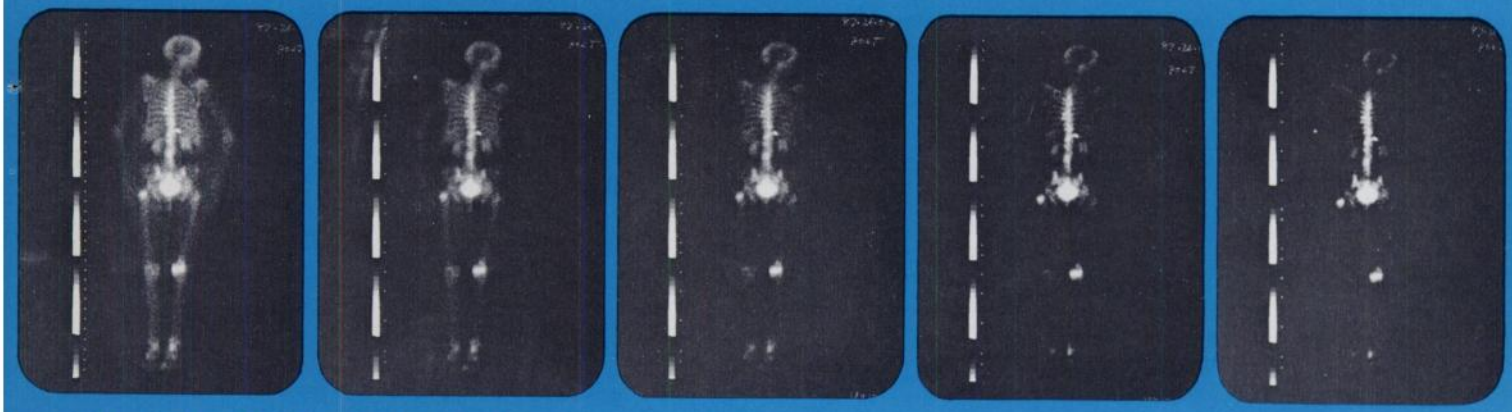


BONE IMAGE OF 13-YEAR-OLD BOY, ANTERIOR.
SCANNING AGENT = ^{99m}Tc-POLYPHOSPHATE.
LENGTH OF SCAN = 160 CENTIMETERS.
TIME OF SCAN = 16 MINUTES.
ID AT STERNUM = 416 CTS/CM^2.

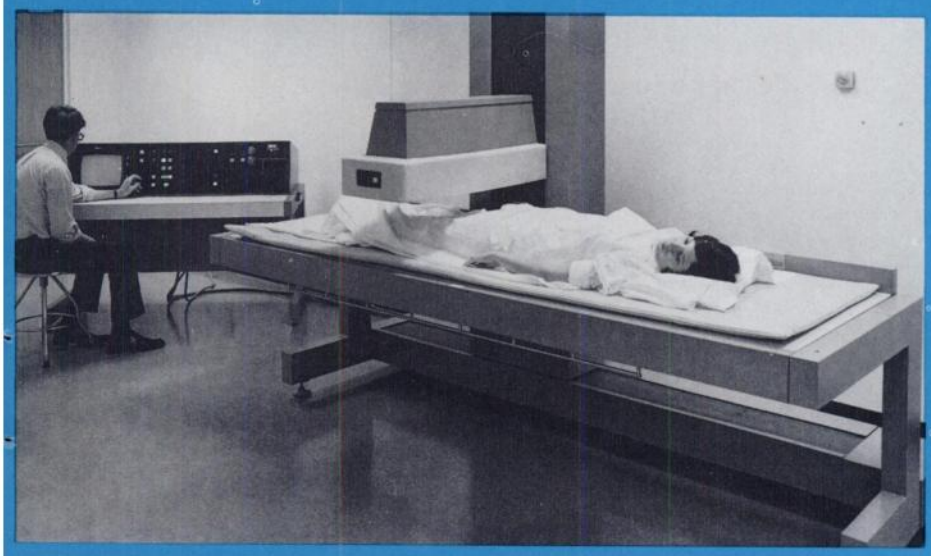


BONE IMAGE OF 56-YEAR-OLD WOMAN, POSTERIOR.
SCANNING AGENT = ^{99m}Tc-PYROPHOSPHATE.
LENGTH OF SCAN = 160 CENTIMETERS.
TIME OF SCAN = 16 MINUTES.
ID AT CERVICAL SPINE = 552 CTS/CM^2.

...AGAIN, AND AGAIN, AND AGAIN



BONE IMAGE OF 52-YEAR-OLD WOMAN, POSTERIOR.
SCANNING AGENT = ^{99m}Tc-POLYPHOSPHATE.
LENGTH OF SCAN = 160 CENTIMETERS.
TIME OF SCAN = 16 MINUTES.
ID AT CERVICAL SPINE = 296 CTS/CM^2.
(IMAGES PHOTOGRAPHED FROM MAGNETIC DISC STORAGE SHOWING EFFECT OF INCREASING BACKGROUND SUPPRESSION.)



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Simplify your Steroid Assays with new Sensitive, Specific Reagents

Micromedic Diagnostics, Inc., offers new steroid radioimmunoassay kits of exacting standards. Initially available: ^{125}I—labelled reagents for cortisol, testosterone and progesterone. All MDI kits provide a standard buffer and common second antibody: you can assay several steroids together on the same day. Results are predictable...simply follow our clear, explicit protocols. Here are the standards, uniform for every kit, that support our claims:

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.

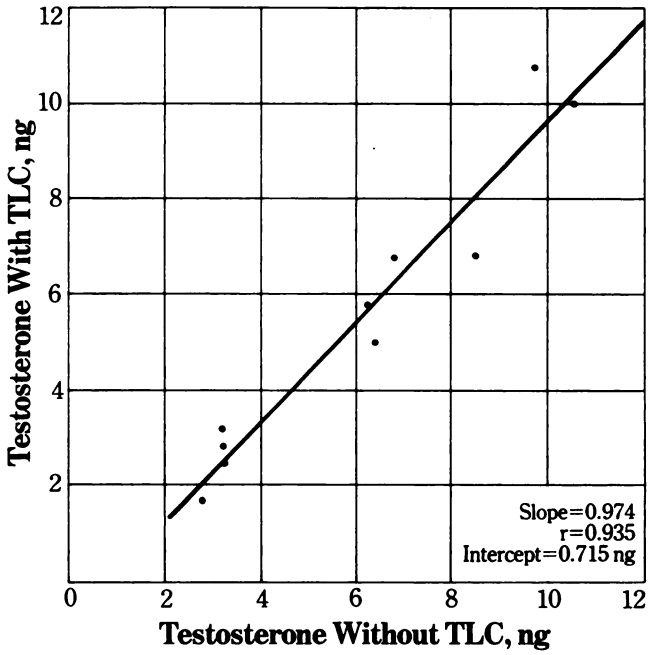
Each MDI antibody is highly specific, thereby minimizing the problem of cross-reactivity. The cross-reactivity of a typical lot of MDI testosterone first antibody is shown in the table below.

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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Total system RIA for total answers

Micromedic Systems has successfully adapted the majority of available RIA reagents to instrumentation. Now, in another major step, we offer:

RIA reagent kits of exacting standards, developed by a leading university research center. All Kits are ^{125}I-labelled, double antibody, utilizing a standard buffer from assay to assay. Protocols are matched to the system's performance and standards of the instruments below.

The RIA rack...heart of hands-off, precise-reaction, total system RIA offered only by Micromedic Systems...samples prepared, incubated, centrifuged and counted, all in the same rack, all without handling or misnumbering.

Automated Pipetting Station, utilizing the RIA rack assures hands off RIA all through the system... no individual tube handling, no massive micro-pipetting, no deviations in volume and dilution. Flexible throughput: handles small or large numbers of tubes with equal ease, all with reproducibility of 0.5% C.V. or better.

New Reagent Dispenser, used with the Automated Pipetting Station, extends its performance characteristics; permits short batch runs of many different assays...adds the convenience of automatic shutoff when reagent supply is exhausted. No wasted reagents...reagent change-over in seconds ...half second dispensing cycle of either 50 μ1, 100 μ1 or 200 μ1.

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Automatic gamma counting system uses standard RIA racks, completes error-free sequence of hands off RIA. The equivalent of three separate counting systems: each of three assay lots can be independently programmed, even for isotope selection. This economical time-sharing means multi-user access, permits sharing of capital cost.

Automatic mode may be interrupted for manual counting with no loss of index...greater assurance for your stats. Data reduction is straightforward: gamma counts are presented in standard Teletype™ form, adaptable to offline processor.

Micromedic Total System RIA family can deliver the finest precision and accuracy available. Write us for details.

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☐ I would like to know more about the RIA total system.
☐ Please send information on your RIA reagent kits
☐ Please send information on the new Reagent Dispenser

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What's new:

The handy handle.

A quick-opening, peel-off top.

What isn't:

It's completely pre-assembled, ready to use.

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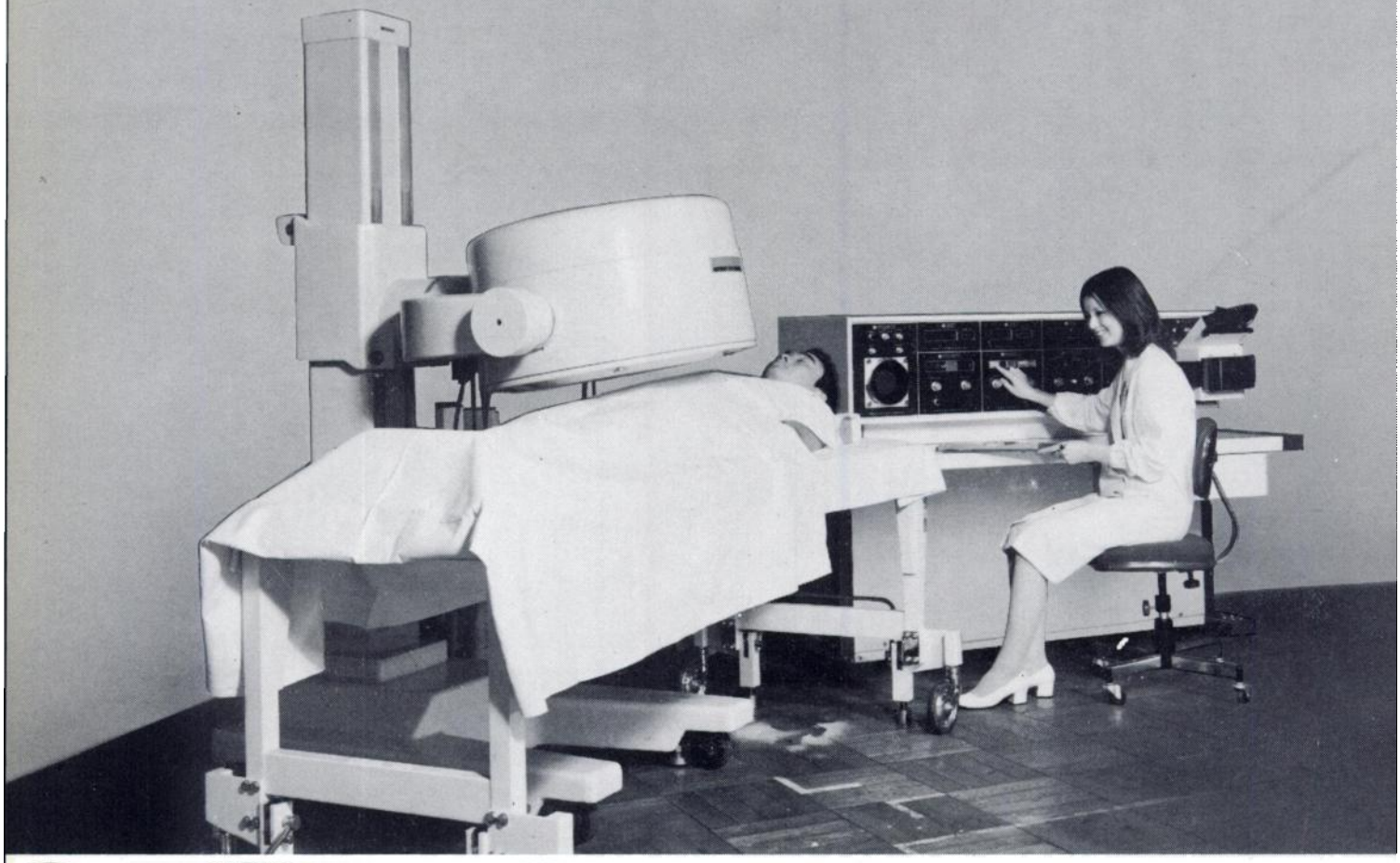
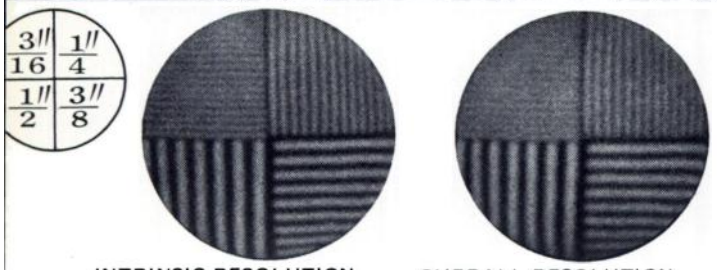


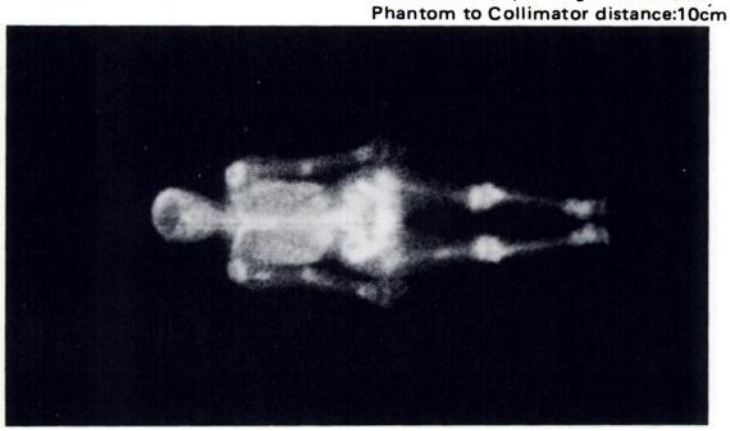


INTRINSIC RESOLUTION
^{99m}Tc, 999 K-counts, Window 20%

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.



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* More accurate diagnosis.
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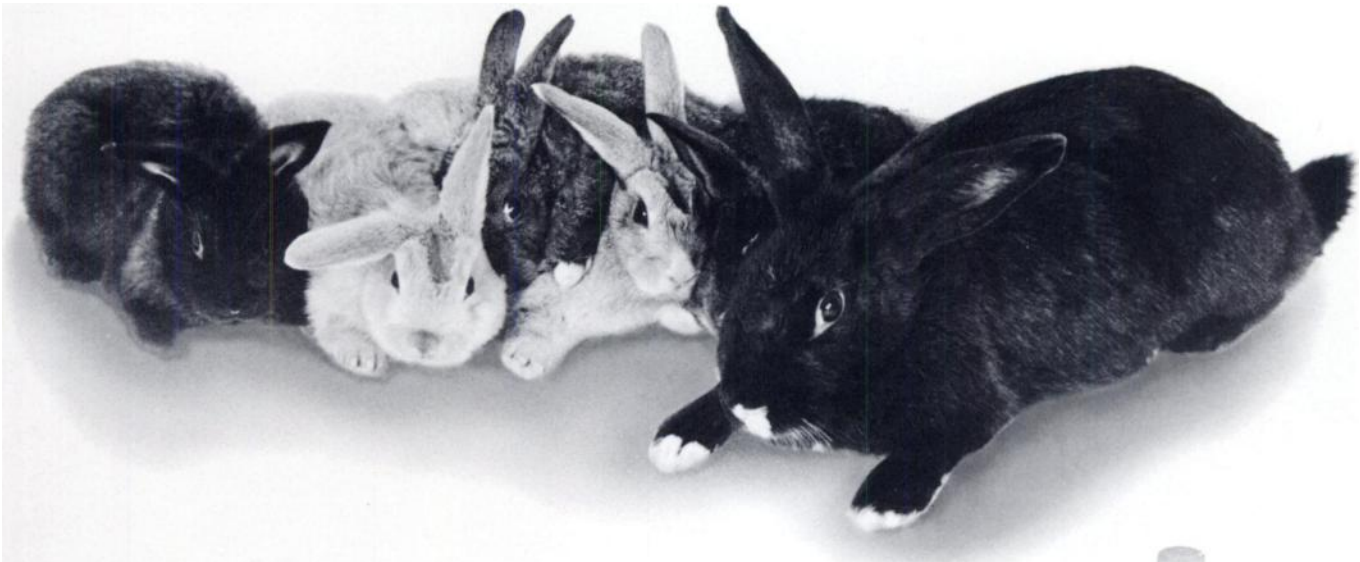

Here's another...

The Wien Total T_4-I^{125} R.I.A. Test Set

Coefficient of variation less than 10%.[1]

Rabbits are not alone in their renown for predictable, consistent reproduction.

Thyroxine determinations by radioimmunoassay can now be performed with a procedure that yields highly reproducible results assay after assay. The Wien T_4-I^{125} Test Set utilizes this time-saving procedure to produce definitive assay results with less than a 10% coefficient of variation. The procedure is recognized as being "rapid, sensitive (only 25 μl of serum required), and reproducible."[1]

This is a T_4 R.I.A. procedure that accrues real savings in both time and budgetary outlay. Fewer procedural steps permit completion of the assays in two hours or less; yet the cost per patient test is less than 78¢.

Rabbits are used as the only source of the unique, highly specific Wien T_4 antibody. The antibody is produced in rabbits in response to injections of T_4-albumin conjugate. The excellent specificity of the Wien T_4 antibody is a key factor in the reproducibility of T_4 results.

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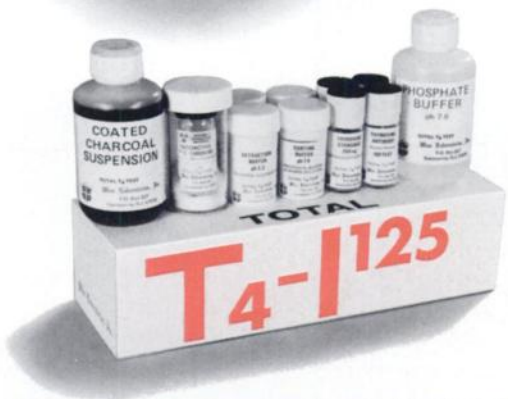
call: (201) 584-7019



- **a 2-hour direct serum determination* (including 1 hour incubation time at room temperature)**
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- **economically priced — less than 78¢** per patient test**
- **sensitive: 25 µl sample size**

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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Other R.I.A. Test Sets available from Wien Laboratories:

T_3-I^{125}	Testosterone-^{3}H	Aldosterone-^{3}H
Digoxin-^{3}H	Estradiol-^{3}H	Corticoids-^{3}H
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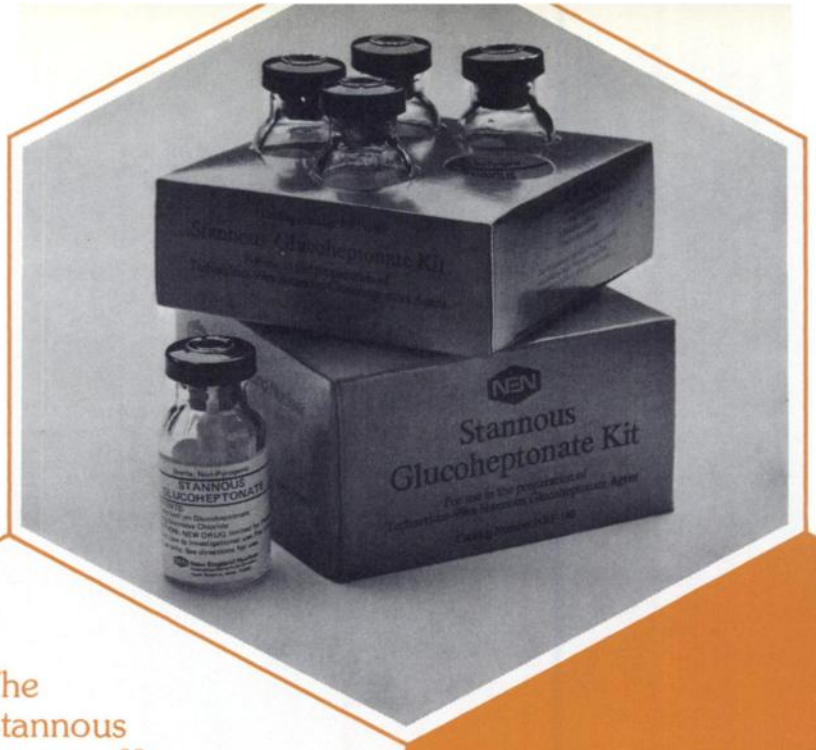
Or write to:

Wien Laboratories, Inc.

P.O. Box 227, Succasunna, New Jersey 07876



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

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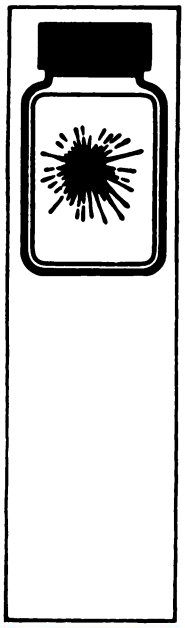

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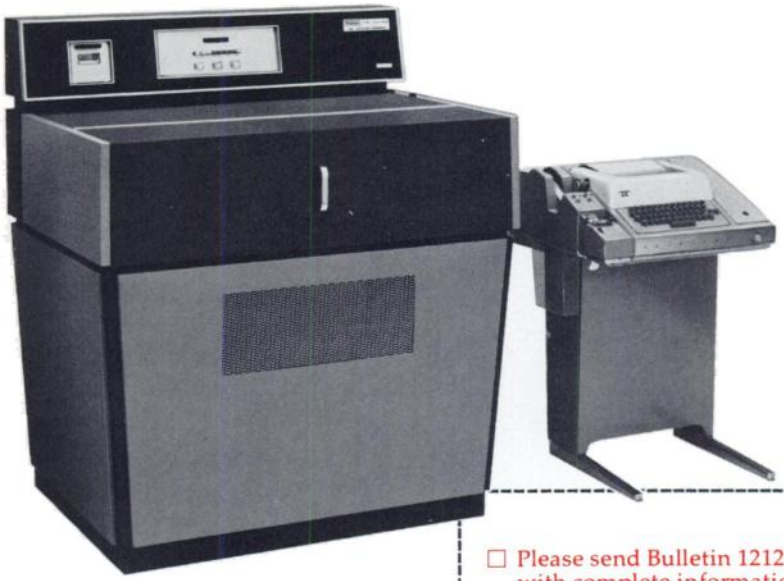

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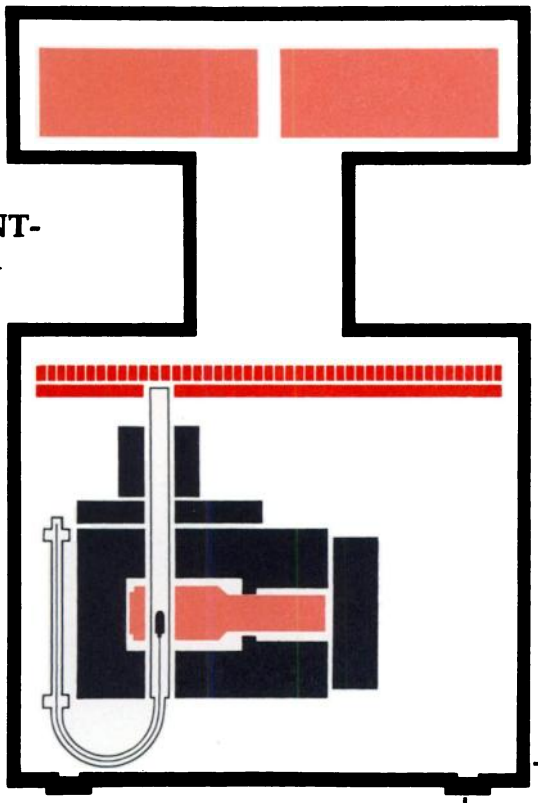

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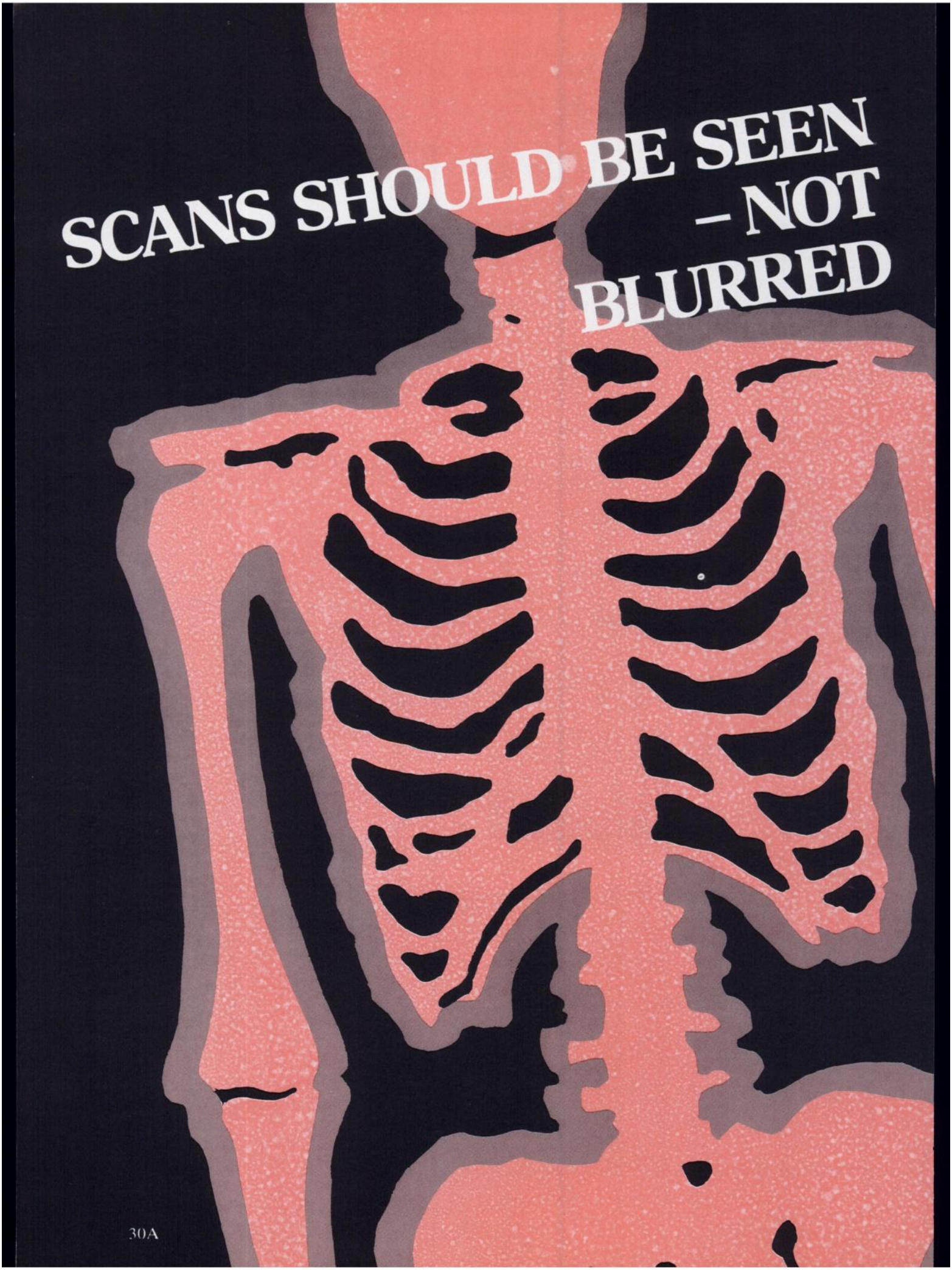
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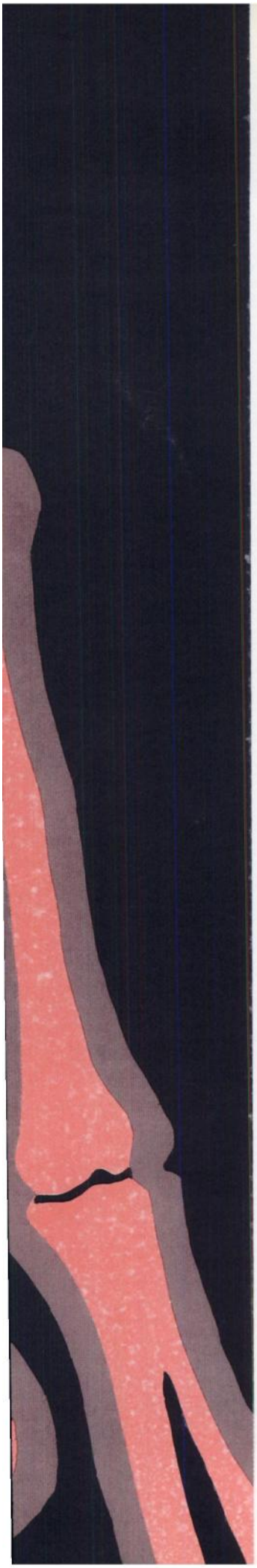
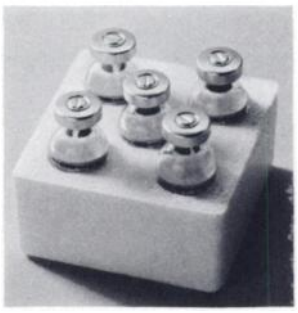


MALLINCKRODT'S NEW

TechneScan® PYP™ KIT
(STANNOUS PYROPHOSPHATE)

A MOST SUITABLE PHOSPHATE FOR SUPERIOR BONE IMAGE QUALITY

A superior bone imaging agent because:



- It is a consistent product
- It clears the bloodstream fast
- It gives high bone-to-tissue ratios
- It very seldom produces liver visualization
- It provides for a variable dose-to-scan time
- It gives high initial tagging efficiencies
- It is stable both in-vitro and in-vivo

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)

Mallinckrodt NUCLEAR

Mallinckrodt, Inc.
675 Brown Road
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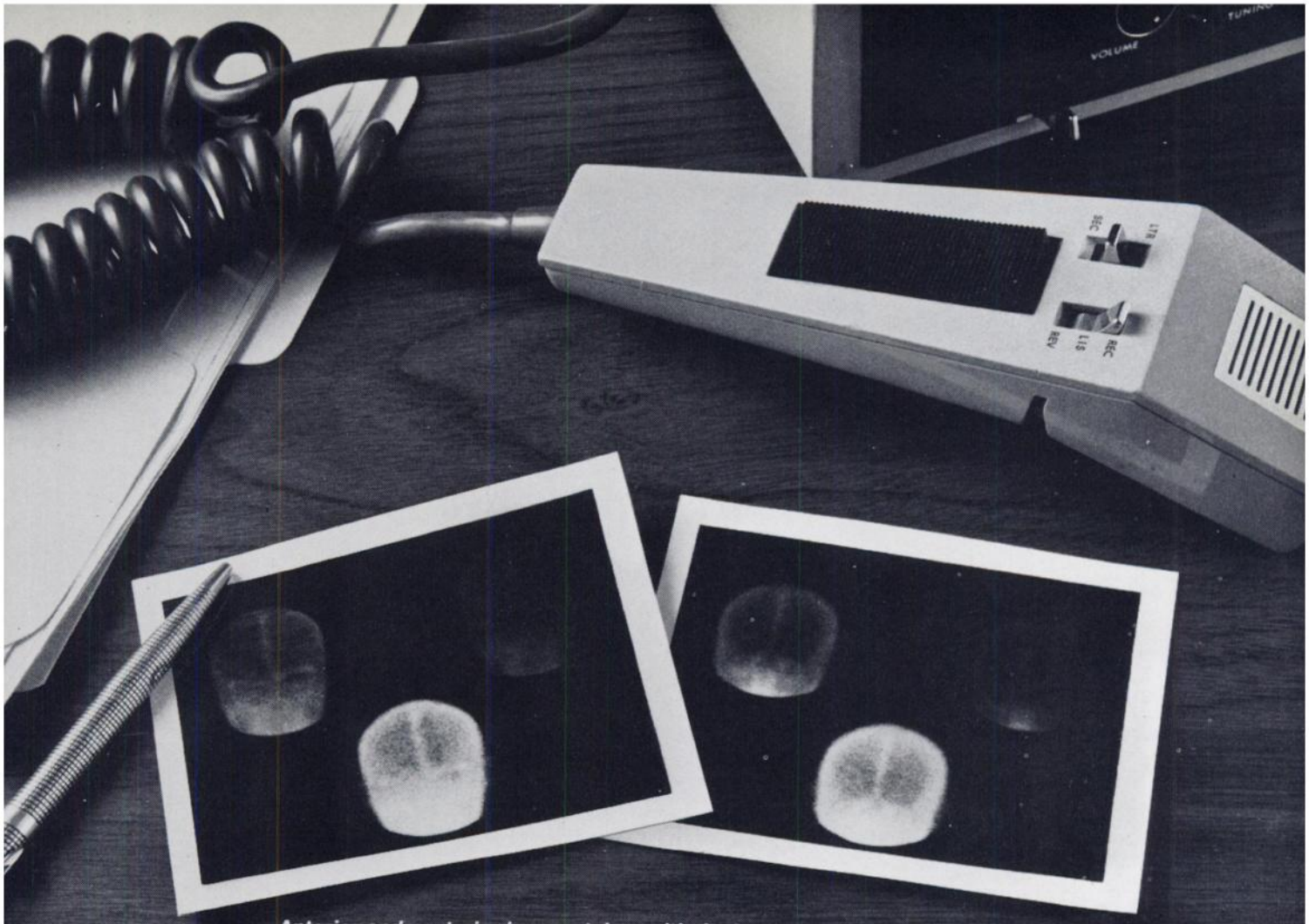

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CEA-ROCHE

Carcinoembryonic Antigen assay

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

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.[1-6] Serial determinations of CEA proved to be of value in assessing the condition of the patient during therapy.[2-5,7] 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.[8,9] Except for primary pancreatic and colorectal carcinoma, titers above 20 ng/ml were, with very rare exceptions, associated with the presence of metastatic disease.[9] 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

When used as an adjunct to other tests and procedures, the CEA-ROCHE assay has provided supplemental information that was of value in assessing whether or not malignancy was present:

- in patients who had signs, symptoms and clinical history suggestive of cancer,
- in patients similar to the above who, also, had certain chronic gastrointestinal and pulmonary inflammatory diseases in which the risk of cancer is greater than in the corresponding normal population,
- in patients who were heavy cigarette smokers and had atypical sputum cytology.

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.[6,9-11]

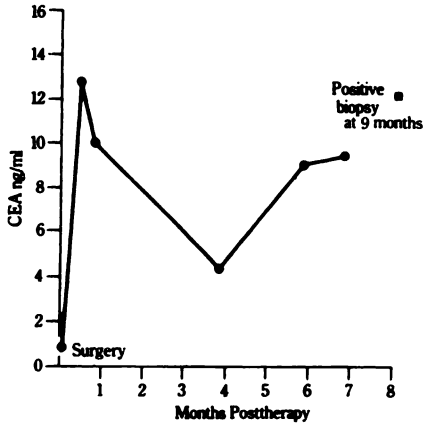
In a special study of 883 patients, cigarette smoking with titer elevations were associated with atypical sputum cytology.[12] Decreases in CEA titer often occurred within 30 to 60 days after cessation of smoking.

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

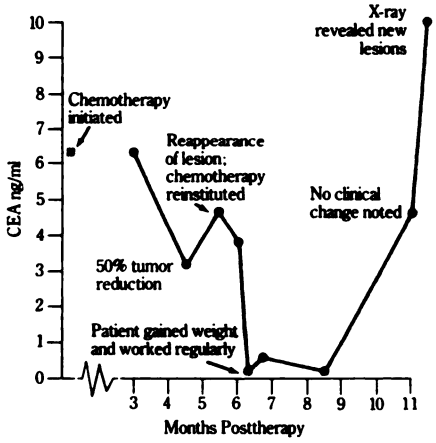
CEA-ROCHE is not recommended as a screen to detect cancer. CEA titers are not an absolute test for malignancy, nor for a specific type of malignancy. In the management and diagnosis of the patient suspected or known to have cancer, all other tests and procedures must continue to be given emphasis. CEA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

references

1. Dhar P, *et al: JAMA 221:*31-35, 1972
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6. Gold P, *et al: Dis Colon Rectum,* In Press
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8. Holyoke ED, *et al: Rev Surg 30:*305-311, 1973
9. Data available on request from Hoffmann-La Roche Inc, Nutley NJ
10. Rule A, *et al: New Eng J Med 287:*24-26, 1972
11. Moore TL, *et al: JAMA 222:*944-947, 1972
12. Hansen HJ, *et al: Human Pathology,* In Press

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☐ I would like _____ (name of hospital or private clinical laboratory) to perform CEA-ROCHE testing.

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Address _____

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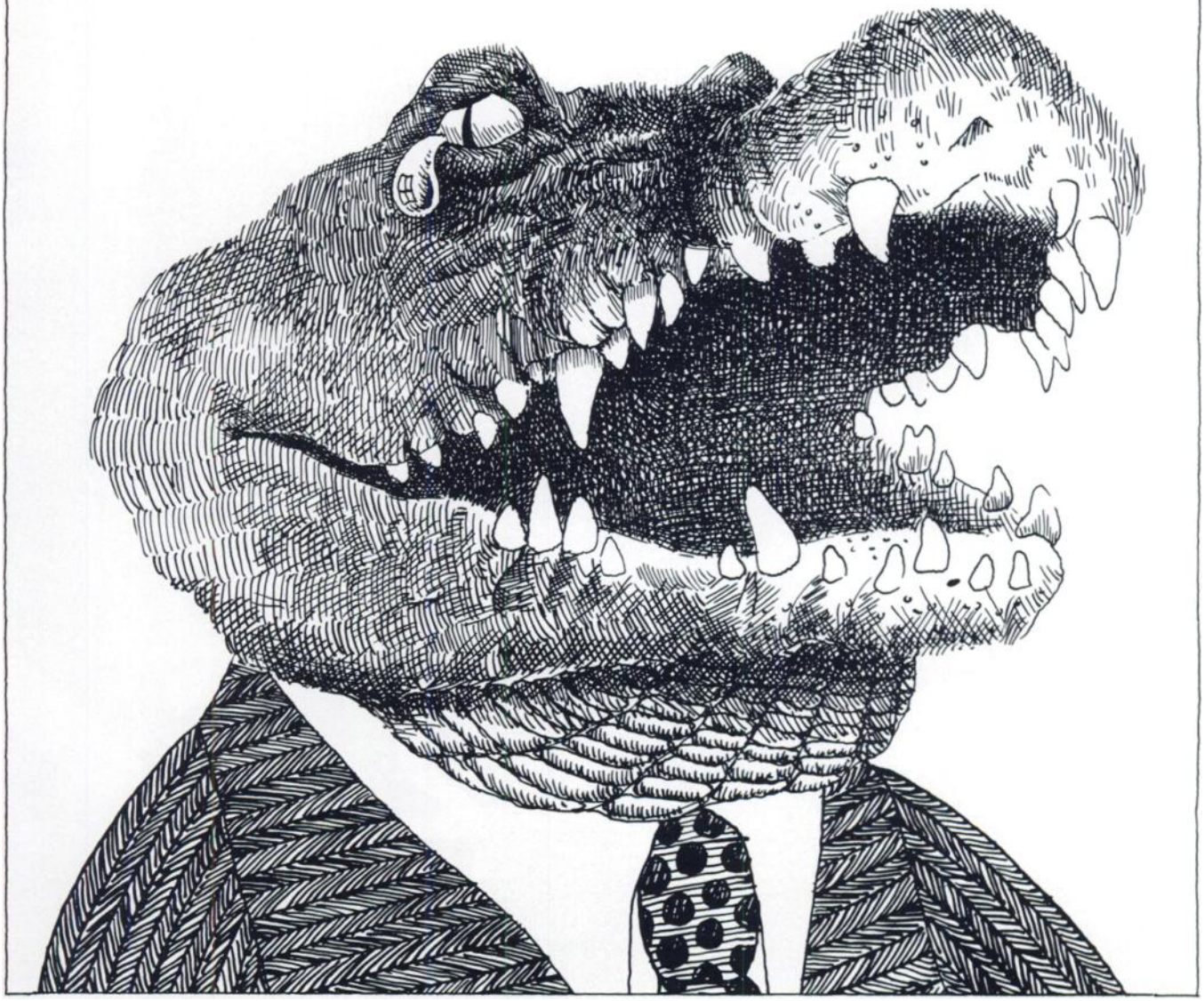

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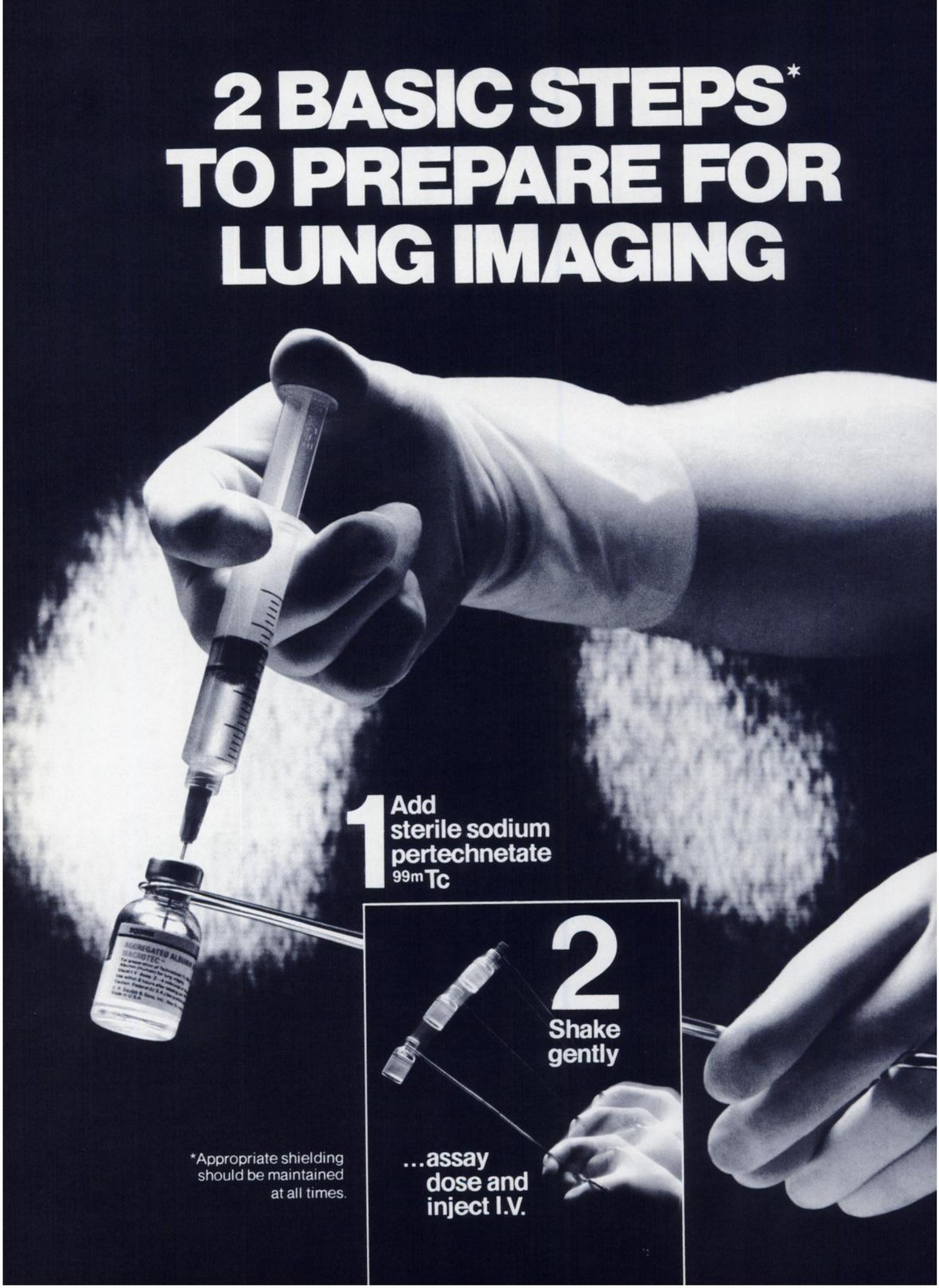
Yes, I am requesting information (clinical reprints of lacrimal studies included) about the System 350 Micropinhole Collimator.

name address phone

2 BASIC STEPS* TO PREPARE FOR LUNG IMAGING



*Appropriate shielding should be maintained at all times.

Introducing from Squibb

Macrotec®

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	

*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

Computerized β/γ Counting COMPARE

Find out why there are more Intertechnique computerized counting systems in the field than those of all other manufacturers combined.

Multi-Mat is the world leader in computerized beta and gamma counting. You have as many as four counters — simultaneously — on-line to a central processor. You can use any combination of Intertechnique liquid scintillation or gamma counters.

Multi-Mat gives you:

- **More programs**
- **More flexible programming**
- **More flexible configurations**

More Programs . . . Multi-Mat users get a library of more than 40 fully commented programs . . . and new ones are being added almost weekly. Programs for liquid scintillation or gamma counting: for RIA (we'll provide a tailor-made program for any commercially available RIA kit); for plotting histograms; for counting 1, 2 or 3 isotopes; for quench correction; specific activity; blood clearance; statistics, and more. For use on- or off-line. We're proud of what we have; we'll be more than happy to show you.

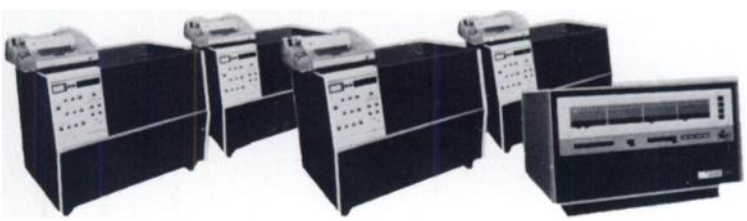
Flexible Programming . . . Multi-Mat users get LEM, the only high-level computer language developed expressly for bio-medical use. LEM is simple, straightforward, easily learned. It allows any user to write programs to meet your own specific requirements. No more waiting for someone else to get around to doing what you want done. No more being forced to accept compromises! With LEM, you can make yourself independent of a programmer because LEM is the language that can make everyone a programmer.

Flexible System Configurations . . . Multi-Mat systems can have from 1 to 4 counters . . . 200 sample or 300 sample . . . liquid scintillation or gamma . . . in any combination! Each counter may have a different operating program while all of them are on-line at the same time to a single Multi-20 central processor. That kind of flexibility is exclusive to Intertechnique . . . and there's even more. Each of several users of a single counter can have his own program which is automatically called into use only when his samples are in place and counting. And all of this programming is stored in core and called out as programs should be — electronically — and in microseconds. You won't find an equivalent elsewhere, because there is none.

That's why there are more Intertechnique computerized counting systems in the field than those of all other manufacturers combined.

Write or call today for more facts:

- Multi-Mat brochure
- LEM Makes You the Boss booklet
- Simplified Computer Programming for Liquid Scintillation Programming.



TELEDYNE INTERTECHNIQUE

50 VAN BUREN AVE., WESTWOOD, N. J. 07675
PHONE: 201-664-7070 TELEX: 134-474

IN EUROPE: INTERTECHNIQUE, S. A. 78370 PLASIR, FRANCE


Ultra-TechneKow
Ultra-TechneKow FM

Now there are two more

Only someone who makes all these can be sure you get the right one

In technetium-99m generators, Mallinckrodt is the only someone who makes all these.

Because we have a complete line of generators, we can make sure you get the right one for your application, whether you require 50 mCi or 500 mCi. You'll not only get the right technetium generator, you'll get one you can rely on. Every Mallinckrodt Ultra-TechneKow® Generator column is sterilized by autoclaving, and each generator is eluted and tested in our laboratories before shipment.

The Ultra-TechneKow® Generator provides every feature you need. Uniformly high yields help you maintain scanning schedules. The "Ion Control" process keeps aluminum levels at almost undetectable levels. A minimum of 1½" of lead shielding and short elution time safeguard the technician, by providing minimum radiation exposure. A 500 ml saline supply permits an uninterrupted milking schedule.

If you use technetium-99m generators in your laboratory, deal with the manufacturer who sells you what you need. Not just what he has.

Write for full information, or call (314) 731-4141 (Extension 339) collect.

Choice of ~~12~~ 14 Ultra-TechneKow® Generators

MOLY		FISSION MOLY	
50 mCi	Cat. No. 006	50 mCi	Cat. No. 100
100 mCi	Cat. No. 007	100 mCi	Cat. No. 101
150 mCi	Cat. No. 012	200 mCi	Cat. No. 102
200 mCi	Cat. No. 008	300 mCi	Cat. No. 103
300 mCi	Cat. No. 009	400 mCi	Cat. No. 104
400 mCi	Cat. No. 010	500mCi	Cat. No. 105
500 mCi	Cat. No. 011	150mCi	Cat. No. 106

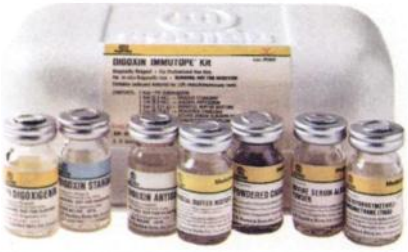
Subject to AEC or state licensing regulations

Mallinckrodt®
NUCLEAR

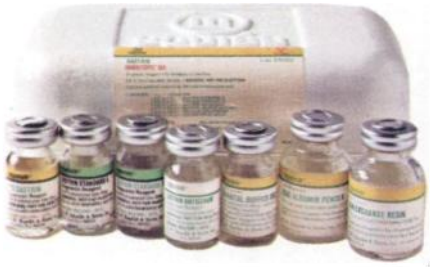
RADIOPHARMACEUTICALS
Mallinckrodt Chemical Works
St. Louis, Missouri 63160

WHAT'S NOW SQUIBB?

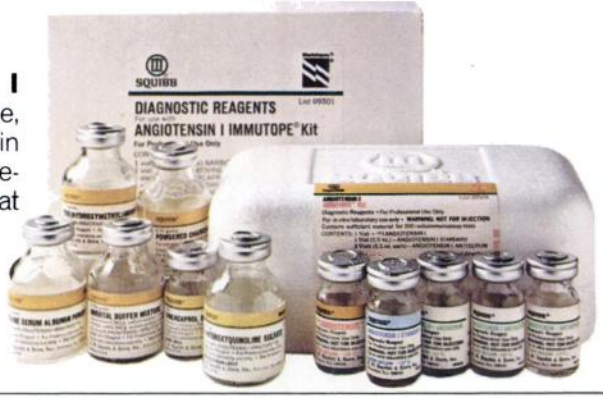
A broad line of quality diagnostics including the **Digoxin IMMUTOPE® Kit** with quality reagents to help assure reliable results.



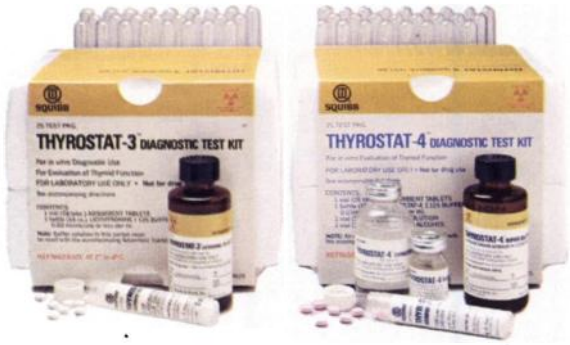
The first commercially available gastrin RIA kit in the U.S.A.—the **Gastrin IMMUTOPE® Kit** reduces to *hours* a test which once took days.



And there's the **Angiotensin I IMMUTOPE® Kit** for the simple, accurate estimate of plasma renin activity. Premeasured, matched reagents make daily mixing and repeat reagent blanks unnecessary.



Fast binding, *fast* adsorption and *fast* results are yours with **THYROSTAT®-3** and **THYROSTAT®-4**—our diagnostic combination for evaluating thyroid function. And it's the THYROSTAT tablet from Squibb that makes the difference.



QUALITY IN VITRO PRODUCTS developed *and* manufactured by Squibb Research Personnel

WHAT'S NEW SQUIBB?

MINITEC™ (Technetium 99m) Generator—The Technetium 99m Generator using fission product molybdenum to produce technetium 99m.

The new Minitec Generator from Squibb 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 *and*... ...*another* 1½" lead protection from MAXI-SHIELD

That means 3⅛" of lead reduces radiation from the column by *99.98%*.

MAXI-SHIELD™ is 137 pounds of interlocking lead half rings for easy assembly, easy use, but *no* direct line of radiation.

Just remove the cap for elution, replace for constant shielding when not in use. The new MINITEC Generator is available in 50, 100, 200, and 300 mCi potencies. And MAXI-SHIELD you get free with your first MINITEC Generator purchase.

See following page for brief summary.

For illustration purposes only.

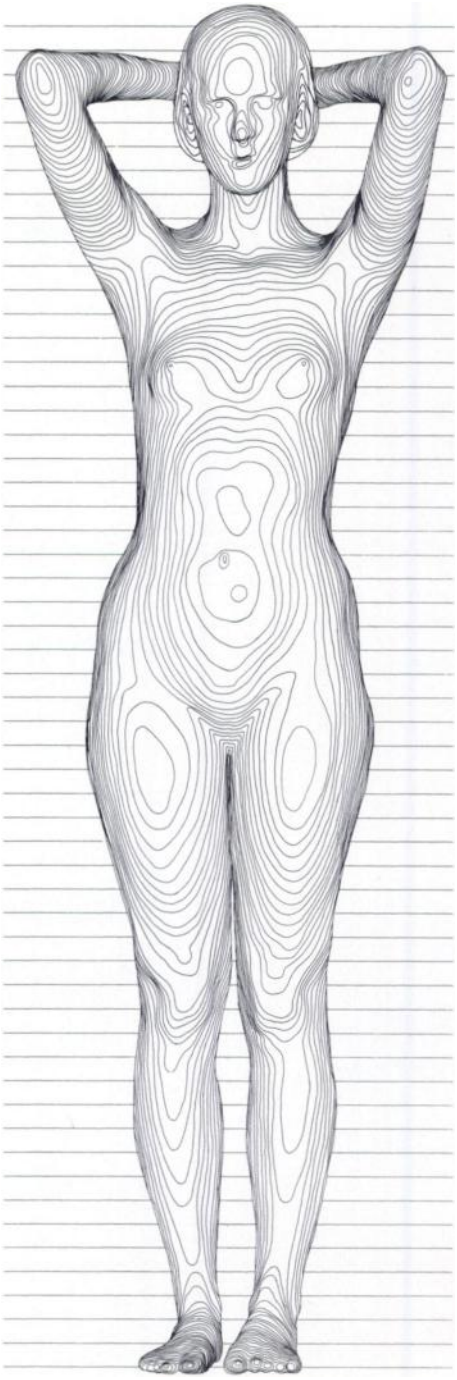
In Vitro Products not for scanning.

See following page for Technetium 99m indications.

Medotopes®

SQUIBB®

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.

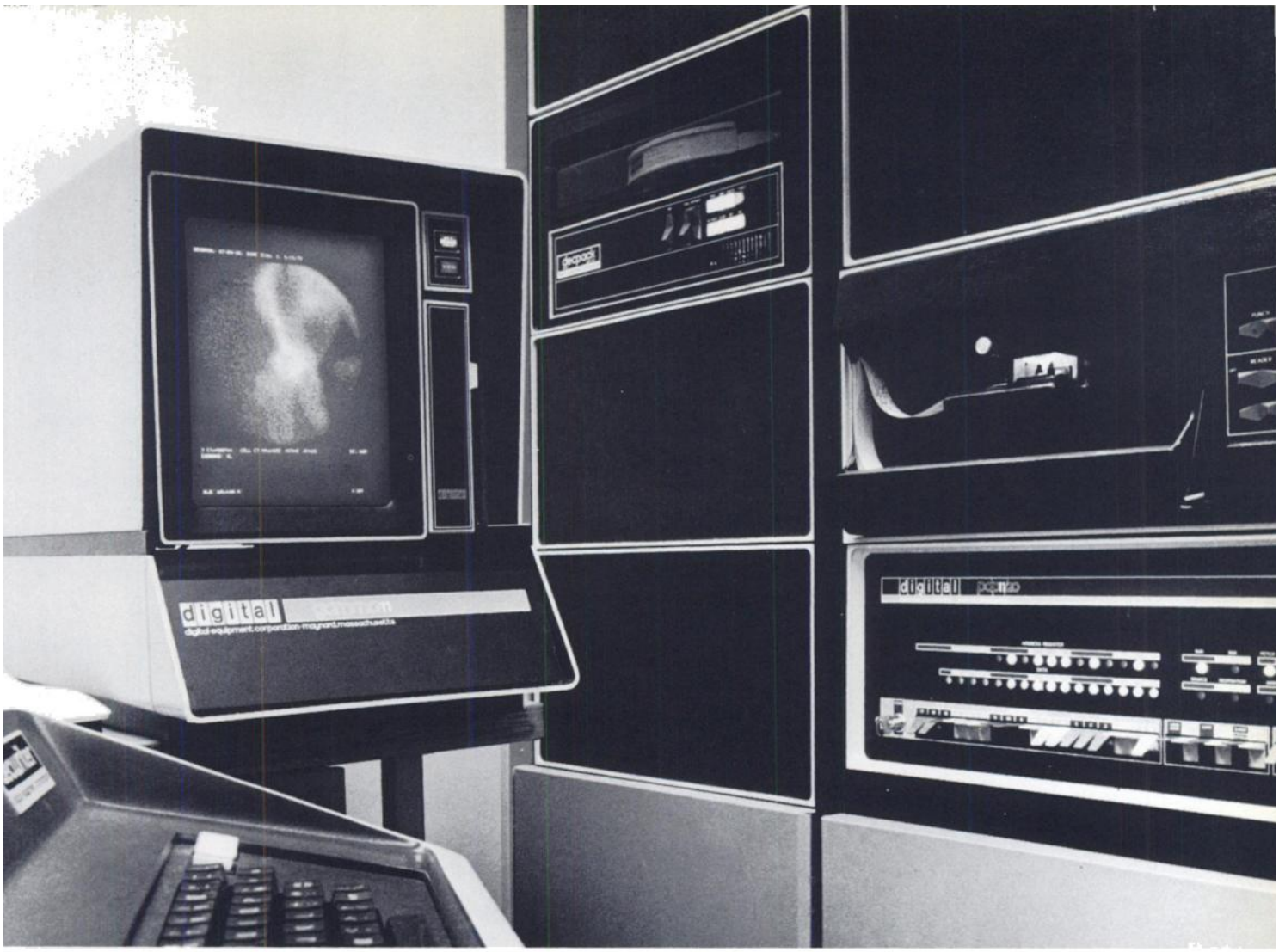
For complete prescribing information, consult package insert.

How Supplied: Minitec (Technetium 99m) Generator is available in potencies of 50, 100, 200, and 300 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

H604-009 R



Digital's Gamma 11. When you need something special from a nuclear medicine system.

A lot of nuclear medicine computers can give you the standard operations. Thresholding. Image smoothing. Crystal non-uniformity correction. Profile slices. Dynamic function curves. But that's just routine with Gamma-11.

What happens when you want to find out something special?

On most systems, things get horribly complicated.

With Gamma-11, you just use FOCAL-PLUS and do a bit of programming.

That's what FOCAL-PLUS was designed to do. Give you the language to develop your own studies, whatever they may be.

FOCAL is not one of those mind-bending languages. It's commonly used as a "beginners" language. But now it's been tailored especially for nuclear medicine. It's highly interactive. You can step up to the scope and mark off the areas you want to work on. It can handle large matrices (128 x 128). Yet it lets you work on individual elements so that you can do things like functional imaging.

And FOCAL-PLUS has many special functions to make programming go faster, like single-command references to collected images or curves.

Buy a Gamma-11 Nuclear Medicine Computer and you get not only FOCAL-PLUS, but also access to over 200 FOCAL programs that have already been developed.

And, of course, you get Digital Equipment Corporation. And Digital's huge service organization.

More people have opted for Digital than for any other nuclear medicine computer supplier... and Digital has produced more than half the minicomputers across the *world*.

Write for more information. Biomedical Group, Digital Equipment Corporation, Maynard, Mass. 01754. (617) 897-5111. European headquarters: 81 route de l'Aire, 1211 Geneva 26. Tel: 42 79 50. Digital Equipment of Canada Ltd., P.O. Box 11500, Ottawa, Ontario K2H 8K8. (613) 592-5111.

digital


BEATS THE OTHERS
Mallinckrodt
NUCLEAR
Mallinckrodt
NUCLEAR
TechneScan™ MAA KIT
AGGREGATED
ALBUMIN (HUMAN) KIT
Catalog No. 092
CAUTION: FROZEN MATERIAL
Store in Freezer Immediately
at −10° C (14° F) or Less
Do Not Allow Contents of Kit to Thaw
COLD

Introducing TechneScan® MAA

(Aggregated Albumin [Human])

Lung Scan Kit

with features only a frozen product can give

Tagging Efficiency...

The tagging efficiency experienced with the **TechneScan MAA** Kit is remarkably consistent, always at or near 100% conversion of pertechnetate to labeled MAA, with little or no loss of the label for up to 24 hours.

Particle Size Range...

Specifications require that not less than 90% of the particles are 10 to 90 microns in size with not more than 10% below 10 microns, and none greater than 150 microns.

Our investigations indicate that 95% of the **TechneScan MAA** particles are in the 10 to 60 micron range, with 5% less than 10 microns, 0.1% between 60 and 150 microns and none greater than 150 microns. This controlled particle size range, plus the fact that there is no tendency to agglomerate, results in good images of lung perfusion.

Simplicity...

Preparation of **TechneScan MAA** Tc 99m is extremely simple, requiring only aseptic addition of a pertechnetate solution to the vial. There is no heating, sonication, centrifugation, clean-up or transfer required. The total preparation time is less than 20 minutes.

Stability...

The expiration date of each **TechneScan MAA** Kit is 6 months after date of manufacture. This 6-month shelf-life permits large inventories to be maintained, reducing the likelihood of depleted supplies.

Safety...

TechneScan MAA is extremely well tolerated. It may be used with reliance on its proven safety, shown by clinical studies. Lung clearance half-time is approximately 6 hours . . . virtually complete urinary excretion occurs in about 24 to 48 hours. And there is to date no evidence of antibody formation.

Economy...

Up to 6 adult patients can be scintigraphed from the preparation of a single **TechneScan MAA** Vial, helping reduce procedure cost per patient.

If tagging efficiency, particle size range, safety, reliability and convenience are factors in your laboratory, consider the **TechneScan MAA** Kit. It's a step forward in lung scanning. For further information contact your Mallinckrodt representative.

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

WARNINGS: In acute cor pulmonale the administration of aggregated albumin is theoretically hazardous due to the temporary small additional mechanical impediment to pulmonary blood flow. Although not reported with **TechneScan MAA** Tc 99m there are two reports in the literature of deaths occurring after the administration of radioiodinated aggregated albumin as a result of pre-existing primary pulmonary hypertension.[1,2]

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

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

This radiopharmaceutical preparation should not be administered to patients who are pregnant or during lactation unless the benefits to be gained outweigh the potential hazards.

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

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

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

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

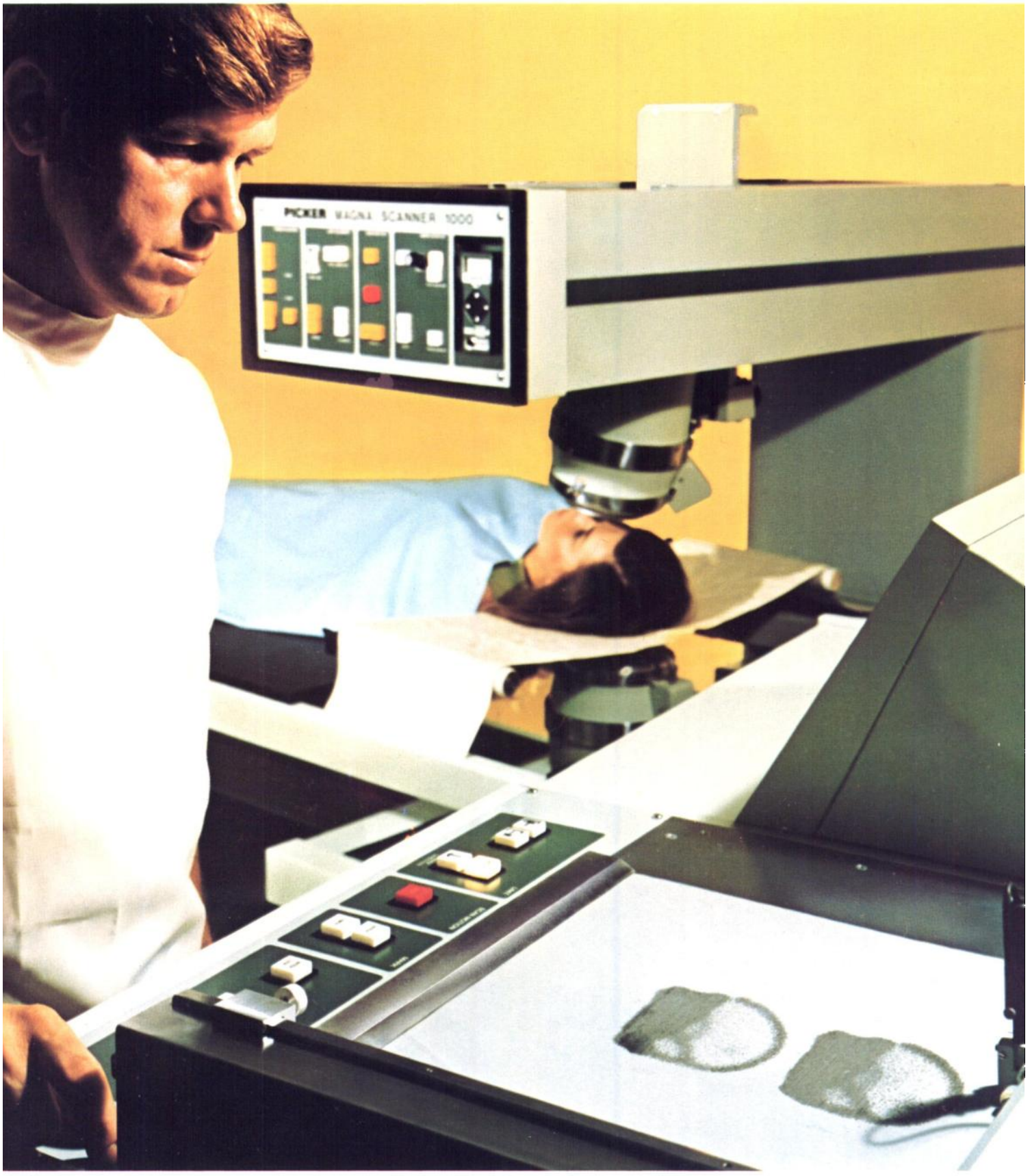
[1]Dworkin, H. J.; Smith, J. R. and Bull, F. E.: Reaction after Administration of Macroaggregated Albumin for a Lung Scan. **New England J. Med., 275**:376, August 18, 1966.

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

Mallinckrodt® NUCLEAR

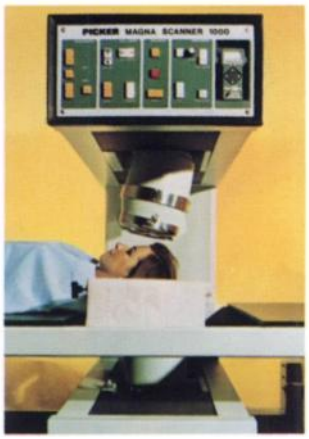
Mallinckrodt, Inc.
675 Brown Road
Hazelwood, Missouri 63042

New Magna® Scanner 1000



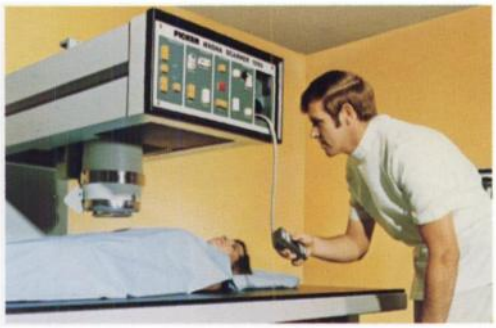
Not just another scanner.

You select a scanner primarily by the quality of scans it produces. Yet, flexibility and range of diagnostic information...ease of operation...reliability and ready service are important criteria, too.



All these advantages (and a few more) are brought together in the new Magna Scanner 1000. Picker's creative engineering team designed Magna Scanner 1000 right from the ground up. No effort was spared to make it the most advanced scanner available to the medical profession.

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.



Other advantages you've come to expect from the scanner leader are present in great abundance in Picker's Magna Scanner 1000. Large (24 x 75") field, big enough for 97½% of all skeletal surveys...pushbutton control of scan parameters unique to each organ...push-button calibration that assures constant film density (patient-to-patient, week-to-week).

Magna Scanner 1000 is the total performance whole-body scanner. And it's backed for maximum in-use availability by Picker's worldwide technical service organization. Picker Corporation, 595 Miner Road, Cleveland, Ohio 44143.

Another reason to buy from...

PICKER®
ONE OF THE C.I.T. COMPANIES

naturally safer

Our selenomethionine is biosynthetically produced. Because it is "all natural", it has inherent advantages over chemically synthesized pancreas imaging agents which are racemic and which may have a lower specific activity. Our L-selenomethionine has an average specific activity of about 100 mCi/mg (successive batches contained 102, 100, 92.7 and 100 mCi/mg respectively). Much smaller amounts (from 1.25 to 2.50 micrograms) are required to obtain a pancreas image.

True, it is not carrier-free, but a 2.50-*microgram* injection of selenomethionine compared to 230 *milligrams* of methionine present in a glass of milk, for instance, is very very small. Why administer more when less will do?

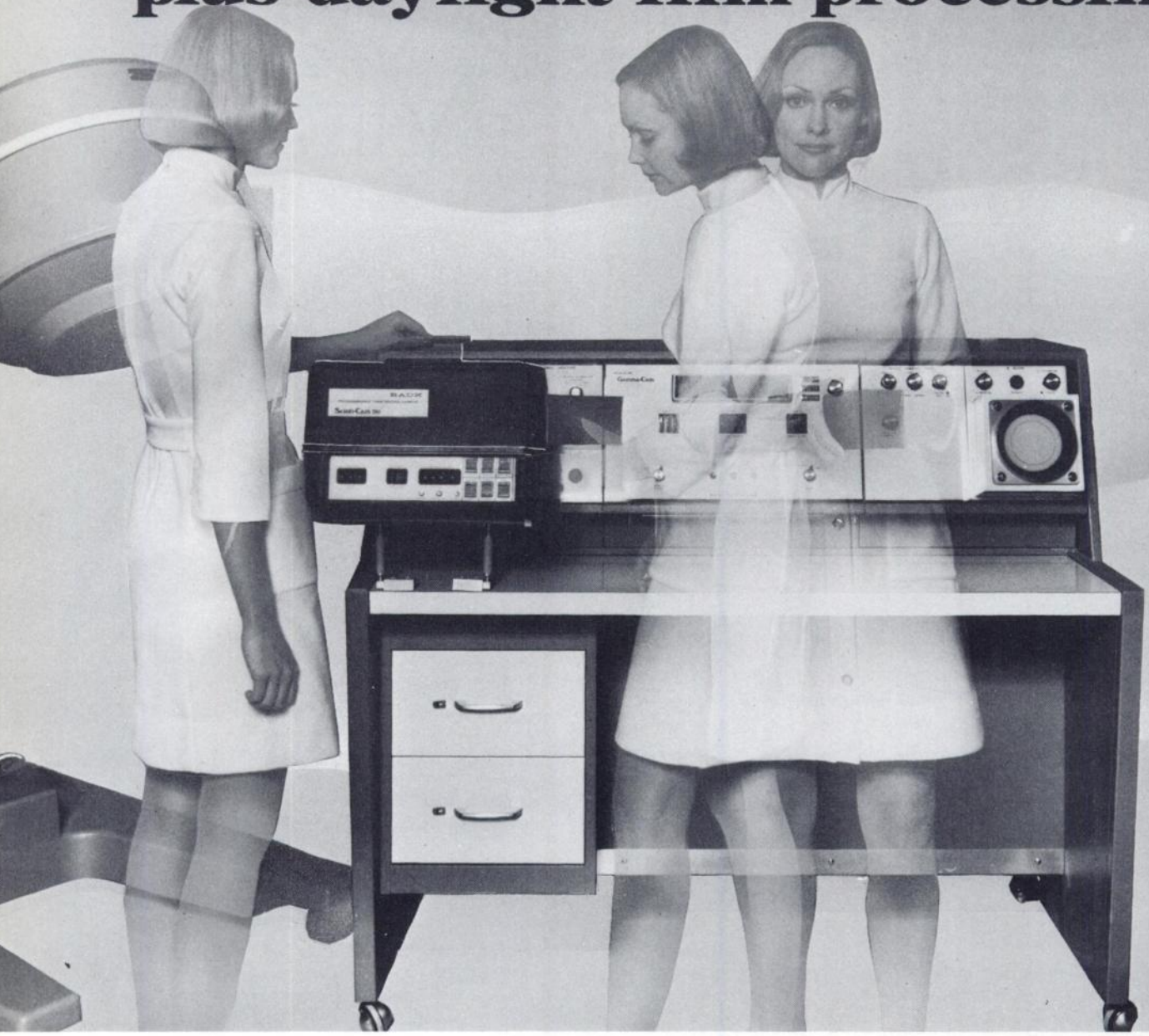
Write or call for descriptive literature on our "all natural" selenomethionine.

Product Description
L-Selenomethionine Se 75 Injection is a sterile, pyrogen-free solution of selenomethionine in sodium chloride injection.

Suggested Dosage Range
125 to 250 microcuries or 1.8 to 3.5 microcuries/kilogram body weight.

CIS Radiopharmaceuticals, Inc.
5 DeANGELO DRIVE/BEDFORD, MA. 01730/Tel. (617) 275-7120

Programmed, Instantaneous plus daylight film processing



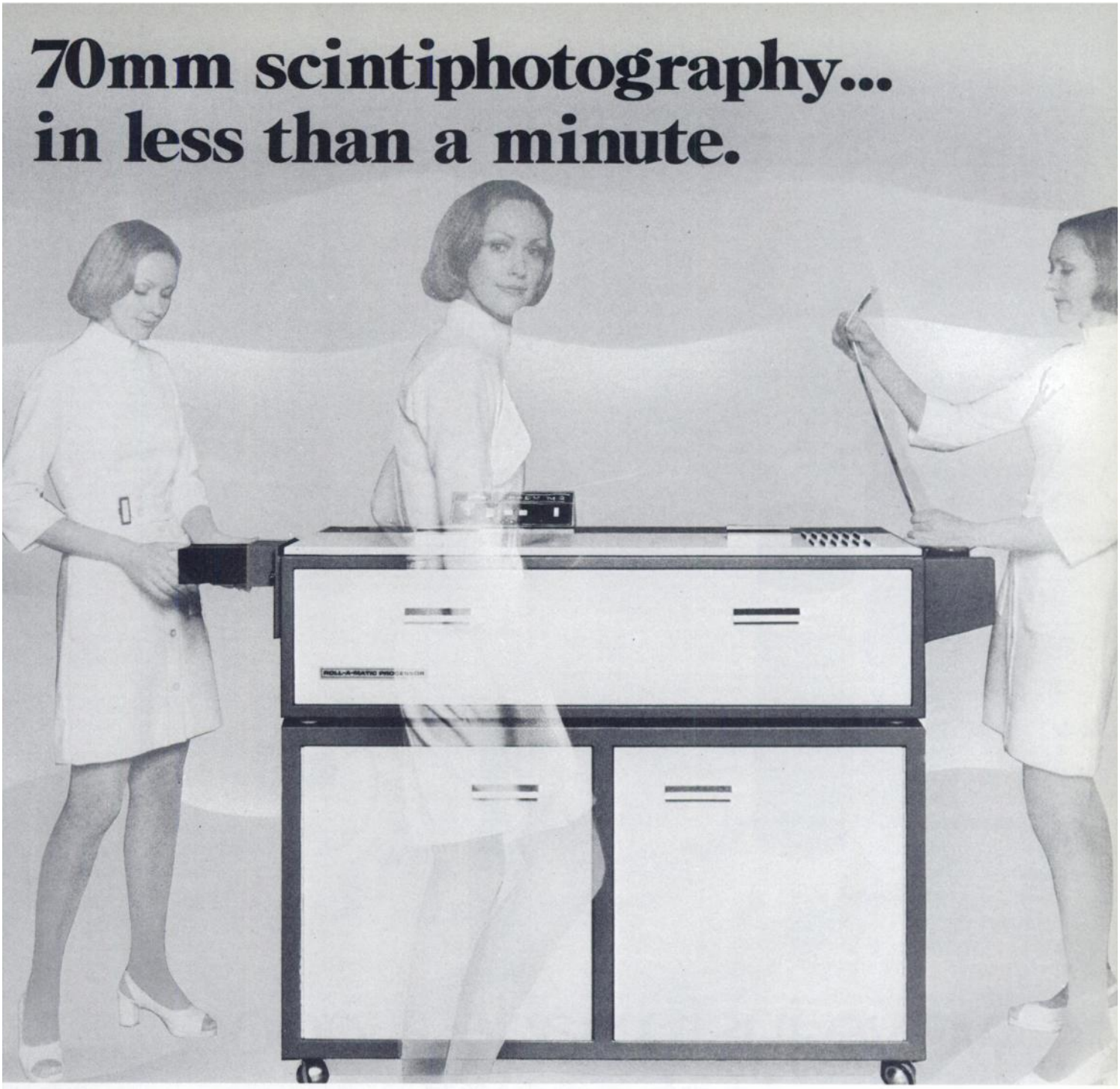
Scinti-Cam 750 70mm Camera
Programmable daylight loading camera that mounts on all existing gamma cameras and takes up to 10 exposures/second.

RADX has the system

Here's the system that meets the exacting standards of scintiphotography. Streamline your nuclear medicine department economically with the 70mm scintiphotography camera and film processor from RADX. The system that maximizes information output of your gamma camera, adds convenience and speeds patient diagnosis.

The RADX Scinti-Cam 750 programmable 70mm camera installs in minutes on the CRT of any existing gamma camera. After daylight loading of up to 174 feet of 70mm film (or an average of 730 exposures per roll), the rest is a fast, simple, pushbutton operation which carries through to even automatic film cutting. The result is your exposed film contained in a "light-tight" cassette that is ready to be processed. That's when the RADX M-3 Roll-A-Matic Processor takes over.

70mm scintiphotography... in less than a minute.



After the technician selects the processing rate and locks the Scinti-Cam film take-up cassette into place, the M-3 automatically extracts the exposed film. And in as little as 42 seconds, the processed film appears—dry and ready for viewing.

Don't delay the total coordination of your clinical procedures any longer. Call or write RADX for further information about the Scinti-Cam 750 and M-3 Roll-A-Matic system.
P.O. Box 19164, Houston, Texas 77024, 713/468-9628.

RADX CORP

M-3 Roll-A-Matic Film Processor
Daylight film loading processor, designed primarily for 35mm and 70mm roll film. Compact, totally self-contained, no external plumbing or drains required. Castor mounted console (illustrated) optional.

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 μg) of vitamin B_{12} or within 24 hours of a loading dose of vitamin B_{12} given for the Schilling test.

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

ADVERSE REACTIONS
None

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

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

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

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

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

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

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

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

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

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

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

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

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

Table I. Principal Radiation Emission Data

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

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

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

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

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

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

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

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

*Activity date

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

Table I. Radiation Doses

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

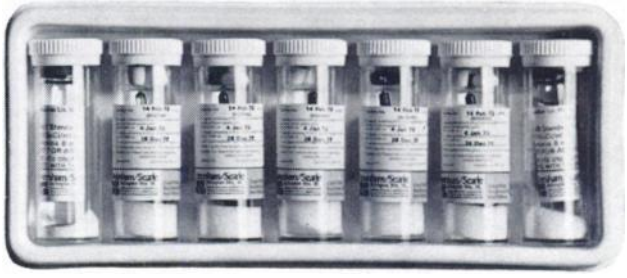
*The administration of a flushing dose of non-radioactive B_{12} will decrease the dose to the liver, gonads, and whole-body from Co 57 and Co 58 by about 30%.

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

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

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

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



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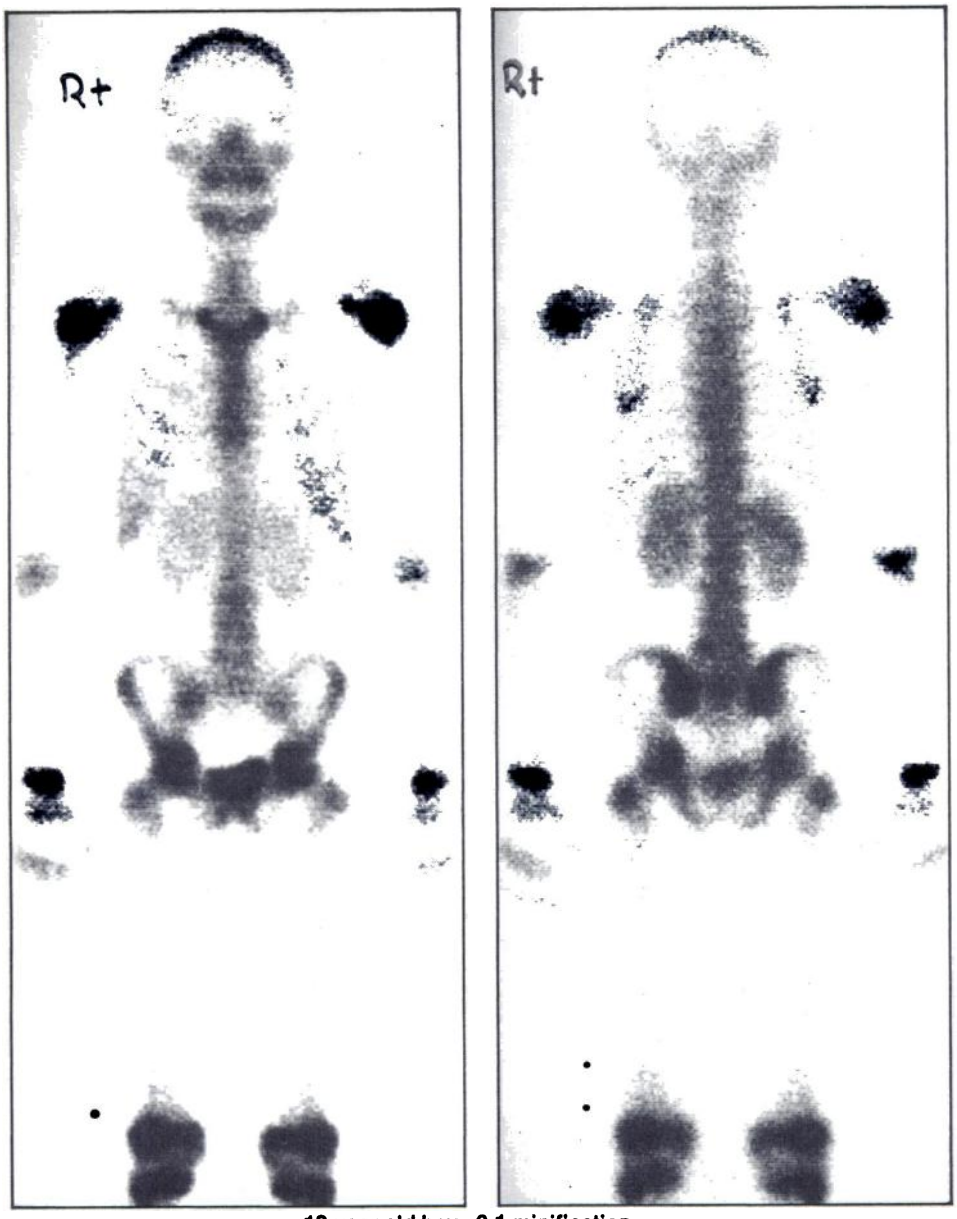
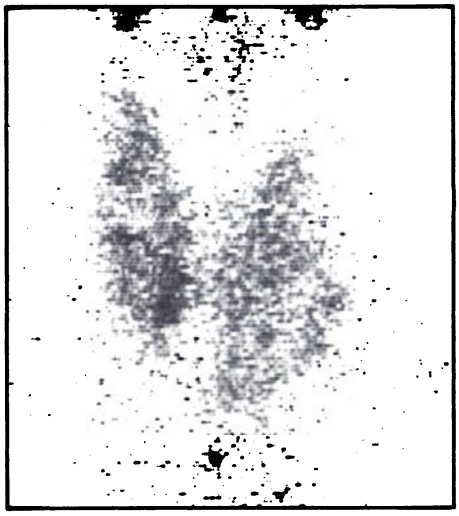
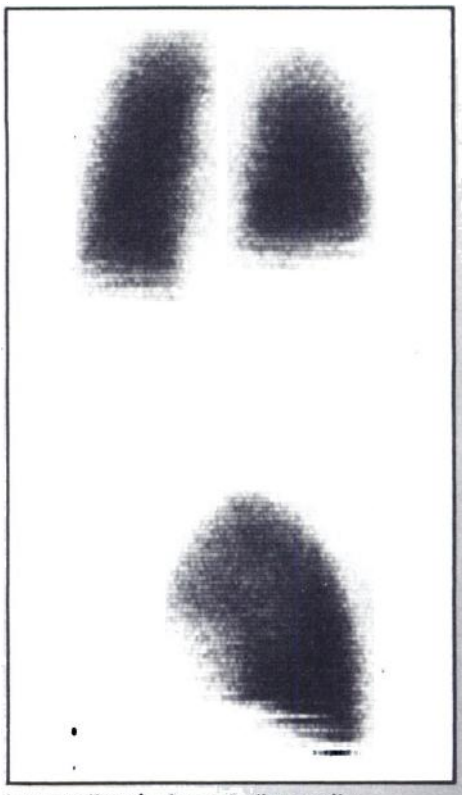


12-year old boy—3:1 minification.



Enlarged thyroid.



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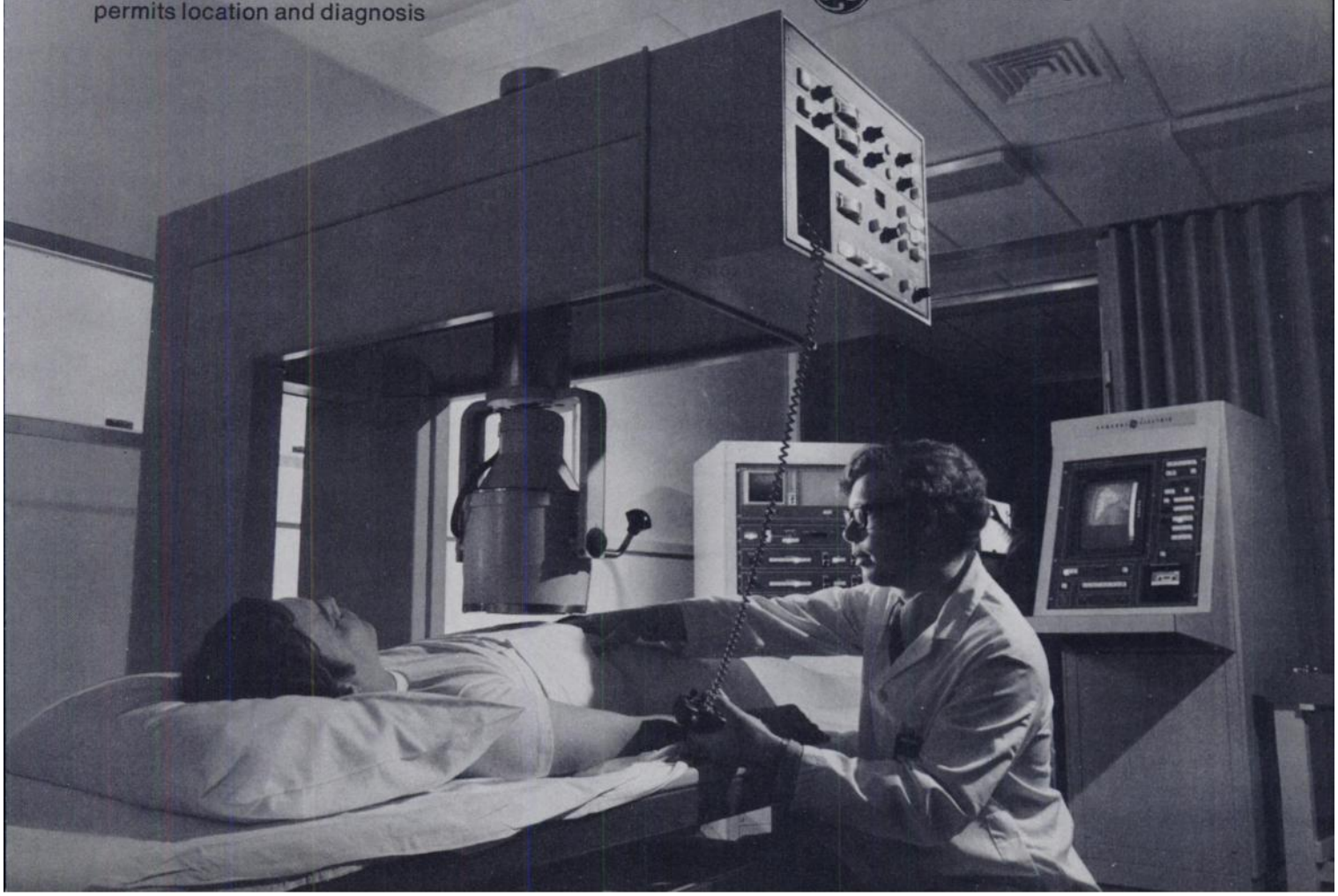

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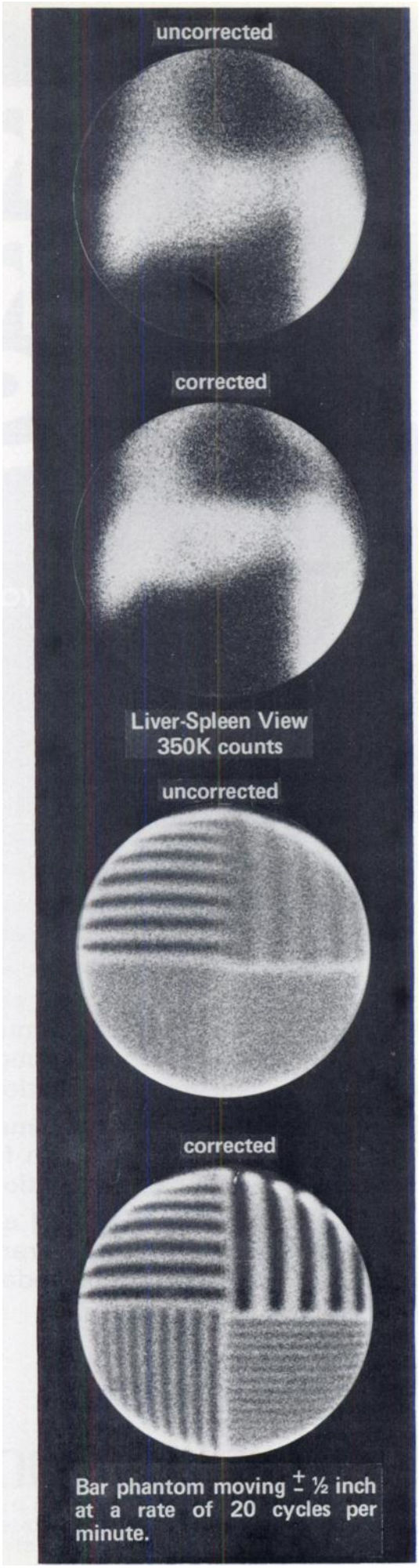
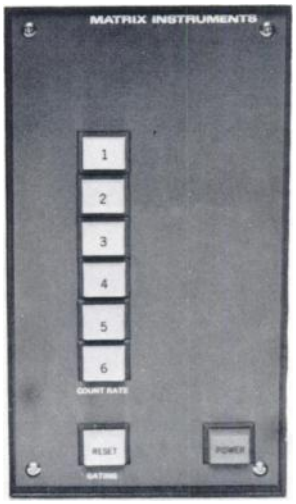


Increase the resolution of your gamma camera and ultrasound scanner by correcting organ motion effects without attaching anything to the patient or increasing the study time.



opti-imager

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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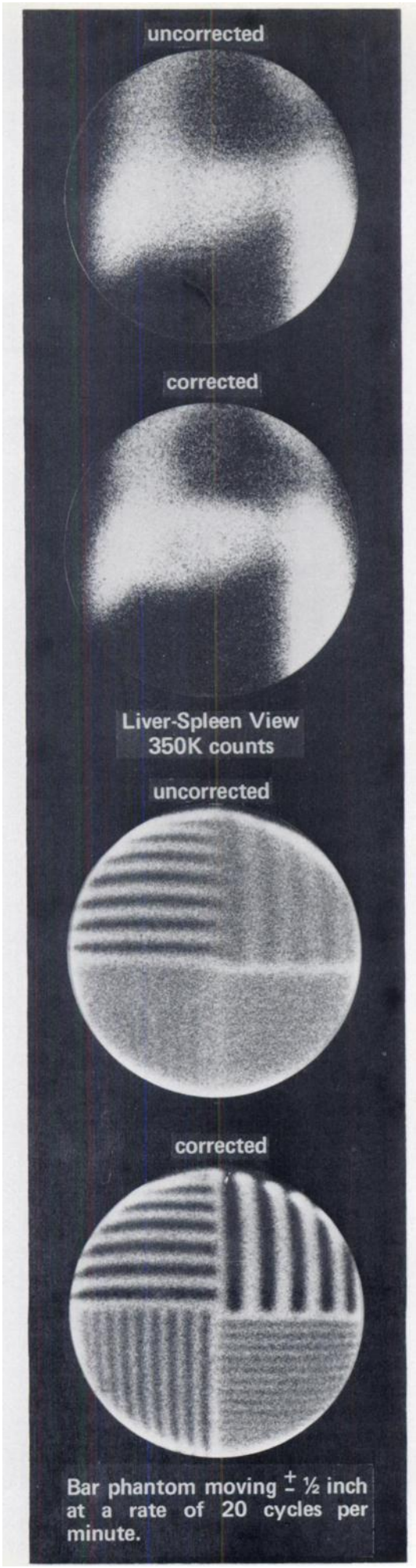

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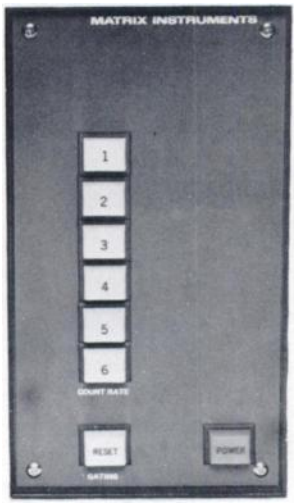

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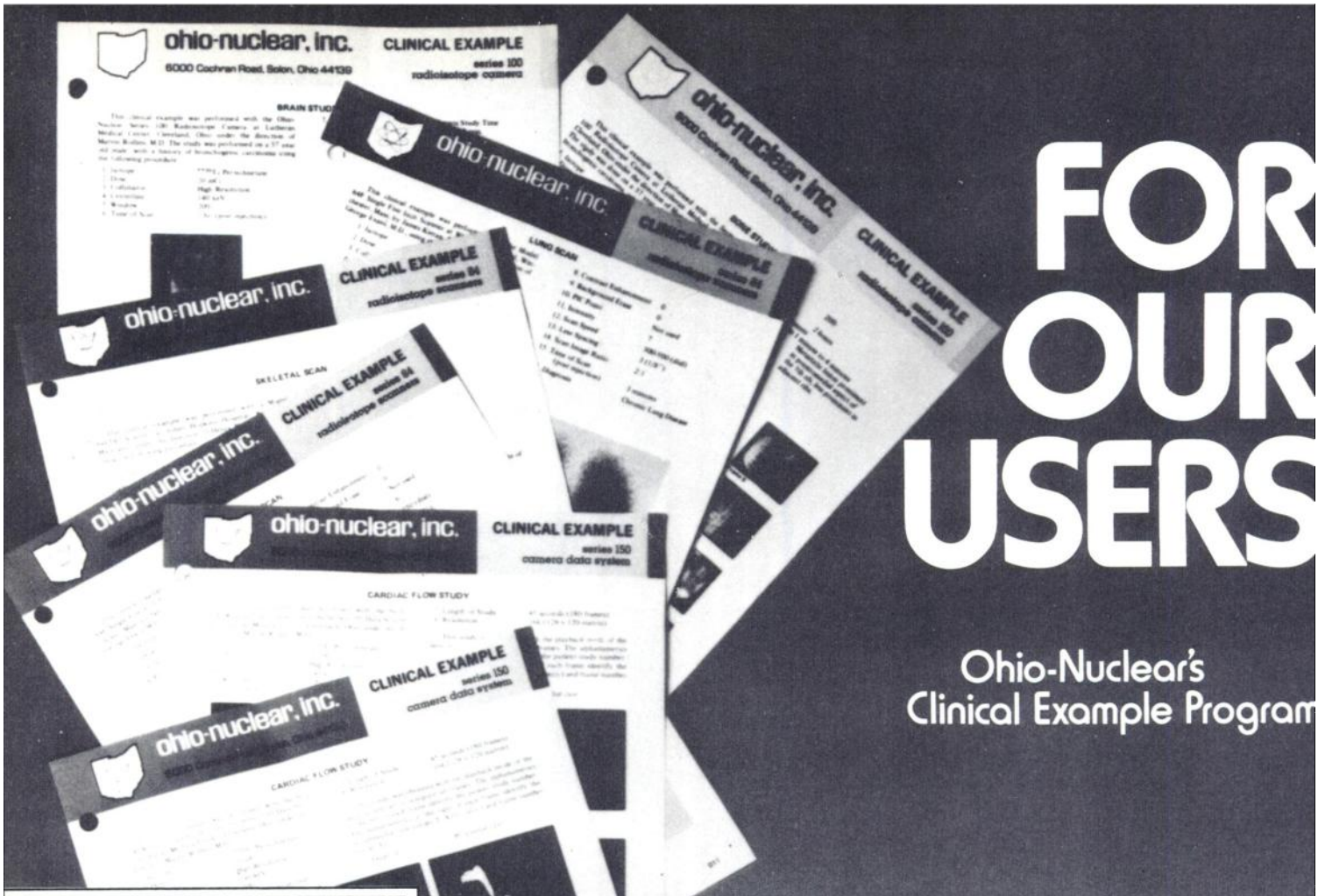

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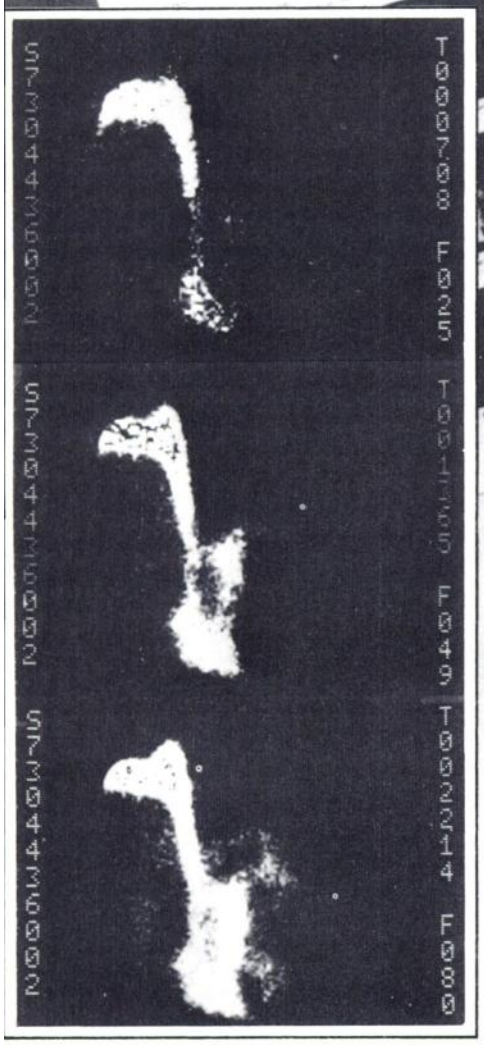

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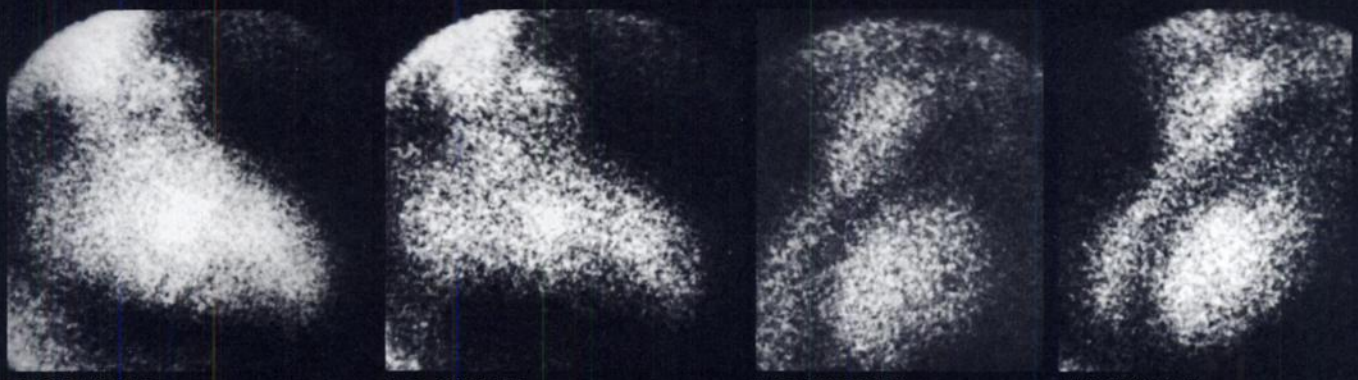

RAO, DIASTOLE | RAO, SYSTOLE | LAO, DIASTOLE | LAO, SYSTOLE

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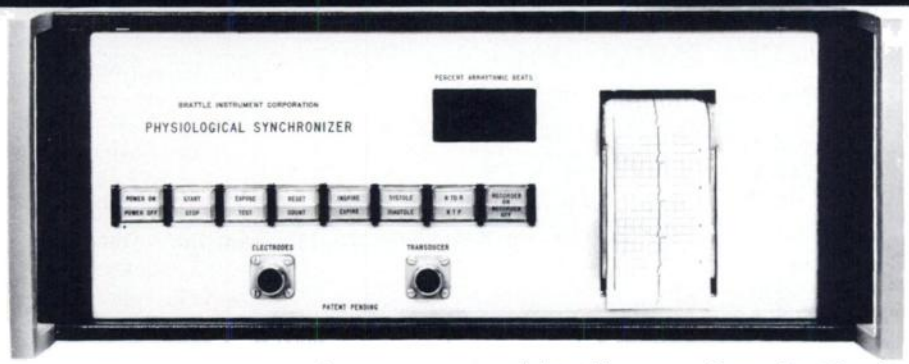

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RESIDENCY IN NUCLEAR MEDIcine—university based two-year well established program with well rounded clinical, didactic, and research activities. Two positions open July 1975. C. M. Boyd, M.D., Division of Nuclear Medicine, University of Arkansas Medical Center, Little Rock, Arkansas 72201.

NUCLEAR MEDICAL TECHNICIAN, for a large VA Hospital fully affiliated with Chicago Medical School. Salary range $9,969 to $12,957 per year. Excellent fringe benefits. Contact Personnel Office, Veterans Administration Hospital, Downey, Illinois 60064. Phone 312-689-1900, Ext. 425. Equal opportunity employer.

NUCLEAR MEDICINE RESIDENCY. Extensive clinical base of imaging, in vitro testing, in vivo testing, and therapy in combined university hospital—V.A. hospital program. Opportunities for clinical and laboratory research. Write: W. N. Tauxe, M.D., Professor of Radiology and Pathology (Nuclear Medicine), University of Alabama Hospitals, Birmingham, Alabama 35233. An equal opportunity employer.

IMMEDIATE OPENING FOR SUPERvisory nuclear medicine technologist position. Progressive 500-bed hospital in Albany, New York. All modern equipment providing up-to-date nuclear radiology services. Salary commensurate with experience. Reply to: Chief of Nuclear Medicine, St. Peter's Hospital, 315 S. Manning Blvd., Albany, N.Y. 12208.

POSITIONS WANTED

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 1203, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

NUCLEAR MEDICINE PHYSICIAN, University trained in nuclear medicine with radiology background, seeks position in clinical nuclear medicine. Reply to Box 1204, Society of Nuclear Medicine, 475 Park Avenue South, New York, N.Y. 10016.

M.D., NUCLEAR MEDICINE SPECIAList, desires position in Greater New York area. Background includes top universities, internal medicine, biochemistry, research, teaching. Call 212-275-9764 or reply Box 1205, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

NUCLEAR MEDICINE TECHNOLOgist desires a job in the educational end of nuclear medicine. B.S. in Education. Teaching experience. RT (ARRT) and NM (ASCP). Please reply to Box 1206, Society of Nuclear Medicine, 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.

Please note our new address.

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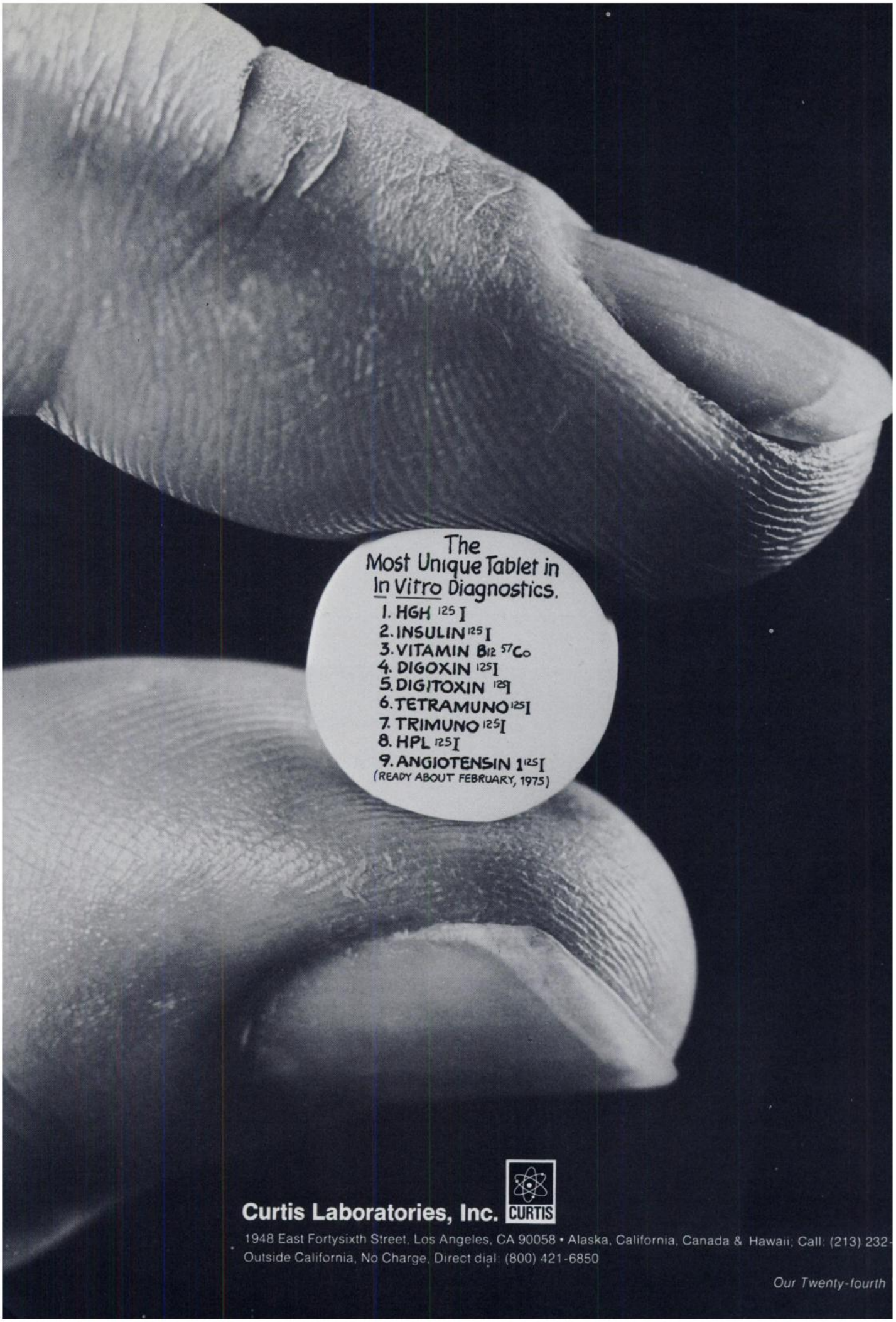
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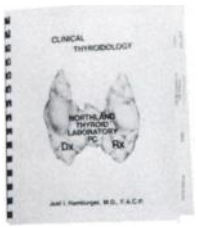

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POSTGRADUATE COURSE IN NUCLEAR MEDICINE

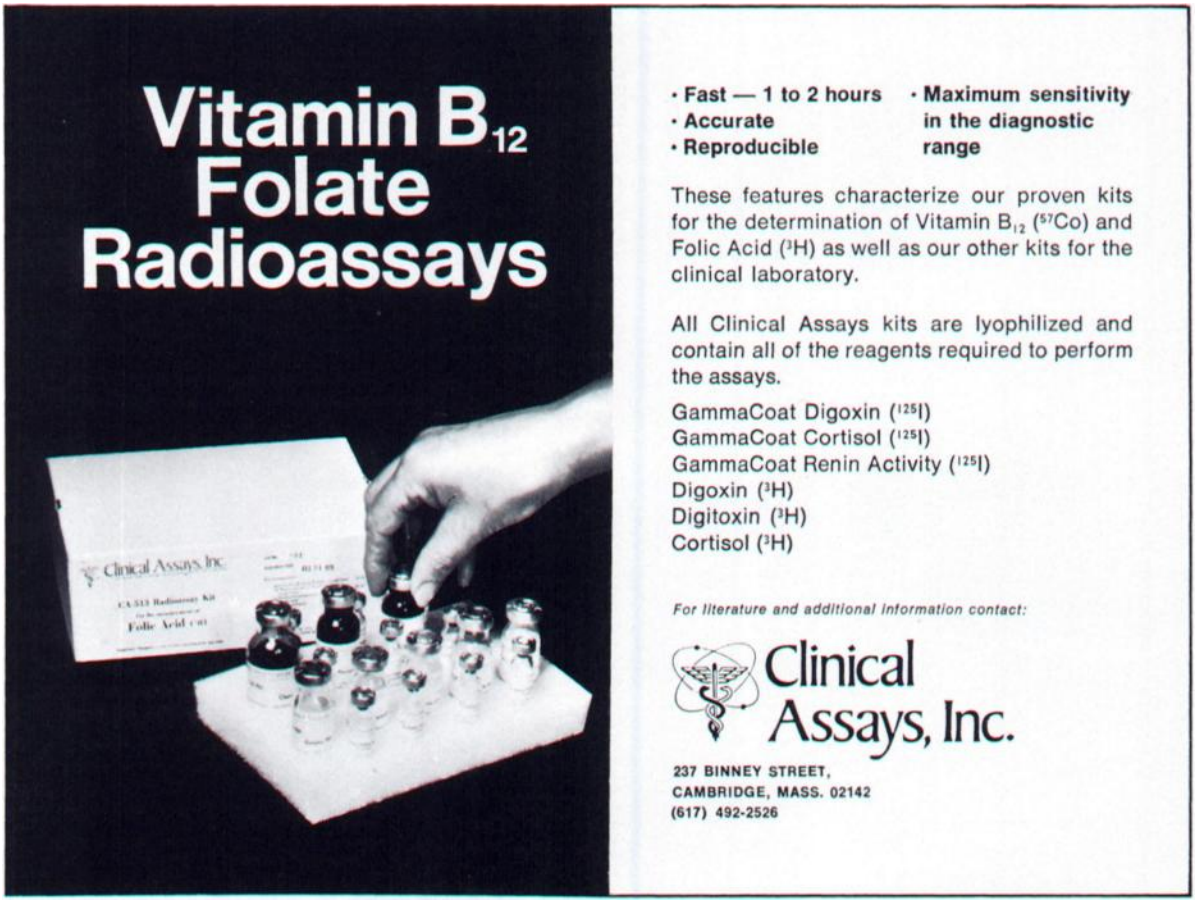
February 24–28, 1974
Williamsburg, Virginia

The Eleventh Annual Postgraduate Course sponsored by the Department of Radiology, Virginia Commonwealth University-Medical College of Virginia will be held at the Williamsburg Conference Center in Williamsburg, Virginia.

This course will provide updated information on a wide variety of topics in clinical nuclear medicine. It is designed for the practicing radiologists and the interested allied physicians in other specialties. The program is accredited by the American Medical Association. Nineteen and one-fourth credit hours apply to the course, and a certificate of attendance will be awarded to registrants.

The guest faculty includes Drs. James J. Conway, Frank H. DeLand, Leonard M. Freeman, C. Craig Harris, Paul B. Hoffer, Henry N. Wagner, Jr., and members of the faculty of the Medical College of Virginia.

The tuition fee is $175, or $75 for residents and fellows. For further information, contact Gary G. Ghahremani, M.D., MCV Station, P.O. Box 728, Richmond, Virginia 23298.



DIRECTOR OF NUCLEAR MEDICINE TECHNOLOGY

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If you are a registered Nuclear Medicine Technologist with at least eight to ten years experience and five years supervisory experience we'd like to discuss this opportunity further with you. The person we seek will have a B.S. Degree with post graduate experience preferred.

The contract is for two years with an exceptionally attractive benefit and compensation portfolio.

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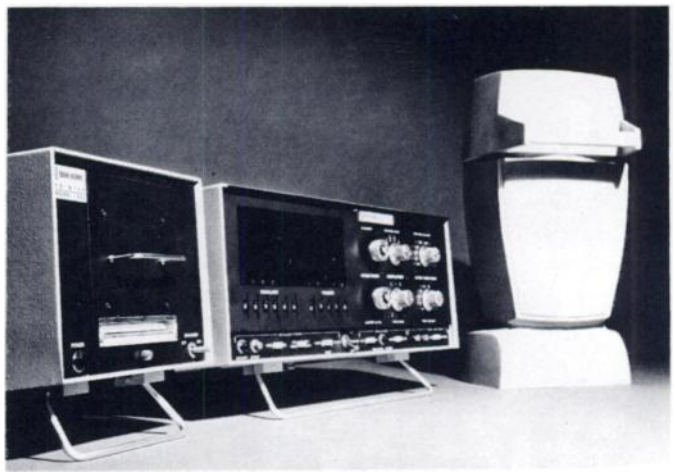

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The spectrometer, itself, contains all major electronic sub-assemblies, will identify all isotopes in a sample, and will determine and display the concentration of each isotope. Automatic baseline advance — all decades presetable, even an analog version — it's all there.

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THE NUCLEAR MEDICINE INSTITUTE CONTINUING EDUCATION PROGRAM FOR PHYSICIANS IN NUCLEAR MEDICINE

The Nuclear Medicine Institute will hold a 4-week comprehensive course for physicians in nuclear medicine. This program is geared to the physician interested in continuing education in nuclear medicine and to those preparing to participate in the various specialty board examinations in nuclear medicine. A unique interrupted schedule format has been chosen so that maximum duration away from home will be five days at a time. Classes will be held the weeks of:

February 17–21, 1975 **April 14–18, 1975**
March 17–21, 1975 **May 12–16, 1975**

Sessions will be five days each, Monday thru Friday. Subject materials will be intermixed and cumulative.

For further information, contact:

D. BRUCE SODEE, M.D., Director
Nuclear Medicine Institute
6760 Mayfield Road
Cleveland, Ohio 44124

INTRODUCTORY ONE WEEK PHYSICIAN COURSE IN NUCLEAR MEDICINE Cleveland, Ohio

Contact: D. Bruce Sodee, M.D.,
Nuclear Medicine Institute
6760 Mayfield Road, Cleveland, Ohio 44124

1974
December 2–6, 1974

1975
January 13–17, 1975; September 1–5, 1975; October 6–10, 1975; November 10–14, 1975; December 8–12, 1975

ONE YEAR TECHNOLOGIST COURSE IN NUCLEAR MEDICINE Cleveland, Ohio

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1975
March 31–June 20, 1975; June 23–September 12, 1975; September 29–December 19, 1975

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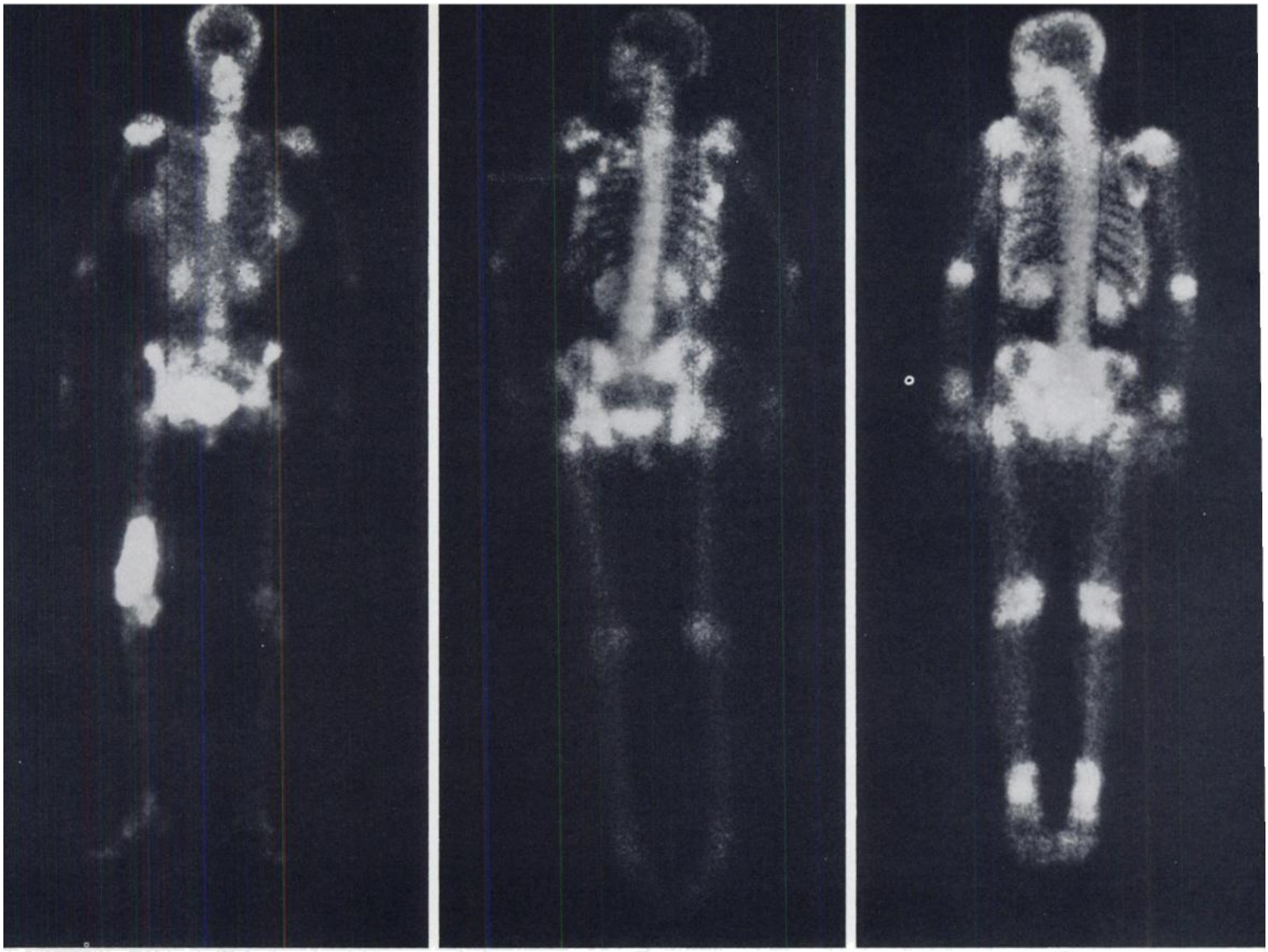
*Thin Layer Chromatography (Cellulose acetate/85% methanol)

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™)



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See following page for brief summary of package insert.

SNM MID-EASTERN CHAPTER

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Annapolis Hilton

April 11–13, 1975 Annapolis, Maryland

Call for Abstracts

The submission of abstracts of original contributions in nuclear medicine is requested for consideration for the scientific program. The chapter is offering $100 and $50 prizes respectively for the two best scientific papers presented. To be eligible for consideration for the prize, papers must represent unpublished, original work by the authors. (Unpublished papers, submitted for publication and not previously presented, are eligible.) Abstracts of competitive papers must be received by the deadline. Papers will be judged on originality, significance to nuclear medicine, and the quality of the work and its presentation.

Guidelines for abstracts:

1. Abstract should contain a statement of purpose, methods used, results, and conclusions.
2. Abstract should not exceed 300 words.
3. Give title of paper and name of author(s) as you wish them to appear on the program. Underline the name of the author who will present the paper.
4. Send abstract and four copies to:

WM. ALLAN DEAR, M.D.
Mercy Hospital
301 St. Paul Place
Baltimore, Maryland 21202

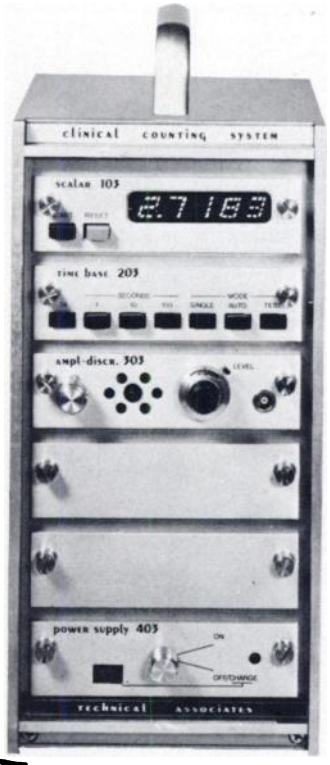
Deadline for abstracts: JANUARY 4, 1975

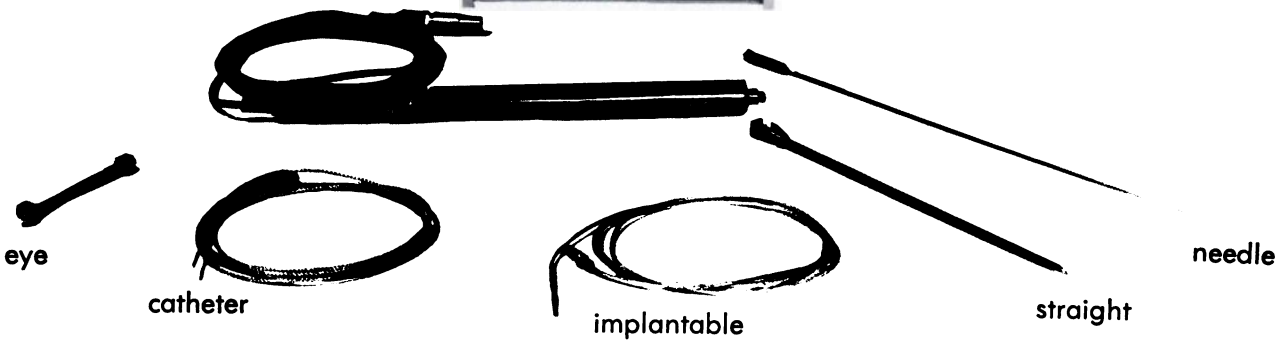
ANNOUNCEMENT

In addition to the regular scientific program, the following special programs will be included in the program:

1. IMAGING QUALITY-CONTROL TEACHING SESSION
2. BONE-IMAGING SYMPOSIUM

the proven clinical counting system





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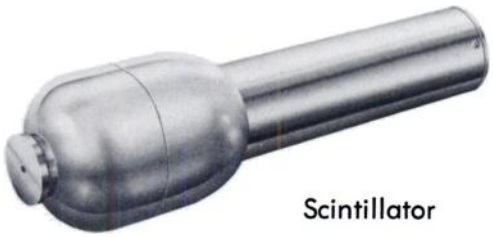

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- Flood sources and bar phantoms to check your gamma camera and scanner
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- Modular phantoms for resolution studies and technician training
- Accessories, such as a flexible marker, pointer, and syringe shields

Many hospitals perform routine checks of all of their nuclear instrumentation (twice daily for cameras) to identify any malfunction before it interferes with a patient study. This new catalog lists items you need to do the same. And it's free.

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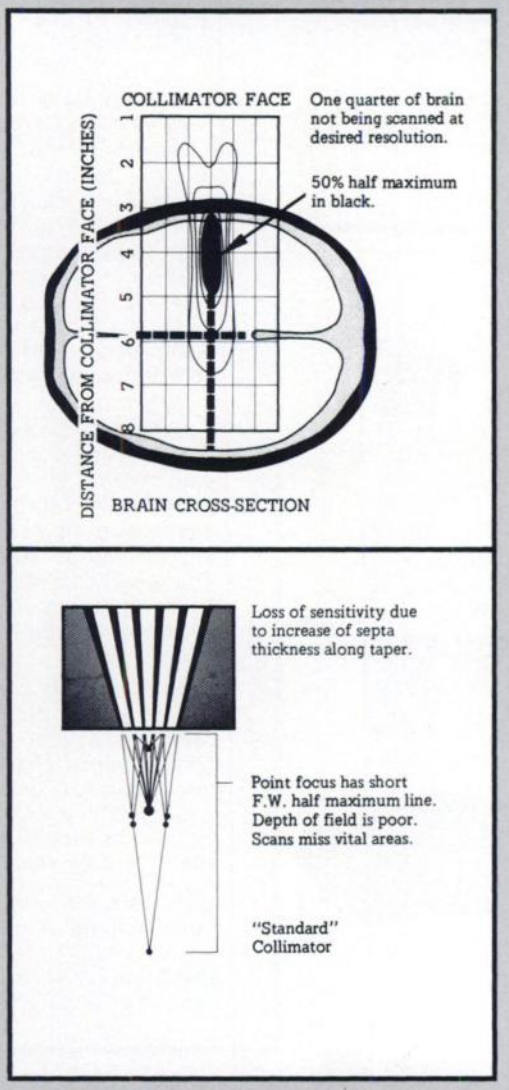
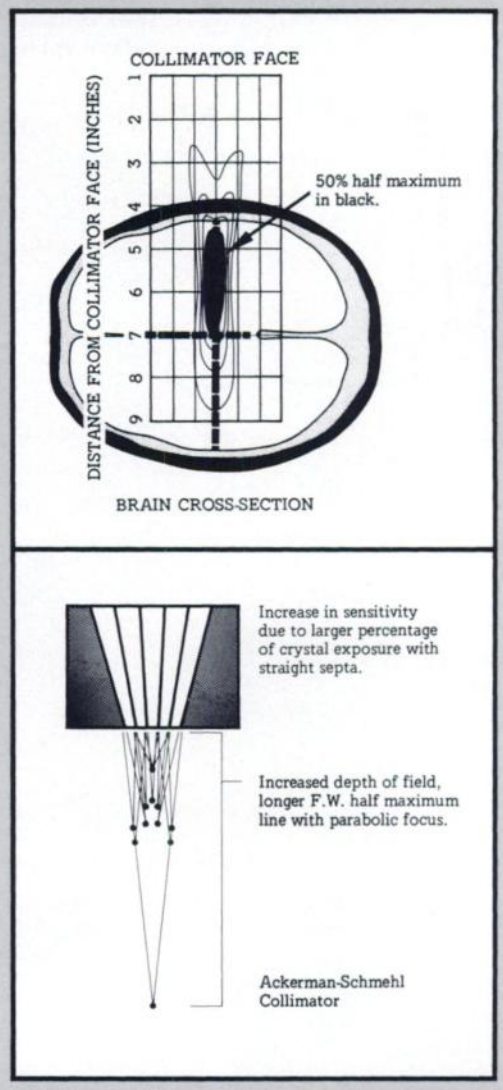
Parabolic Focus Collimators.



Point Focus



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Parabolic focus produces the best combination of resolution, sensitivity, and focal depth. Add to that a new parameter: Depth of Field, which is defined as "The length visualized in any organ at the same resolution".

It is not of significant length on point focus collimators to be considered an important parameter. All other collimators in the world except Ackerman-Schmehl are point focus.

Many physicists tell us that depth of field is just as important on a rectilinear scanner as it is with a scintillation camera. Resolution and sensitivity are insignificant unless you are scanning the organ. Ackerman-Schmehl offers six low energy collimators to suit different scanning needs at $750 each.

Call collect for further information.
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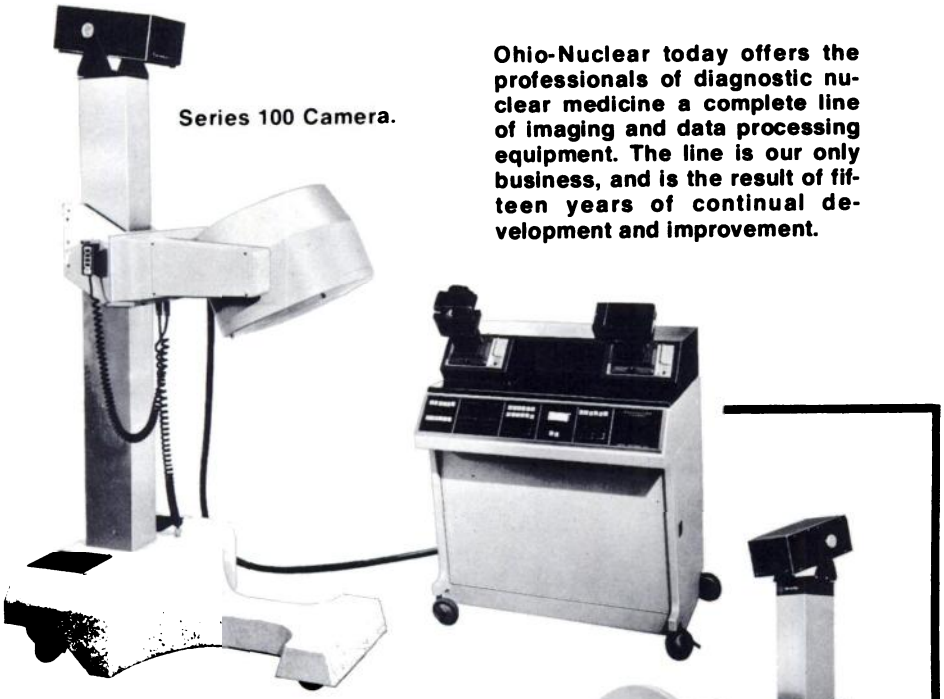
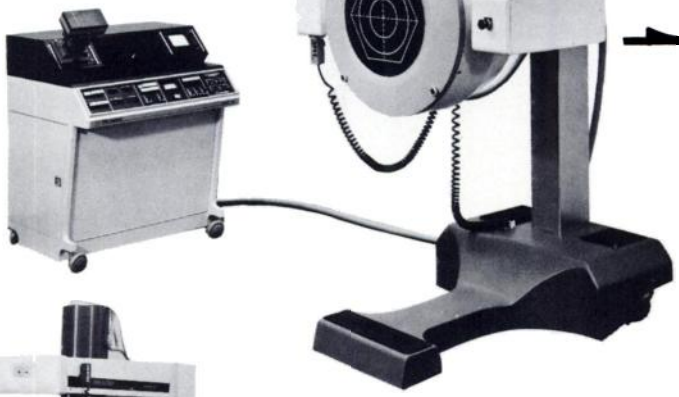


Series 100 Camera.

Ohio-Nuclear today offers the professionals of diagnostic nuclear medicine a complete line of imaging and data processing equipment. The line is our only business, and is the result of fifteen years of continual development and improvement.



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Series 84 Scanner.

Area Scan.

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Series 84 Scanner. The proven (700 installations) whole body scanner, single and dual probe, full line of options, all singles upgradable to dual. Scan minification 2:1 and 5:1.

Series 100 Camera. The Superior Radioisotope Camera. Best available resolution ($^1/_{10}$" [2.5mm] using ^{99m}Tc); speeds up to 100,000 counts/sec.; ease of operation — studies conducted from hand control, two speed operation, pushbutton isotope selection, and photomultiplier tube gain balancing by your technologist; and a complete selection of options.

Series 110 Camera. Our new 14½" (36.8cm) field of view camera, offering a resolution of $^5/_{32}$" (4.0mm) lead bars using ^{99m}Tc; eliminating the need for a diverging collimator (fewer collimator changes) and the same speed, ease of operation, and options available with the Series 100.

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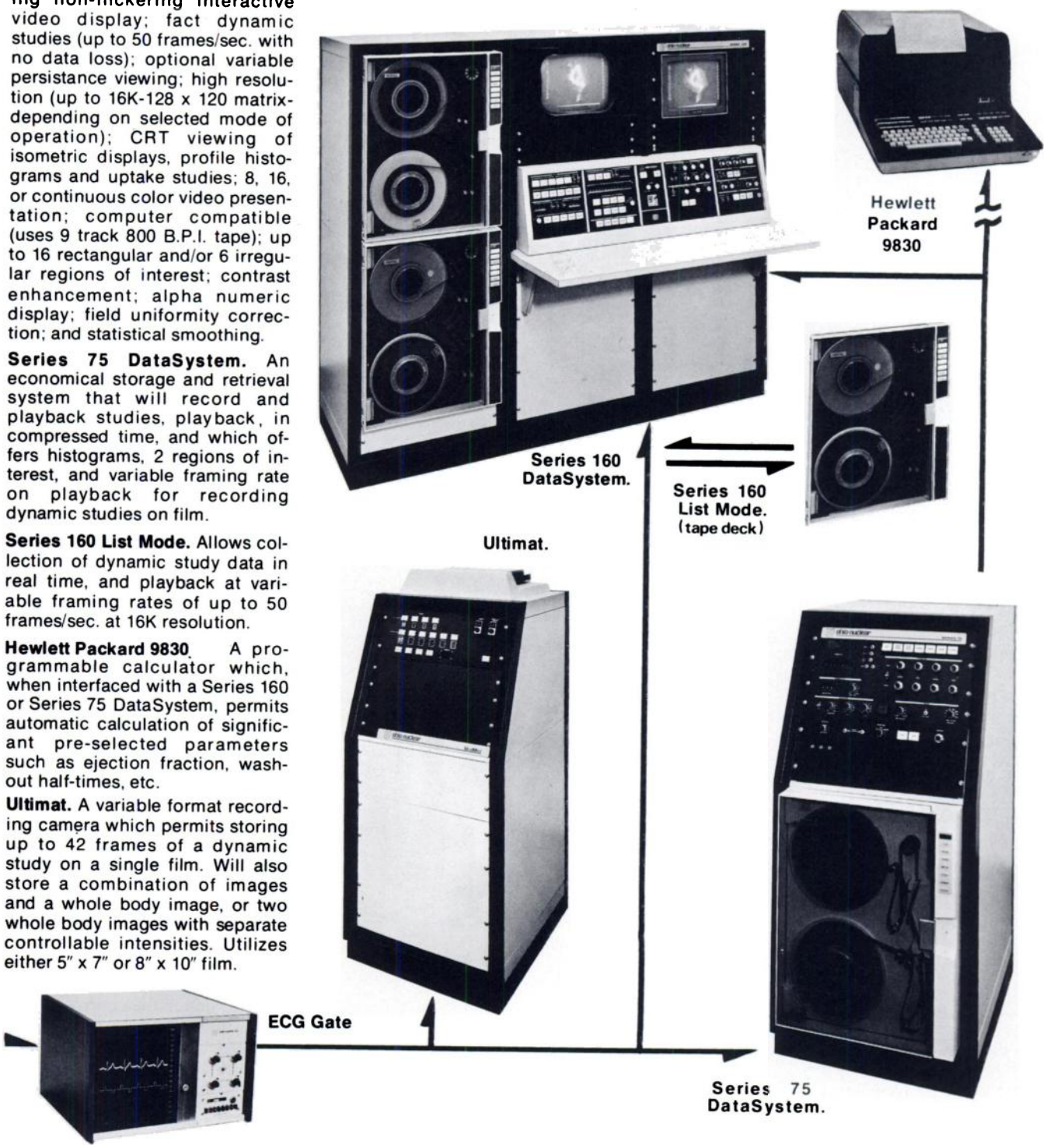
Series 160 DataSystem. A complete digital imaging system offering non-flickering interactive video display; fact dynamic studies (up to 50 frames/sec. with no data loss); optional variable persistance viewing; high resolution (up to 16K-128 x 120 matrix-depending on selected mode of operation); CRT viewing of isometric displays, profile histograms and uptake studies; 8, 16, or continuous color video presentation; computer compatible (uses 9 track 800 B.P.I. tape); up to 16 rectangular and/or 6 irregular regions of interest; contrast enhancement; alpha numeric display; field uniformity correction; and statistical smoothing.

Series 75 DataSystem. An economical storage and retrieval system that will record and playback studies, playback, in compressed time, and which offers histograms, 2 regions of interest, and variable framing rate on playback for recording dynamic studies on film.

Series 160 List Mode. Allows collection of dynamic study data in real time, and playback at variable framing rates of up to 50 frames/sec. at 16K resolution.

Hewlett Packard 9830. A programmable calculator which, when interfaced with a Series 160 or Series 75 DataSystem, permits automatic calculation of significant pre-selected parameters such as ejection fraction, washout half-times, etc.

Ultimat. A variable format recording camera which permits storing up to 42 frames of a dynamic study on a single film. Will also store a combination of images and a whole body image, or two whole body images with separate controllable intensities. Utilizes either 5" x 7" or 8" x 10" film.



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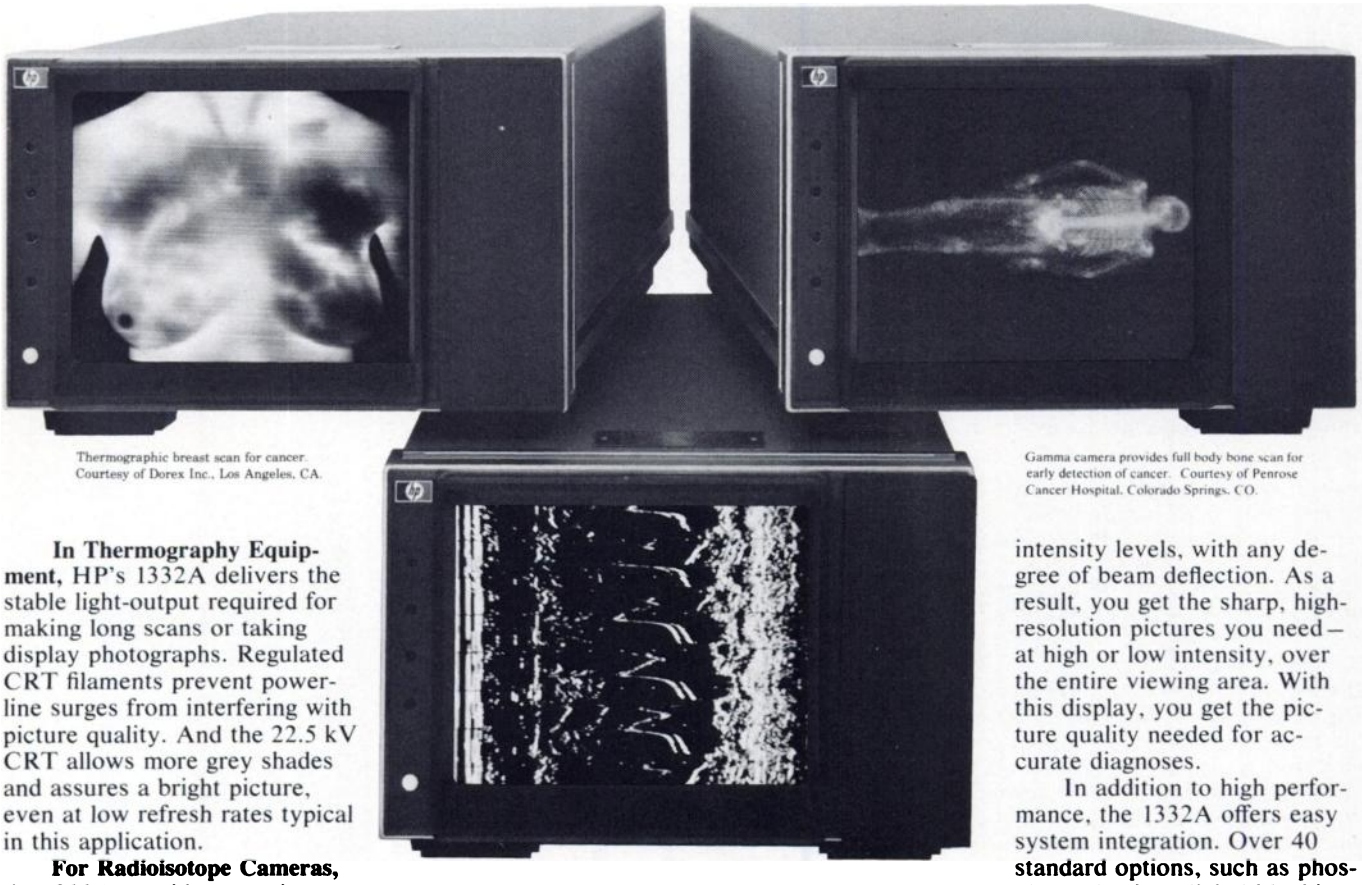
depend on HP's new 1332A. This improved display gives you the superior picture quality you must have when life is in the balance. It answers your need for higher resolution, better stability, more uniform light-output. And it meets the stringent UL Listing for electronic equipment used in patient care. The 1332A provides a combination of high performance and easy system integration to give OEMs a better display solution for demanding medical-instrument applications. For example:



Thermographic breast scan for cancer. Courtesy of Dorex Inc., Los Angeles, CA.

Gamma camera provides full body bone scan for early detection of cancer. Courtesy of Penrose Cancer Hospital, Colorado Springs, CO.

Ultrasound determines dynamic blood flow through the heart. Courtesy of Metrix, Denver, CO.

In Thermography Equipment, HP's 1332A delivers the stable light-output required for making long scans or taking display photographs. Regulated CRT filaments prevent power-line surges from interfering with picture quality. And the 22.5 kV CRT allows more grey shades and assures a bright picture, even at low refresh rates typical in this application.

For Radioisotope Cameras, the 1332A provides superior light-output uniformity for more accurate analysis. Exceptional CRT design maintains the unit's extremely high resolution regardless of intensity level or beam deflection. This, combined with a fast z-axis rise-time means you get sharp pictures that reflect your system's true performance capability.

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084/7

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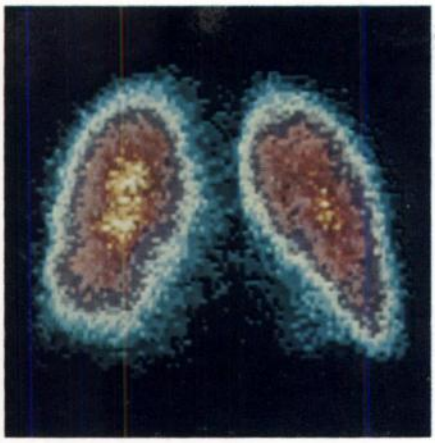
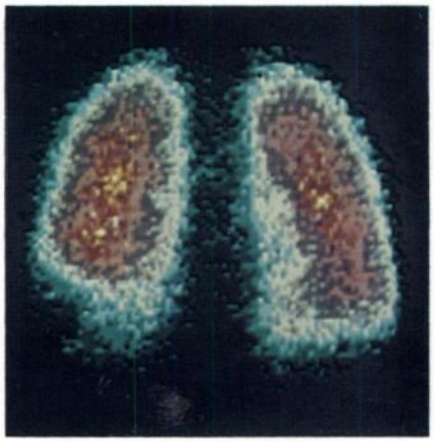
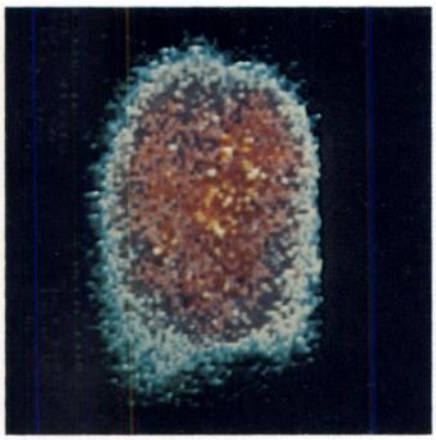


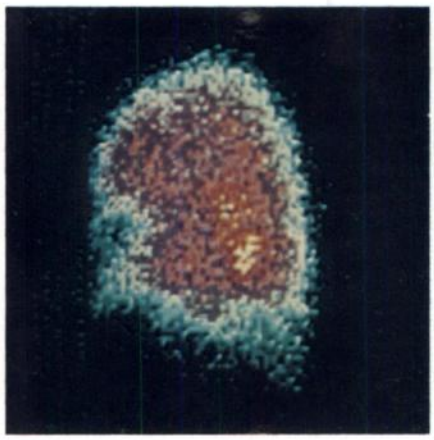
Anterior



Posterior



Right Lateral



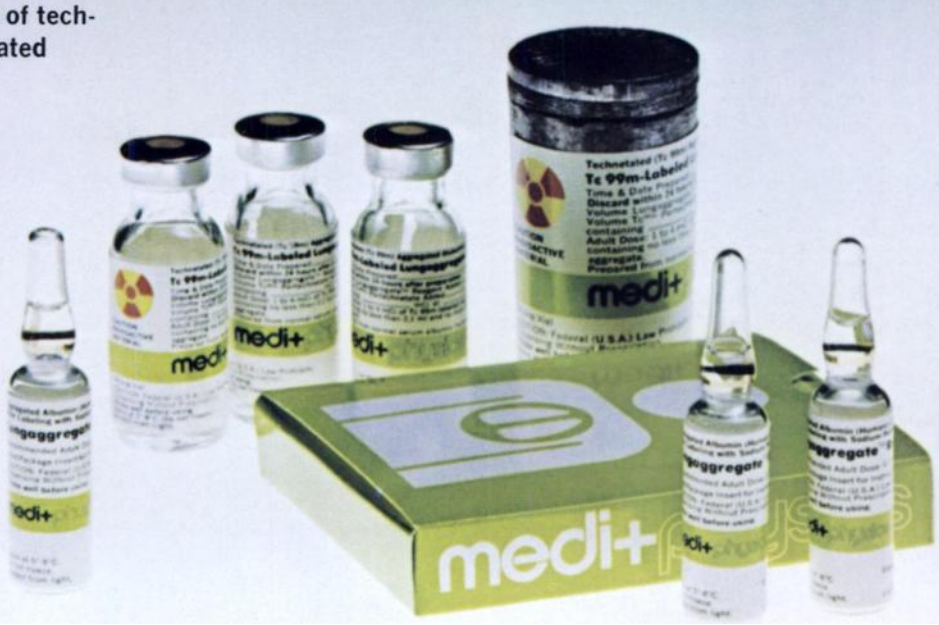
Left Lateral

Lung images demonstrating a perfusion defect after intravenous injection of 3.5 mCi of technetated (Tc 99m) aggregated albumin (human).

Counts collected—413,000 to 419,000 per view.

Lung imaging time—160 seconds on posterior and lateral views. 208 seconds on anterior view.

(Complete data are available on request from Medi+Physics)



Lungaggregate™ Reagent

Aggregated Albumin (Human)

1. Name:
Aggregated Albumin (Human) for Intravenous Injection after Labeling with Sodium Pertechnetate Tc 99m.
Lungaggregate™ Reagent.

2. Description and Ingredients:
Lungaggregate™ Reagent is prepared from albumin from human plasma nonreactive when tested for hepatitis associated (Australia) antigen (less than 1.0 mg of human serum albumin per ml), stannous chloride (less than 0.38 mg/ml) in phosphate buffered sodium chloride solution at pH 5.0 to 6.0, and 2% benzyl alcohol added as a preservative. Each lot of Lungaggregate™ Reagent meets the following specifications prior to release.
2.1 Size distribution—over 90% of the counted particles have a mean diameter of 10-90 μm, less than 1% have a mean diameter over 100 μm and no particles observed have a mean diameter greater than 150 μm.
2.2 Particle density—300,000 to 600,000/ml
2.3 Apyrogenic
2.4 Sterile
2.5 pH—5.0 to 6.0
2.6 Passes general safety test
2.7 Labeling and distribution: Labeled product meets the following criteria:
(a) Less than 10% of activity is free pertechnetate;
(b) Over 80% of injected activity is in lungs, and the lungs to liver and spleen activity ratio is greater than 10/1 at 3 to 5 minutes after intravenous administration in rats.

3. Method of Preparation:
(NOTE! Aseptic technique must be used in the following preparation to minimize the possibility of contamination with micro-organisms.)
3.1 Record on the mixing vial label, shield label, and record labels the time and date of preparation, the volume of Lungaggregate™ Reagent and Tc 99m volume, activity, and calibration time to be added to the mixing vial.
3.2 Shake the aggregate ampul vigorously to suspend particles.
3.3 Open the ampul.
3.4 Withdraw (very slowly) 1.5 to 2.0 ml of aggregate from the ampul using a syringe with an 18 to 21 gauge needle.
3.5 Inject (very slowly) the syringe contents into the mixing vial.
3.6 Wrap the mixing vial in an absorbent paper disc and place it in the lead shield. Place the completed shield label on the lead shield.
3.7 Add 0.5 to 2.0 ml of oxidant-free Tc 99m-pertechnetate in saline into the shielded mixing vial, shake vigorously for at least 30 seconds, and incubate contents at room temperature for 30 minutes. (The total amounts of Reagent and Tc 99m-pertechnetate solutions added **must be less than 3.5 ml since this is the maximum capacity of the mixing vial.** Moreover, the total Tc 99m activity used must be such that at the time of use of the product the patient dose consisting of 1 to 4 mCi activity must contain 0.1 to 1.5 ml of Reagent.) Use of Sodium Pertechnetate Tc 99m having a maximum specific concentration of 25 mCi/ml is recommended.
3.8 Retain record label as documentation for completed preparation procedure.

4. Actions (Clinical Pharmacology):
When macroaggregated human serum albumin (particle size greater than 10 μm) is injected intravascularly, it lodges in the first arteriolar-capillary bed it reaches, and the relative distribution of the macroaggregates is a measure of the relative blood flow to these vascular beds. If a particular vascular bed is occluded, as is seen in the lung following pulmonary embolization, then the tissue having a compromised blood supply fails to show accumulation of radioisotope in contrast to surrounding normally perfused tissue. Radioisotopically labeled macroaggregated albumin has thus proven useful in evaluating perfusion of the lungs and to a lesser extent other organs in which the aggregates may be introduced into their afferent blood supply.

5. Indications:
Imaging of regional pulmonary perfusion in the presence of clinically suspected regional pulmonary ischemia, such as is seen with pulmonary emboli, neoplasms and obstructive lung disease.

6. Contraindications:
The presence of large right to left cardiovascular shunts which could allow intravenously administered macroaggregates to directly enter the systemic circulation is a contraindication for the use of macroaggregates. Particulate material such as macroaggregated albumin should not be administered to patients with cyanosis or with evidence of severe restriction to pulmonary blood flow such as may be present in pulmonary hypertension of various etiologies. This agent should not be administered to pregnant or lactating women, or to patients under eighteen years of age unless the expected benefits to be gained from the study are critically judged to outweigh the risks involved.

7. Warnings:
Whenever protein-containing materials such as Tc 99m labeled Lungaggregate™ are administered to man, especially when administered repeatedly, there is a possibility that hypersensitivity reactions may occur. Epinephrine, antihistamines and corticosteroid drugs should be readily available whenever this product is administered.

8. Precautions:
The precautions associated with the use of Tc 99m labeled Lungaggregate™ are thought to be the same as those associated with the use of radioactive material with similar physical and chemical properties. Appropriate procedures should be used to minimize exposure to the patient and all attending personnel. Thus, the dose of the Tc 99m labeled Lungaggregate™ used in a given patient should be the minimum necessary to achieve useful information for the clinically indicated study and for the kind of radiation detection devices employed. To insure the integrity of the labeled soft macroaggregate of this agent, it is emphasized that needles of 18 to 21 gauge should be used for preparing or administering this diagnostic agent. The injection should be made slowly to prevent disruption of the aggregates. In any case, once the preparation is withdrawn from the vial it should be administered promptly to avoid settling and clumping of the aggregate particles. One should also avoid aspirating blood and tissue fluids into the syringe in a manner which could promote the formation of small clots. Some users have successfully circumvented this latter situation by infusing a small amount of sterile saline intravenously and then giving the Tc 99m-Lungaggregate™ preparation through the patent I.V. needle. On the other hand, one should not use an ongoing intravenous infusion as a portal for administering this agent because of the well known tendency of fibrin accumulations in and about such intravascularly placed devices. Only authorized physicians and personnel who have adequate training in the proper use and safe handling and disposal of radiopharmaceuticals should use this product.

9. Adverse Reactions:
Although no adverse reactions attributable to the reagent were reported in approximately 4,000 reported patient studies using Tc 99m labeled Lungaggregate™ Reagent (see Section 12 Clinical Studies), and while no adverse reactions are anticipated relative to its use, one cannot completely discount the possibility of such an occurrence. Hypersensitivity to the agent and intolerance to any degree of particle-induced pulmonary capillary blockade may possibly result in adverse reactions. Fatal reactions have been reported following administration of other preparations of macroaggregated human serum albumins [1, 2, 3].

10. Dosage and Administration Procedure:
10.1 Administer 1 to 4 mCi of Tc 99m labeled macroaggregated albumin in a volume containing no less than 0.1 ml and no more than 1.5 ml of the Lungaggregate™ Reagent to a patient in a single study.
10.2 Prepare patient for the study and for intravenous injection before withdrawing dose from the mixing vial.
10.3 Shake contents of the mixing vial vigorously just before removing aliquot intended for patient use.
10.4 Withdraw (very slowly) the calculated dosage and volume from vial into a syringe using an 18 to 21 gauge needle.
10.5 Inject dose intravenously promptly after withdrawal from vial. Avoid drawing blood or tissue fluids into syringe in a manner which would enhance clotting.
10.6 Image immediately after I.V. injection.
10.7 Store remainder of preparation in the mixing vial under refrigeration (Do Not Freeze), protected from light. It may be used up to 24 hours after time of preparation. Discard after 24 hours from time of preparation.
10.8 Disposal methods must comply with prevailing drug and radioactive waste disposal regulations.

11. Radiation Dosimetry:
Based on human whole body in vivo distribution kinetics of intravenously administered Tc 99m labeled Lungaggregate™ described in Section 12, Dr. E. M. Smith* calculated the radiation dose to various organs of a standard 70 Kg man using the absorbed fraction method. The results of these calculations follow.

	Absorbed Dose in Rads	
Organ	1 mCi Tc 99m Administered	4 mCi Tc 99m Administered
Liver	0.080	0.320
Lung	0.190	0.760
Spleen	0.060	0.240
Total Body	0.011	0.044
Ovaries	0.007	0.018
Red Marrow	0.011	0.044
Testes	0.004	0.016

*Edward M. Smith, ScD., Miami, Florida

12. Clinical Studies:
Evaluation of in vivo distribution kinetics of Tc 99m activity following intravenous administration of Tc 99m labeled Lungaggregate™ to normal human subjects was performed by a quantitative evaluation of whole body scintillation scanning. The data was consistent with a kinetics model which identified 90% of the administered activity as initially localized in the lungs with a subsequent biological clearance half-time of 286 minutes or 4.77 hours; as activity cleared from the lungs, 30% of the administered activity eventually concentrated in the liver and spleen; all remaining activity had a whole body distribution pattern similar to that of pertechnetate ion. Mathematically stated, the model identifies the fractional distribution pattern of activity as follows: Lung = $0.90e^{-0.145t}$, Liver and Spleen = $0.30\ (1\text{-}e^{-0.145t})$, Whole Body distribution similar to pertechnetate ion = $0.10 + 0.60\ (1\text{-}e^{-0.145t})$ (where t = time in hours after administration of activity).
Clinical evaluation of Tc 99m labeled Lungaggregate™ Reagent in approximately 4,000 reported patients indicated that when prepared and used as directed, satisfactory imagings of pulmonary perfusion resulted. No adverse reactions have been observed that could be causally related to the administration of this agent.

13. Licensing:
Tc 99m labeled Lungaggregate™ Reagent may be used only by physicians licensed for such use. Such licensing should be obtained from the U.S. Atomic Energy Commission in AEC Regulated States and Federal medical facilities and from delegated state authorities in all other states.

Footnote:

[1] Wagner, H. N., Jr., Radiology, 91:1235, 1968.
[2] Dworkin, H. J., Smith, J. R., Bull, F. E., New England Journal of Medicine, 275:376, 1966.
[3] Vincent, William R., et al, Goldberg, S. J., Desilets, D., Radiology, 91:1181-1180, 1968.

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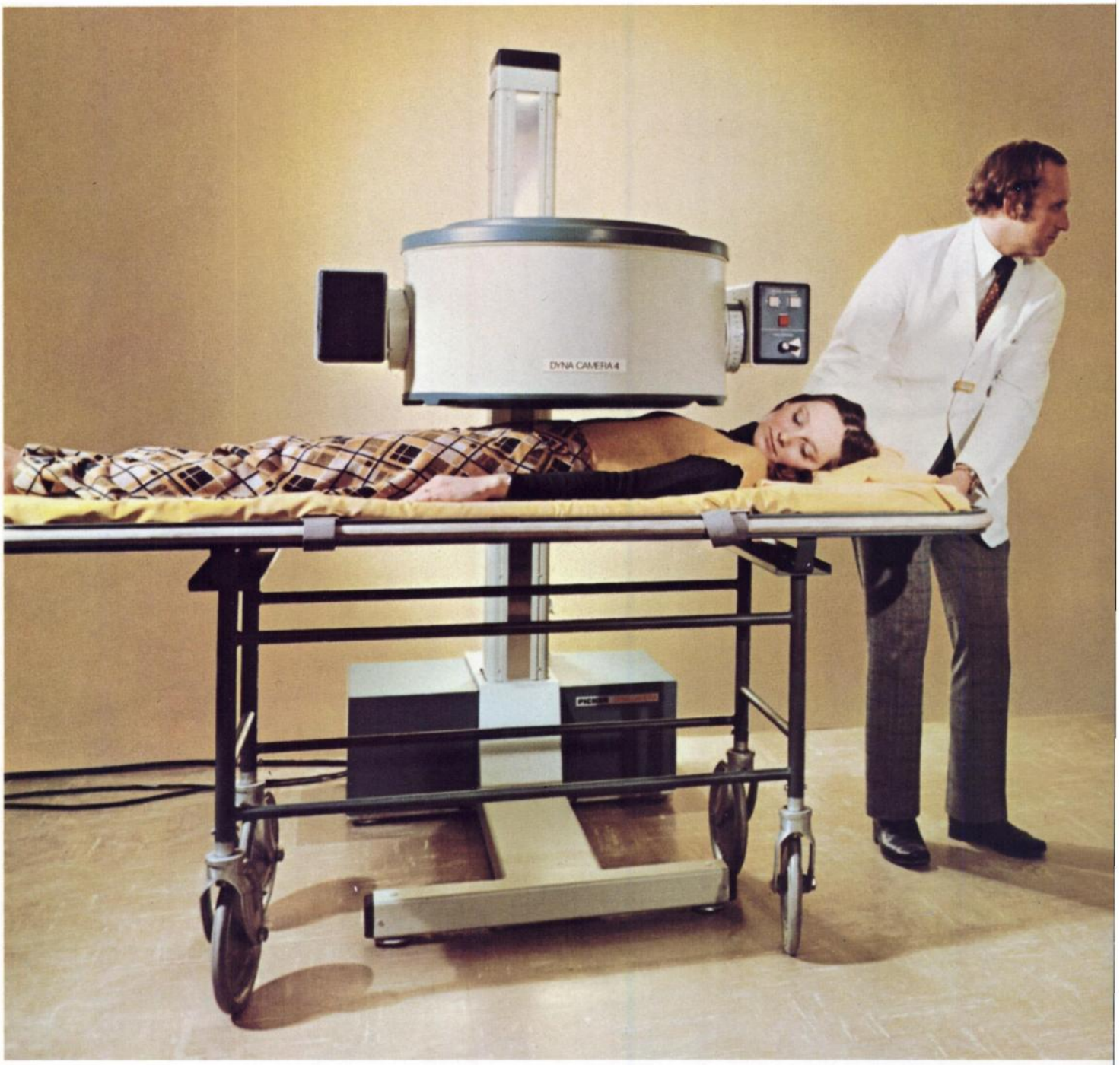

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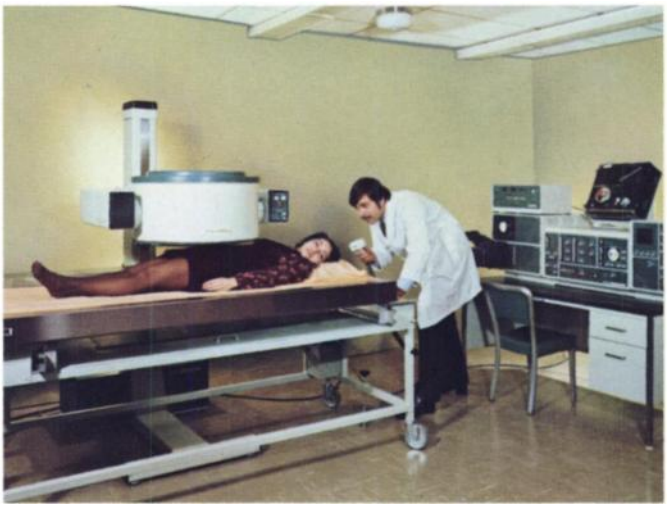

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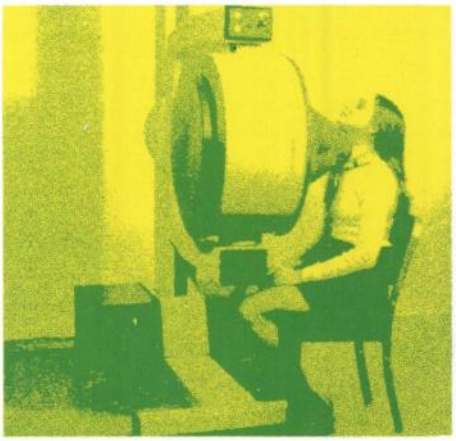

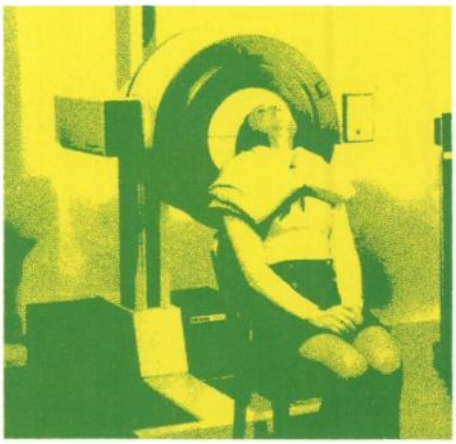

Dyna Camera 4

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☐ High-speed ultra-low dead time using analog buffering and delay line techniques.
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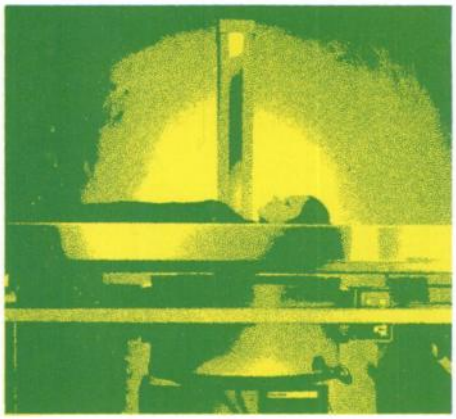

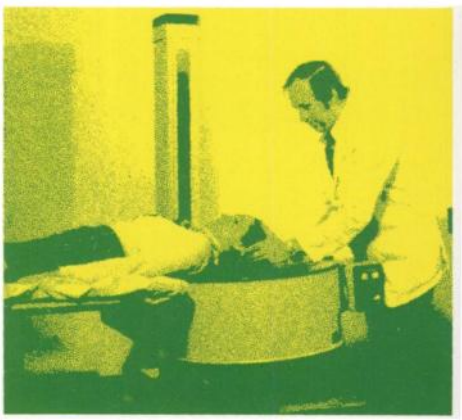

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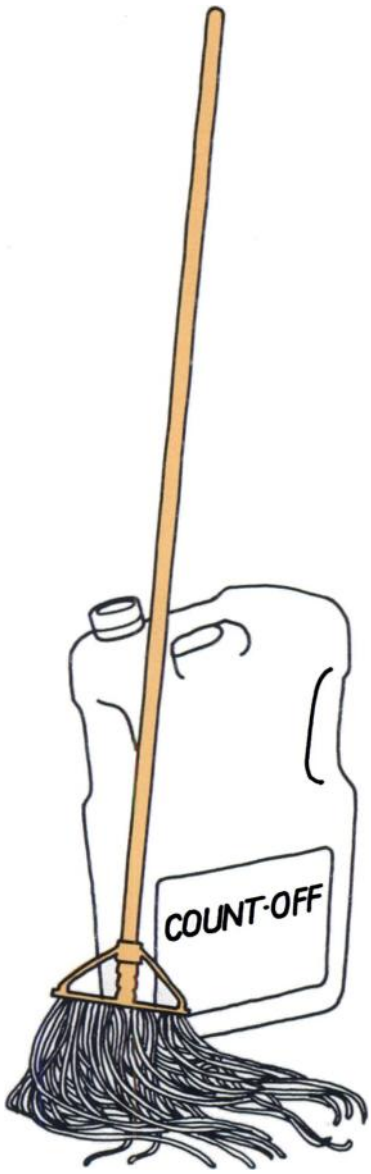

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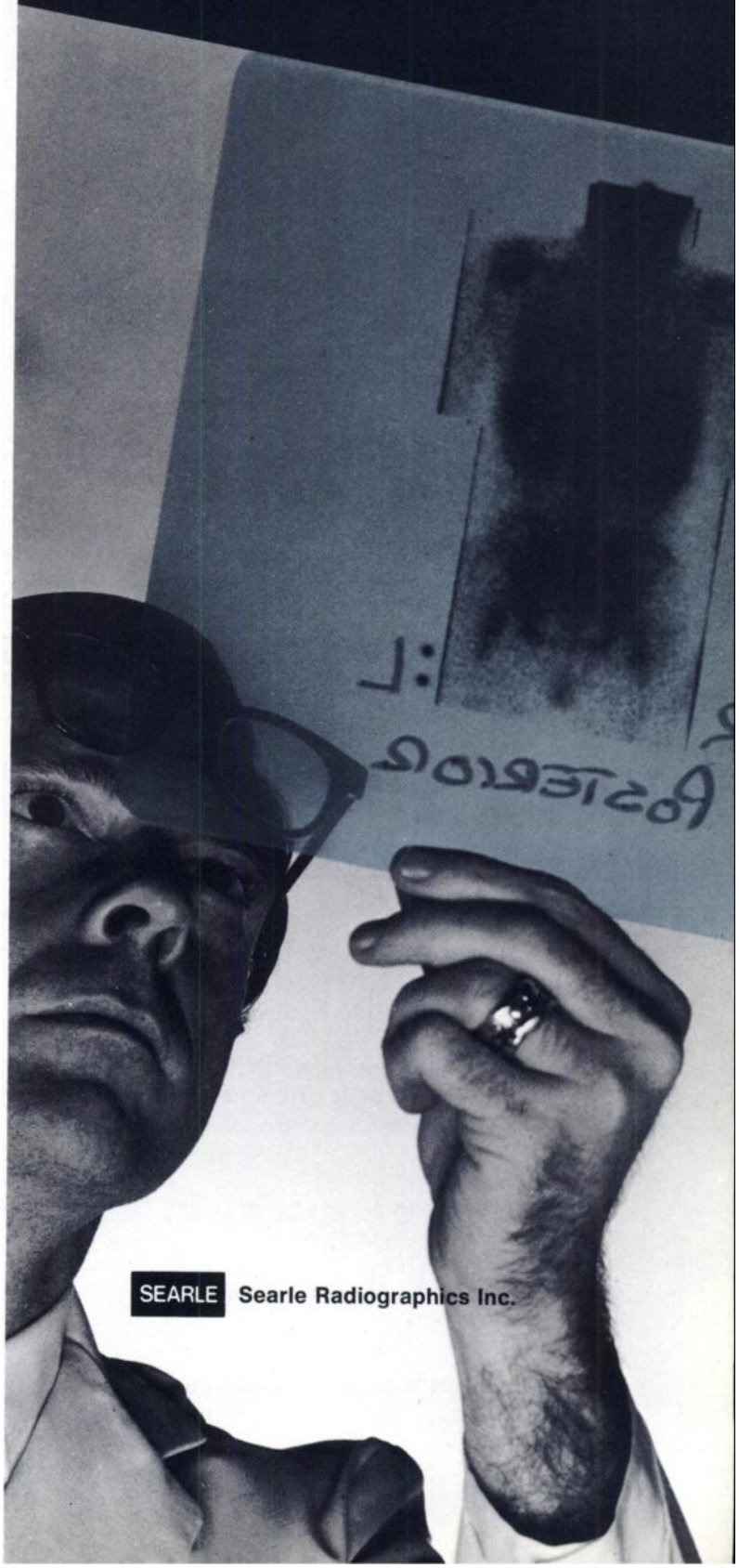

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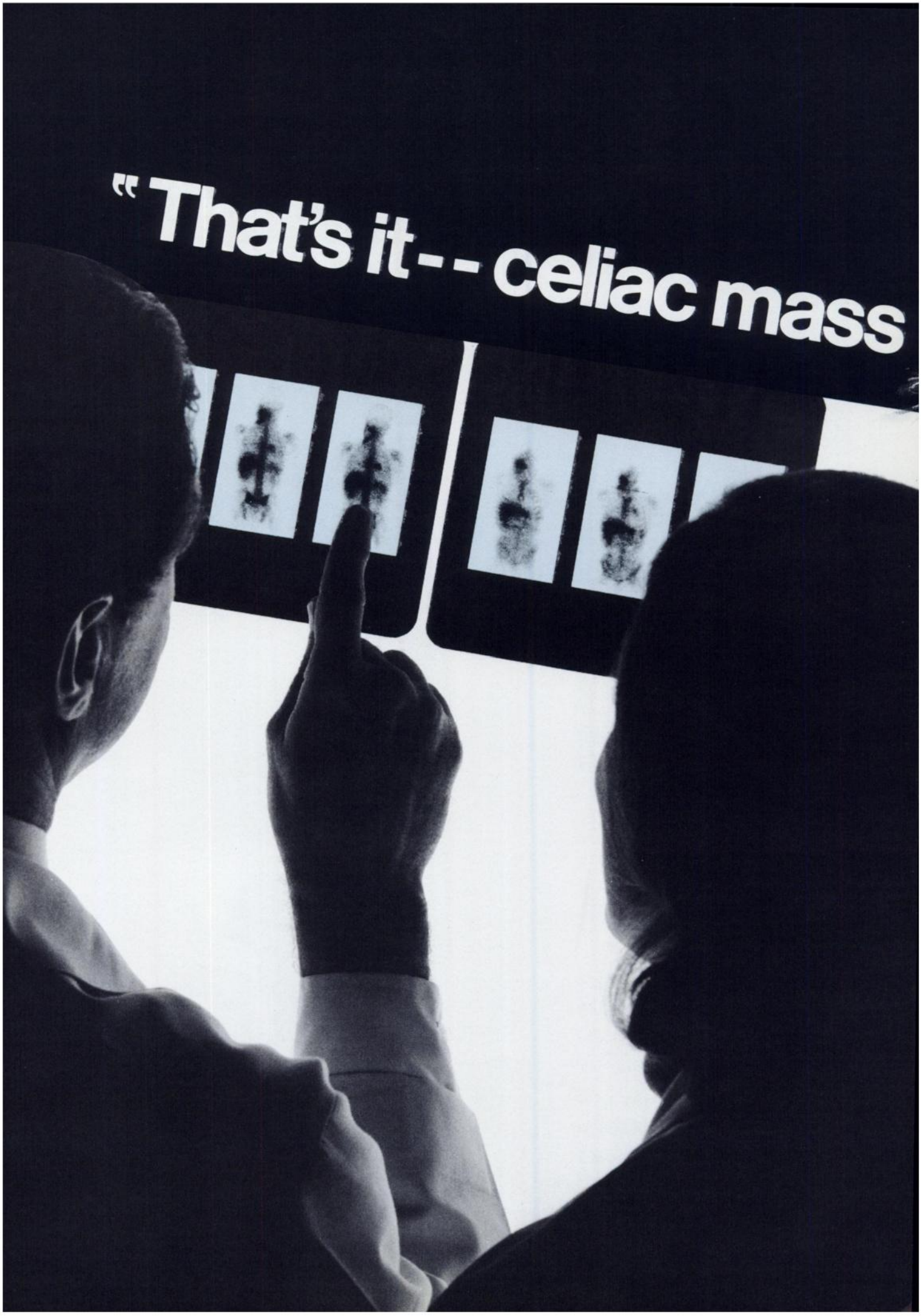
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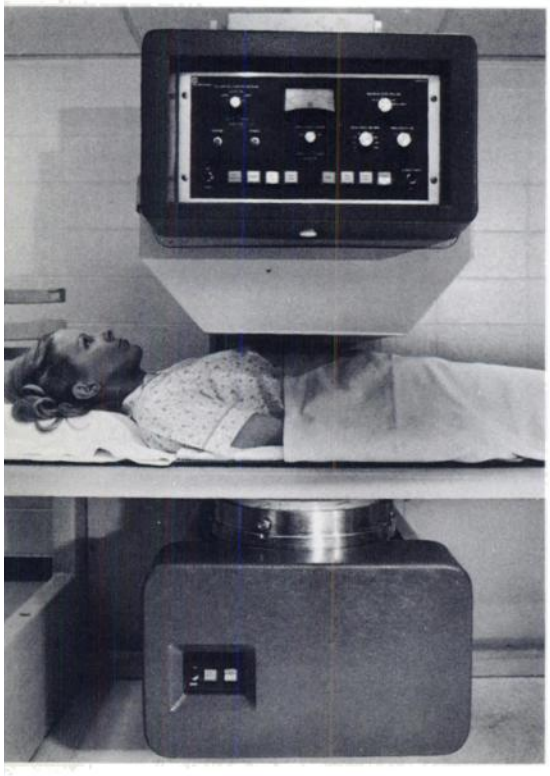
(... the tomo scan also shows a left supraclavicular lesion which was not observed with conventional scanning techniques.)



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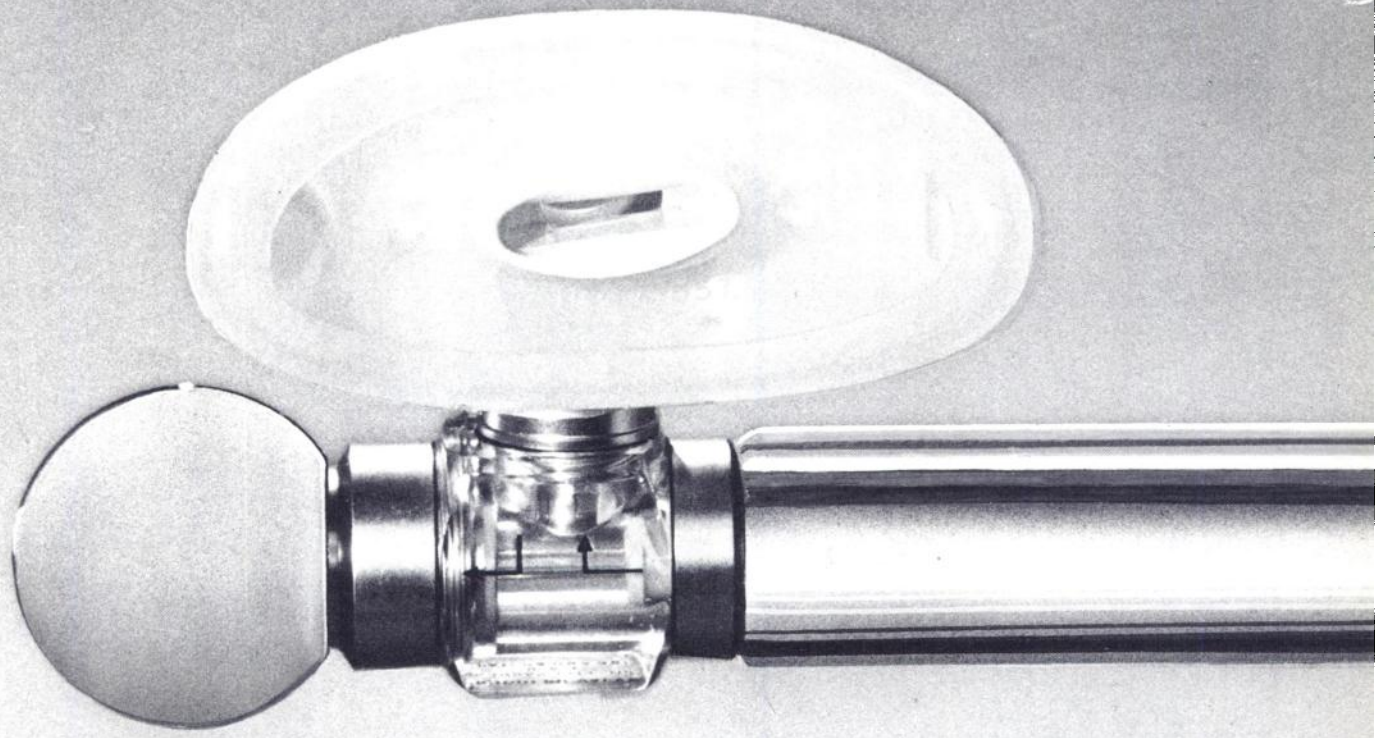

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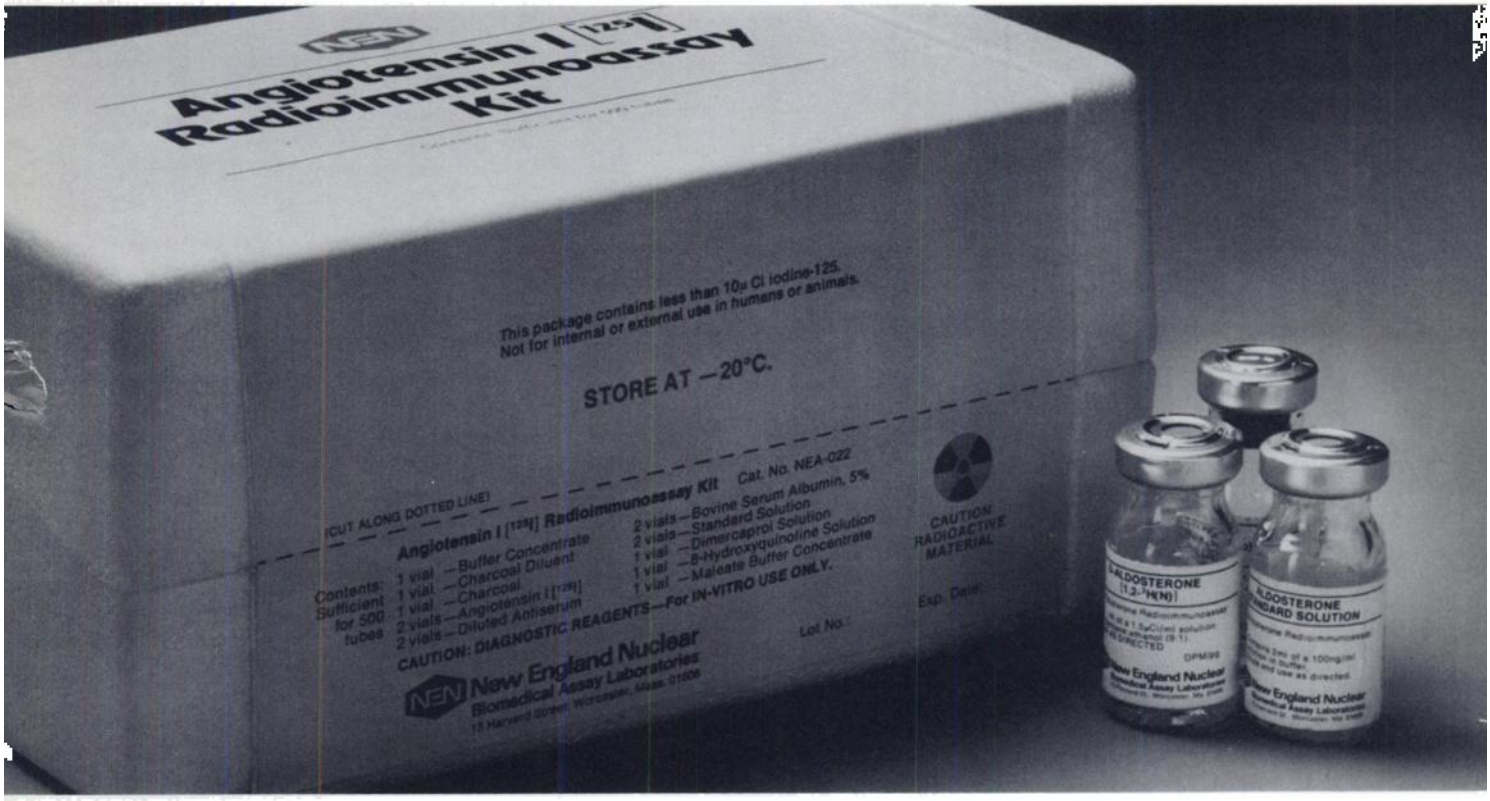

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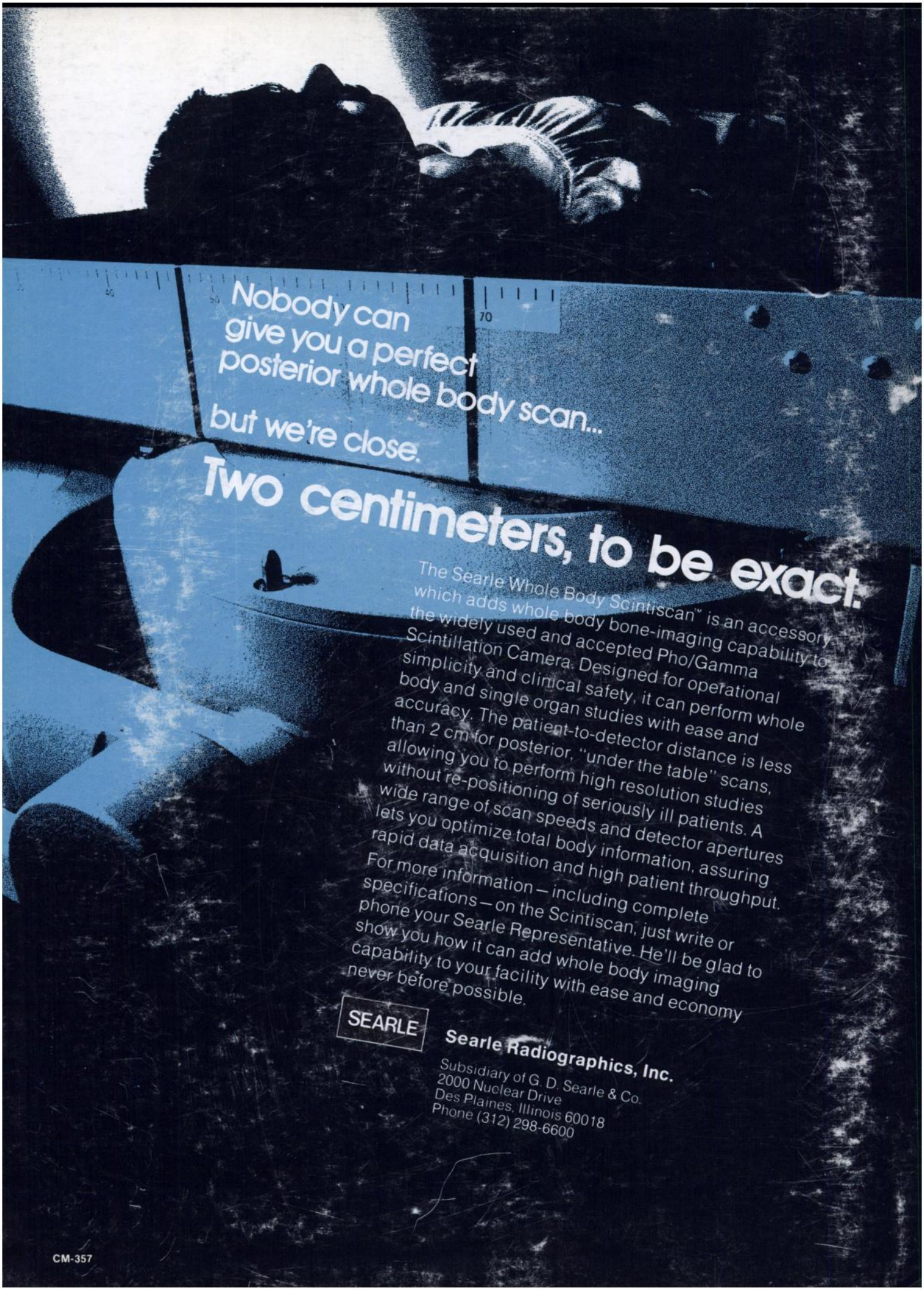

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