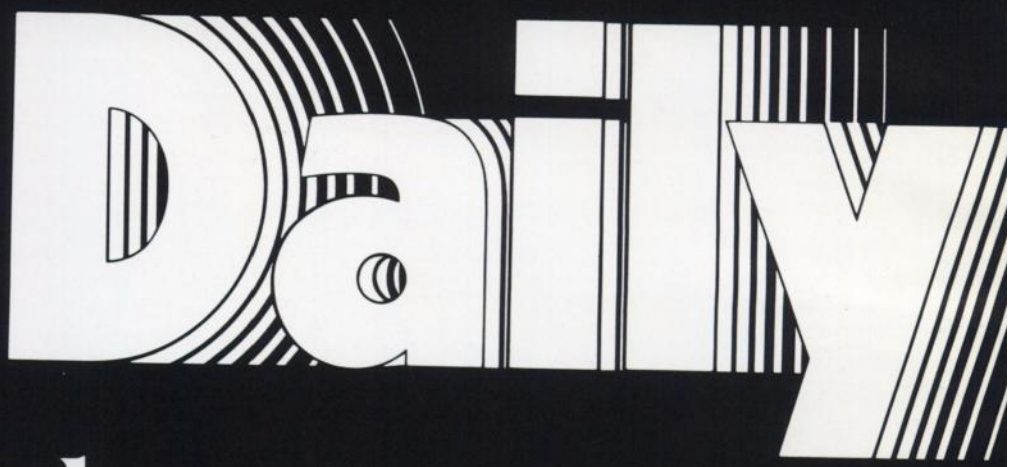
MEDI+PHYSICS'



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Medi+Physics has developed a network of service laboratories throughout the country. They can deliver the radiopharmaceuticals you need in a day or less.

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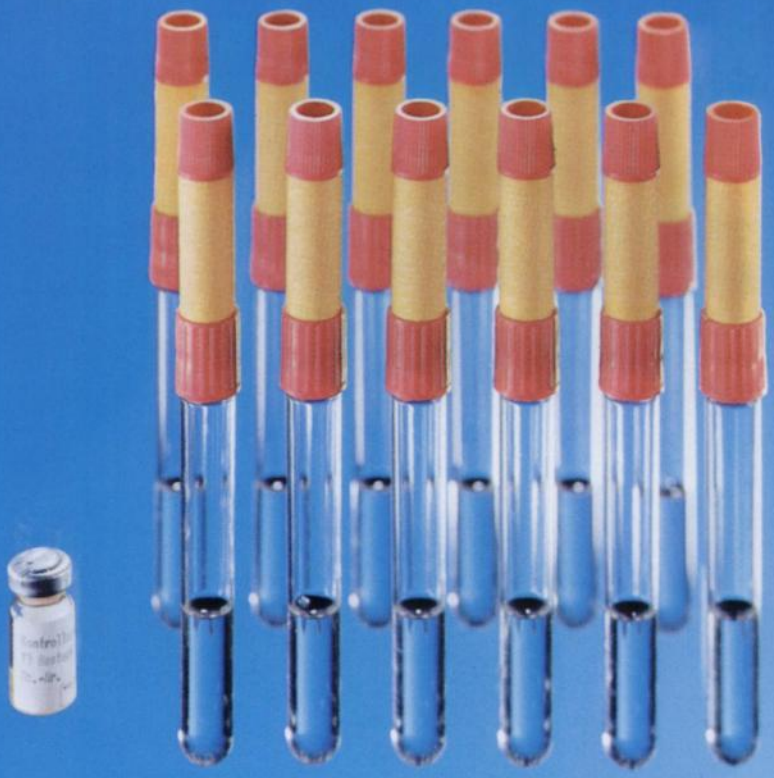
easy — safe — rapid
Test kit for the determination
of TBC (Thyroxin-binding cap acity)
in serum



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

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12 calibrated tubes with 3,4 ml Thybon® each (J-125)-solution
Total activity: 3 uCi J-125
Preservative: 0,02% Sodium azide 12 adsorption tubes
1 ml standard serum of defined TBG capacity
The reagents are exclusively for in-vitro capacity
Order No.: J5113, 1 package (12 tests)

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store protected from light
in the refrigerator at +4 — +6° C

STABILITY
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on the package.

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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.

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

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

INTERTECHNIQUE

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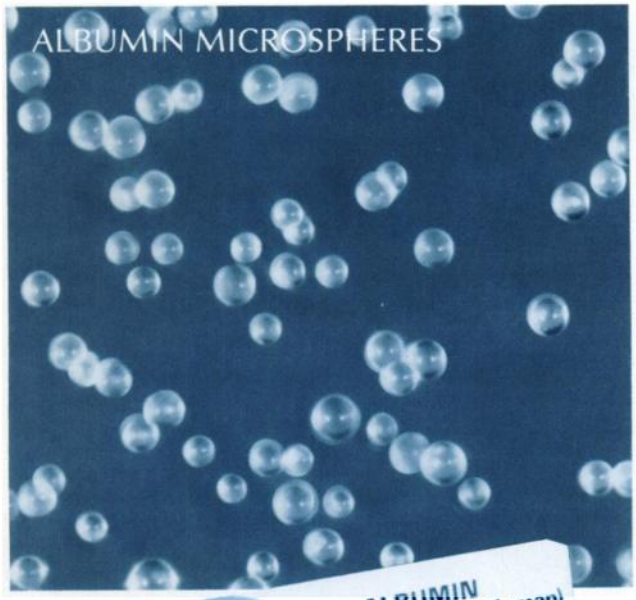
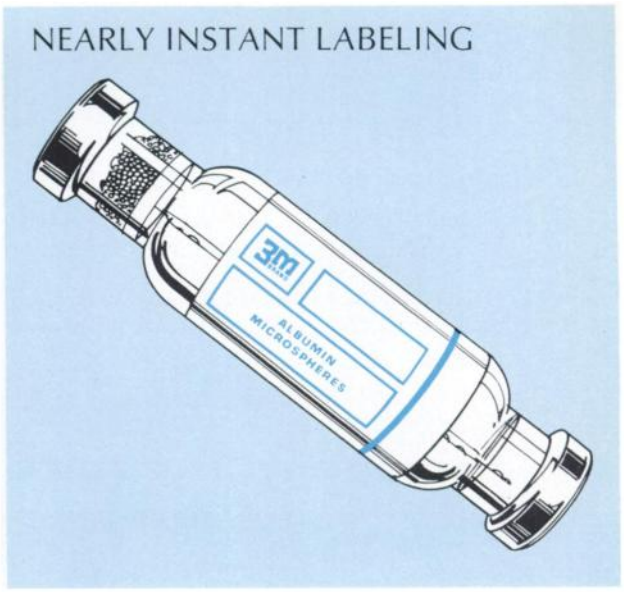
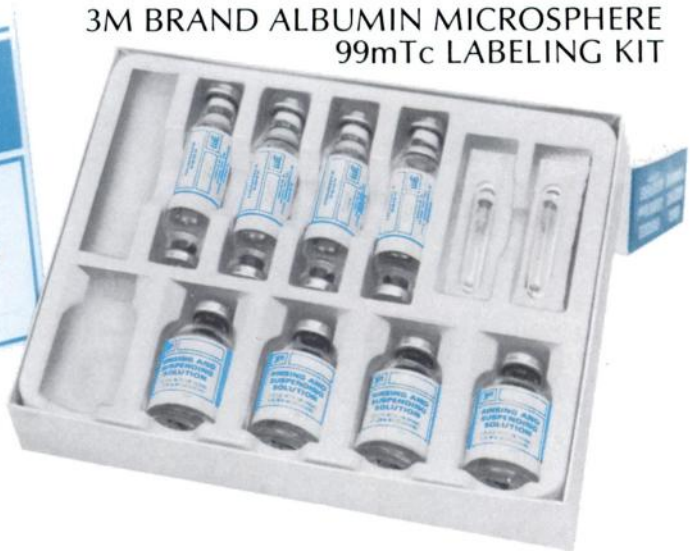
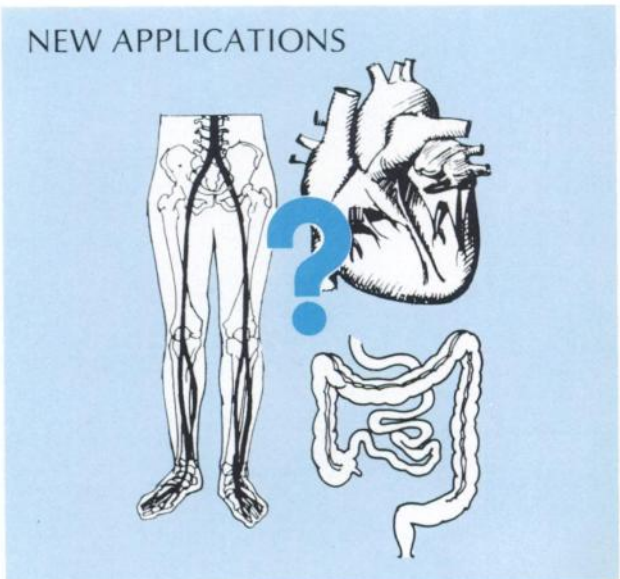

ALBUMIN MICROSPHERES


NEARLY INSTANT LABELING
3M
ALBUMIN MICROSPHERES


5 UNIT PACKAGE
ALBUMIN MICROSPHERES (Human)
FOR LUNG IMAGING
(15-30 MICRON)
3M BRAND
ALBUMIN MICROSPHERE
99mTc LABELING KIT


3M BRAND ALBUMIN MICROSPHERE
99mTc LABELING KIT


QUALITY
AND
SERVICE
SPECIFICATIONS


NEW APPLICATIONS
?

designed with CONSISTENCY IN MIND

^{99m}Tc ALBUMIN MICROSPHERES

ALBUMIN MICROSPHERES

Perfectly spherical, 3M Albumin Microspheres are uniformly sized to 15-30 microns in diameter. This uniformity, coupled with an extremely low tendency to agglomerate, results in truer images of lung perfusion — this means no hot spots or extra-lung activity. Each Albumin Microsphere is a single homogeneous sphere of albumin that won't disintegrate in the vial or syringe. Yet, microspheres readily clear from the lung. Pulmonary clearance half-times are long enough for multiple view imaging but are still short enough to allow daily imaging.

QUALITY AND SERVICE

These concepts, synonomous with the 3M name, are included with each Microsphere kit.

You can expect *quality* and consistency because our strict production checks and doublechecks assure conformance to 3M's high standards.

You get *service* because we provide you with qualified, experienced people to answer any question.

If you have a question, need technical assistance or would like to have a representative call, please dial our toll-free number. (800-328-1671)

NEARLY INSTANT LABELING

Because of our continued research and development, Microspheres can now be labeled with technetium in just six minutes — only a minute or two longer than kits called "instant".

Not only has the labeling time been cut, but the labeling efficiency has been raised. You now can expect about a 90% tag, and unbound activity is rinsed away in the process. You can't do that with other instant kits.

Expiration date is now *9 months* after date of manufacture, another result of our continued research.

NEW APPLICATIONS

Lung imaging may only be your first application for Microspheres. Investigators are now also exploring their use in radionuclide venography and perfusion imaging of the heart, the legs, and the bowel. What will be your next use for Microspheres?

FOR DETAILED INFORMATION ABOUT MICROSPHERES WRITE:

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TOLL FREE (800)328-1671

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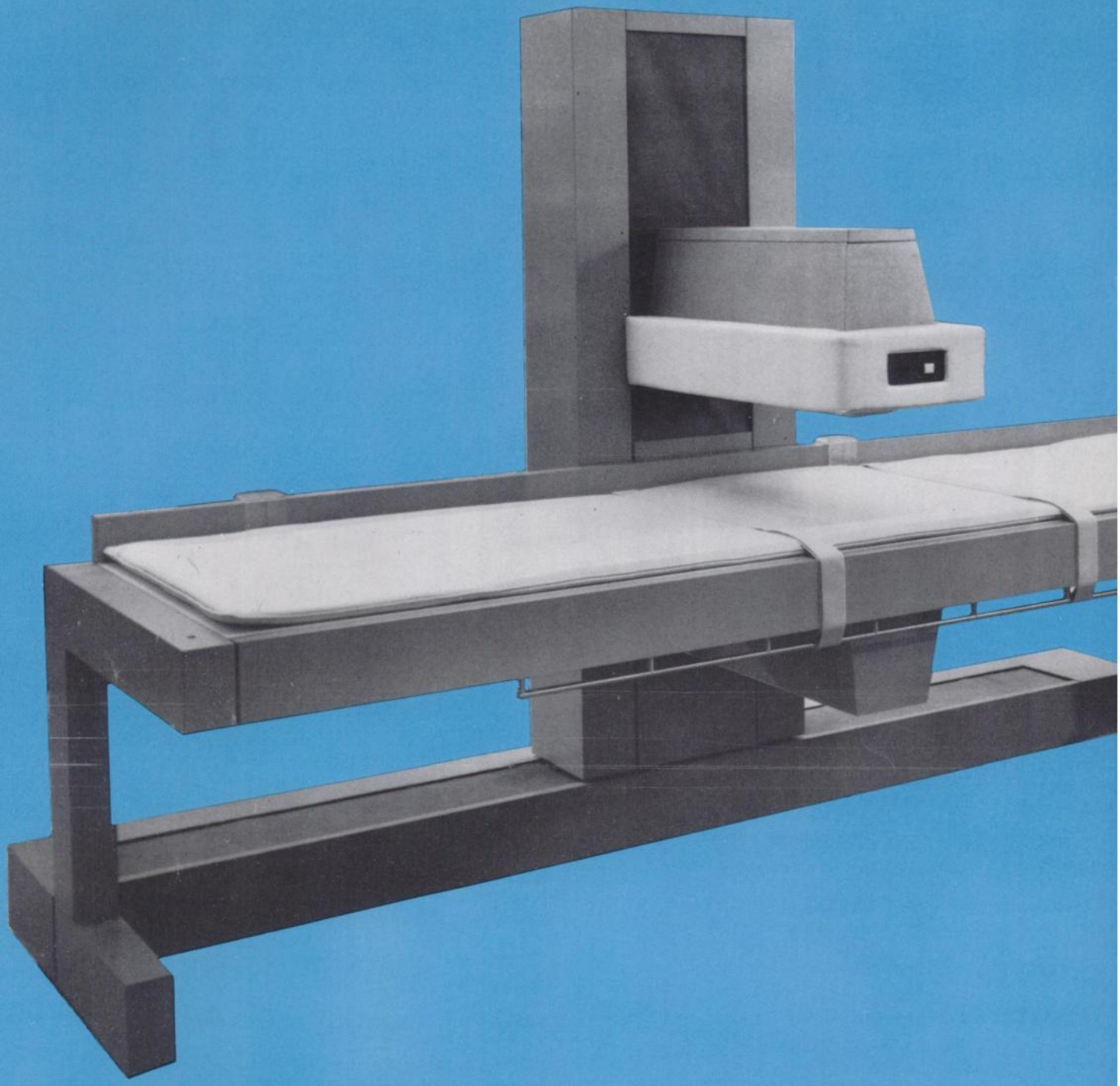


Cleon Corporation's new Whole-Body Imager, now in clinical operation, makes whole-body and organ imaging *more informative* for the clinician, *more productive* for the hospital, *more comfortable* for the patient, and *simpler* for the technician. Here's how:

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

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

A Quiet Revolution in Whole-Body Imaging

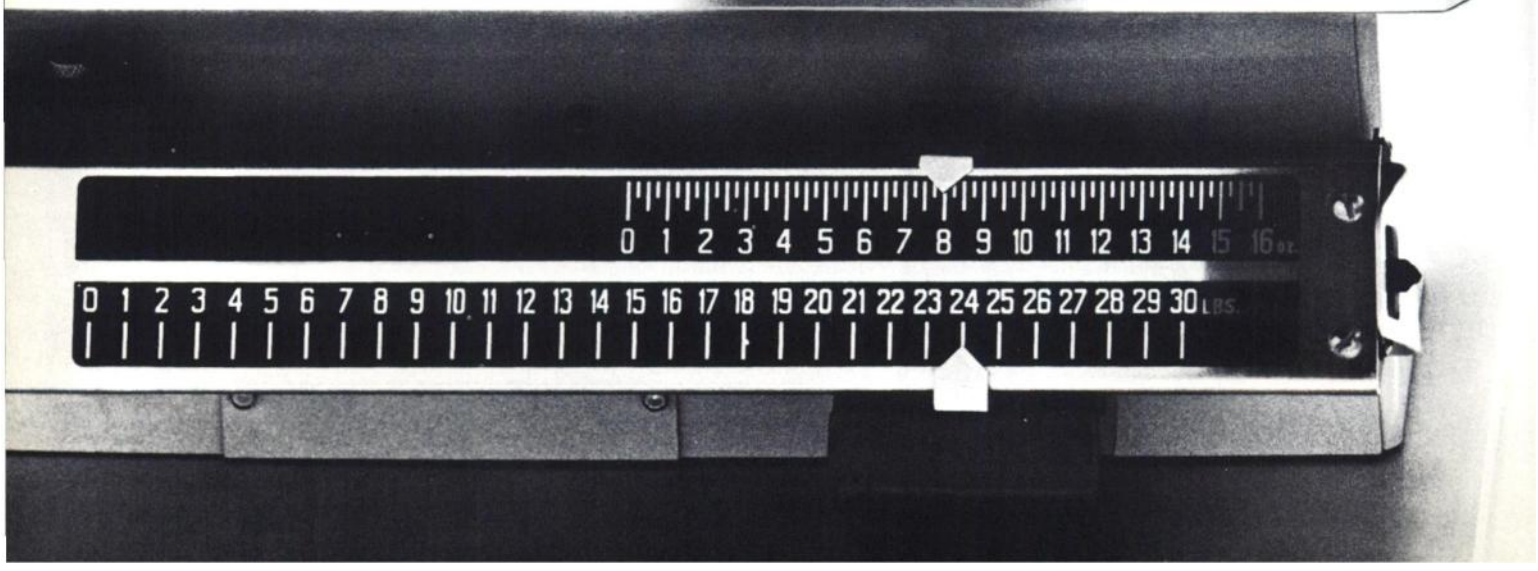
count density; video magnification of selected image areas. Controls are few and simple; set-up time is minimal; technicians can learn to use the equipment on the day it's installed.
For technical specifications, clinical data, price and delivery information, call or write:

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

New from Squibb

Minitec™ (Technetium 99m) Generator

Made small to make sense



Minitec™ (Technetium 99m) Generator FROM SQUIBB

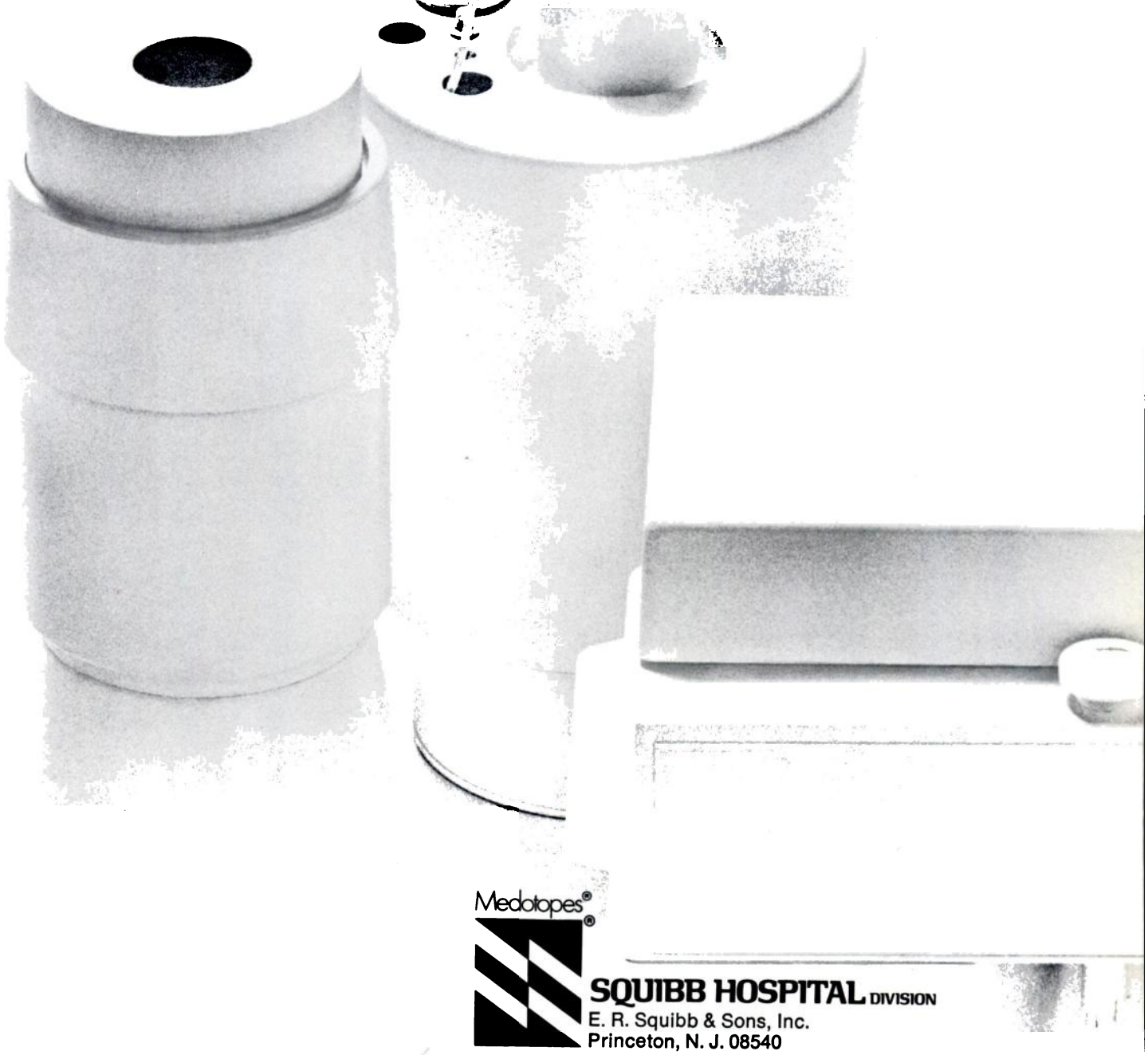
MINITEC™ (Technetium 99m) GENERATOR makes sense: ^{99m}Tc in your lab when, where and how you want it.

Virtually instantly. Sets up in seconds, elutes in 3 minutes.

Conveniently. Small, light, complete high-potency generator. Weighs only 24½ pounds, measures less than 5″ in diameter, under 8½″ high. Occupies minimal laboratory bench space.

Highly concentrated—designed for safety. High shielding-to-activity ratio; 1⅝″ of lead surrounds the column. Top access ports permit storage with constant shielding. Generator is prepared with fission product moly. Yields sterile, non-pyrogenic eluate. High-concentration eluates yield maximum flexibility. MINITEC GENERATOR is available in 50, 100, 200, or 300 mCi potencies, delivered Monday AM, precalibrated through Thursday. A compact, high-activity generator designed for user protection.

New MAXI-SHIELD™ makes added protection part of the system. Assemble base, cap and interlocking half rings on site to add 1½″ of extra lead protection. Only the cap is removed for elution.



Medotopes®

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

See following page for Brief Summary.

Made small to make sense

Minitec™ (Technetium 99m) Generator

BRIEF SUMMARY

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.

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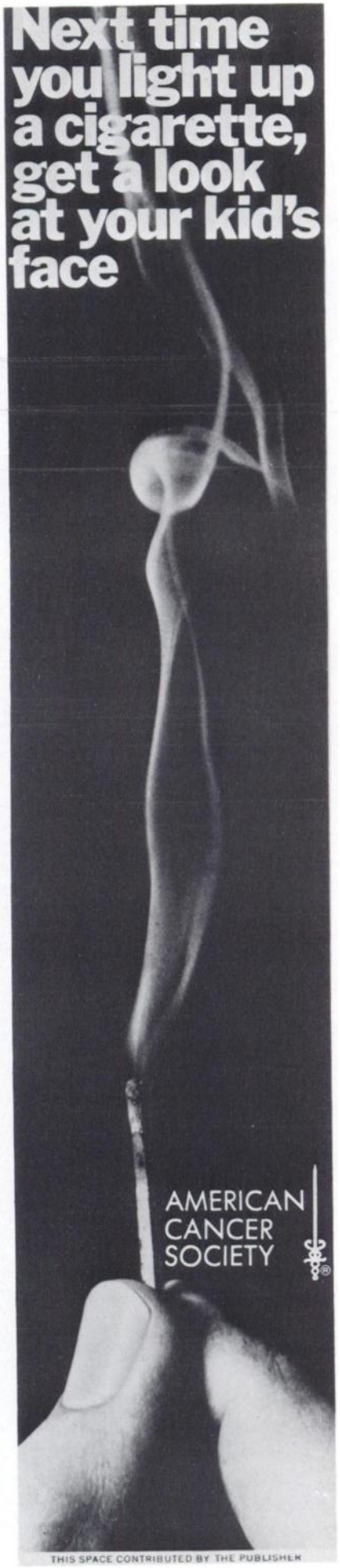
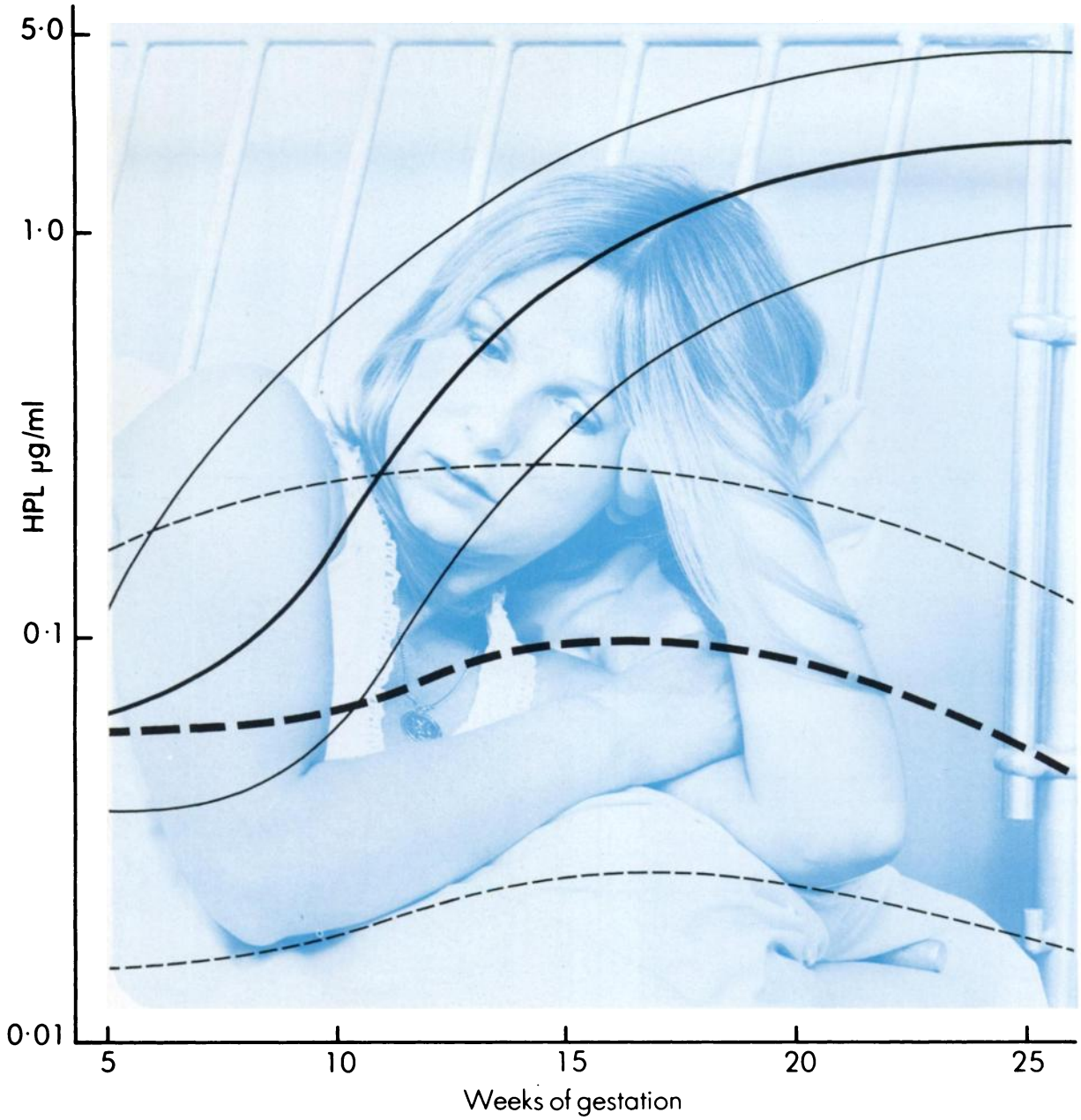
H604-040



Early warning or false alarm?



In cases of vaginal bleeding in early pregnancy it is frequently impossible on clinical grounds alone to distinguish between those patients who will abort and those who will proceed to term.

It has been shown that the assay of human placental lactogen (HPL) in maternal serum can often make this distinction.[1] Patients with lower than normal levels usually went on to abort during their first admission, whereas those with normal levels were likely to continue successfully to term. Thus, the HPL assay "can indicate those women in whom abortion is inevitable and could be used to reduce substantially the length of hospital stay in this common complication of early pregnancy."[1]

Reference Brit Med J, **3**, 799-801, 1972.

Human Placental Lactogen

a rapid, reliable test of placental function

* no 24-hour collection of urine
* serial estimations easily performed
* no risk to either patient or foetus

Now available in kit form: HPL Immunoassay Kit (IM.68)

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SNM CENTRAL CHAPTER

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October 17 - 19, 1974

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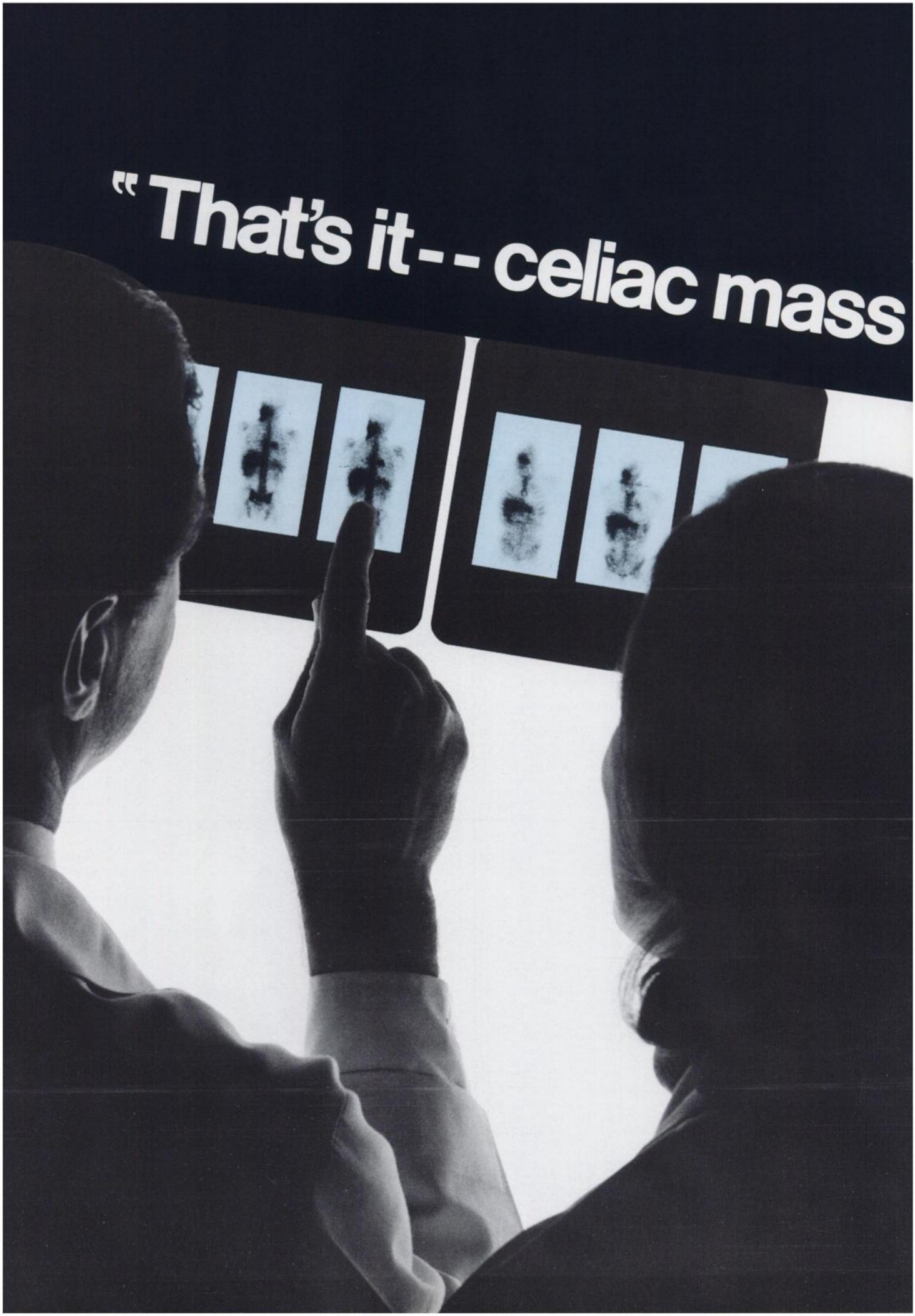
Three days of teaching sessions, invited and proffered papers, as well as commercial and scientific exhibits will cover all aspects of nuclear medicine for the physician, scientist, and technologist.

For details on submitting abstracts contact:

MARVIN GOLDBERG, M.D.
Division of Nuclear Medicine, Box 382
University of Minnesota Hospitals
Minneapolis, Minn. 55455

For commercial exhibit space, please contact:

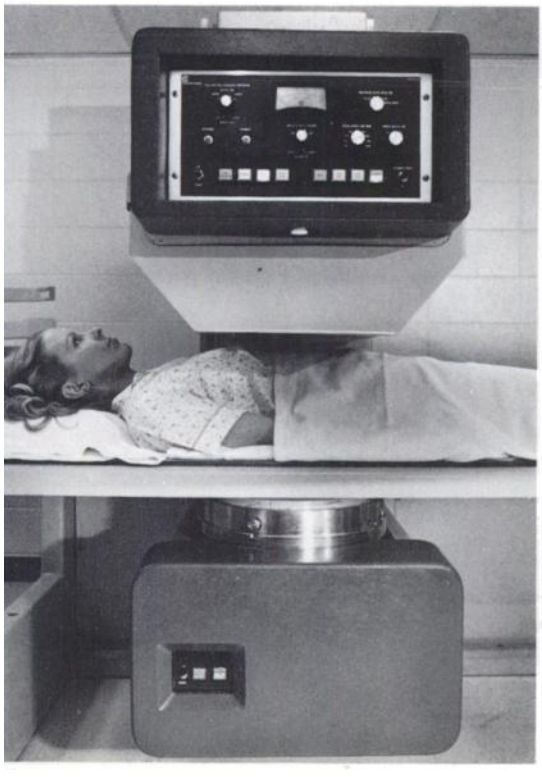
CHRISTA FOSTER
Society of Nuclear Medicine
475 Park Avenue South
New York, N.Y. 10016


"That's it--celiac mass

when diagnosis
is in doubt,
PHO/CON
HELPS CONFIRM

confirmed by PHO/CON.™"

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



PHO/CON — the new simultaneous multiplane imaging device — gives your facility unique diagnostic advantages. It can confirm tentative diagnoses suggested by other imaging methods, and can often provide definitive visualizations when other methods cannot.

A significant advantage of the PHO/CON is that it gives you up to six anterior and six posterior tomographic images from one scan, each readout being sharply focused on a different plane in the subject. Thus, lesions which are often obscured in conventional imaging techniques can be dramatically enhanced with near constant resolution regardless of depth.

And unlike other modalities, PHO/CON is not limited to single organ imaging. It has a large 26″ x 70″ scan field, so that whole body skeletal and organ imaging can be performed when necessary. Each detector head produces six simultaneous 2″ x 2″ tomographic images on a 5″ x 7″ film, or three simultaneous 2″ x 5½″ whole body images on an 8″ x 10″ film. Minification is 5:1 to 9:1 depending on the scan area you select, 13:1 for large area and whole body.

Collimator change is quick and easy, with no heavy lifting required. Detector heads are automatically positioned to Lazy Susans for change and storage. Available are High Resolution (6 mm) low energy, Intermediate Resolution (10 mm) low energy, and Intermediate Resolution (10 mm) medium energy collimators.

As for efficiency and speed of procedure: PHO/CON has 3 times the crystal area of a dual 5″ scanner, with scanning speed up to 1000 cm/min.

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

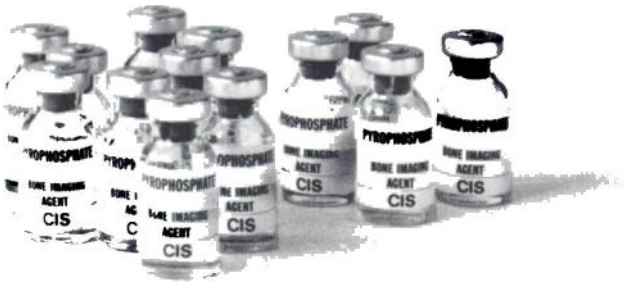
PHO/CON is ready to prove its diagnostic value in teaching hospitals and cancer clinics worldwide. For complete information on its use in your own facility, write or phone:

SEARLE

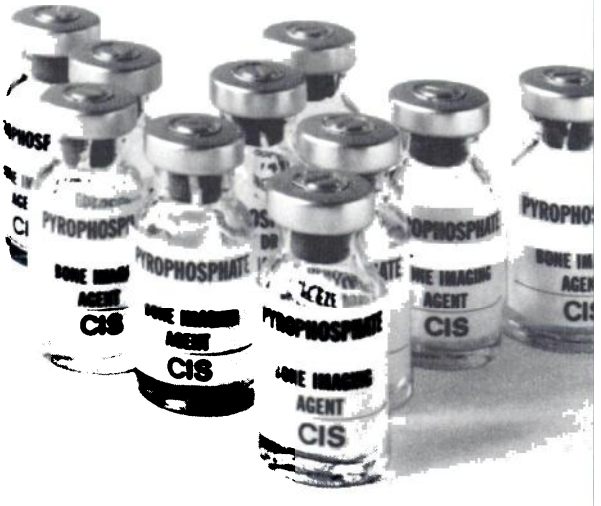
Searle Radiographics Inc.
Subsidiary of G. D. Searle & Co.
2000 Nuclear Drive
Des Plaines, Illinois 60018, U.S.A.
Telephone: 312-298-6600

REPRODUCIBLE, batch after batch.

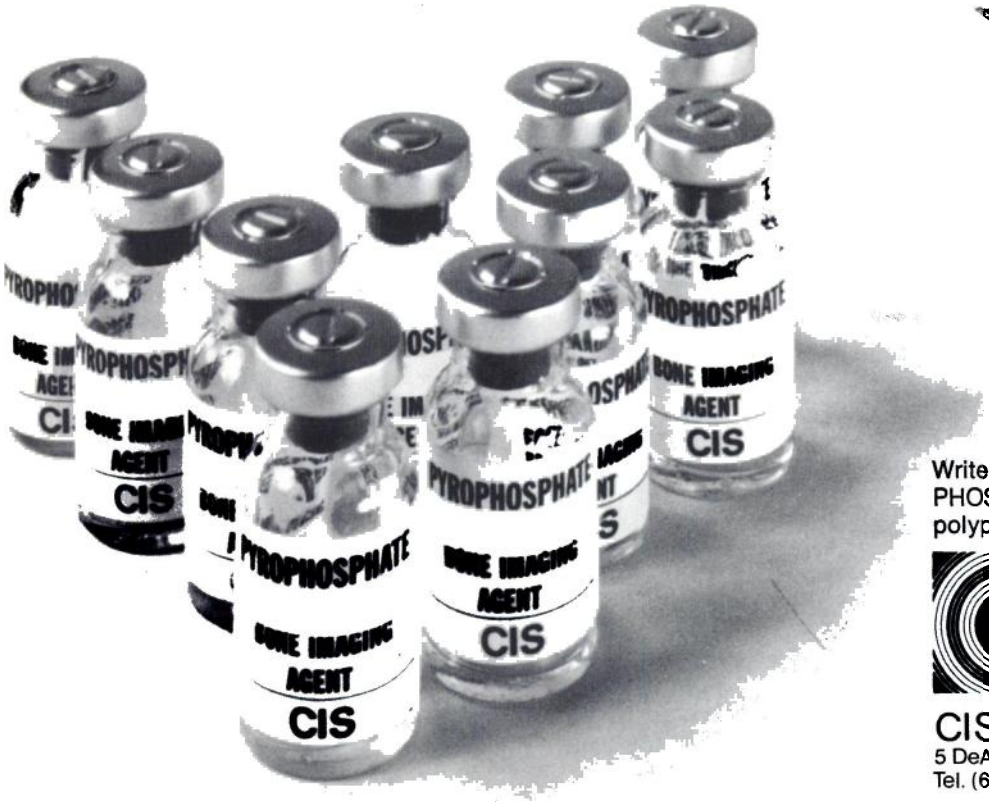
Most everyone agrees that PYROPHOSPHATE is the best bone imaging agent. Unlike diphosphonate, it is a physiologically natural compound. Unlike polyphosphate, it is a fully identifiable compound that doesn't vary from batch to batch. Reliable bone imaging is achieved whether PYROPHOSPHATE is used today or years from now.



Far safer than strontium agents, our PYROPHOSPHATE is technetium labeled. It exhibits rapid urinary clearance, low blood levels and it isn't picked up by the liver or intestines. It exhibits 90% labeling compared to the 50% to 70% labeling of polyphosphate.



B. Bock, R. Perez, C. Panneciere and R. DiPaola *J. Nuclear Med.* 14, 380 (1973); R. M. Hopkins, J. M. Creighton and D. R. VanDeripe *Ibid* 409; F. Hosain, P. Hosain, H. N. Wagner, G. L. Dunson and J. S. Stevenson *Ibid* 410; R. Marty and J. D. Denney *Ibid* 423; M. R. McKamey, E. J. Artis and D. D. Hansen *Ibid* 426.



Write or call for full information. Our PYROPHOSPHATE is comparably priced with polyphosphate and diphosphonate.

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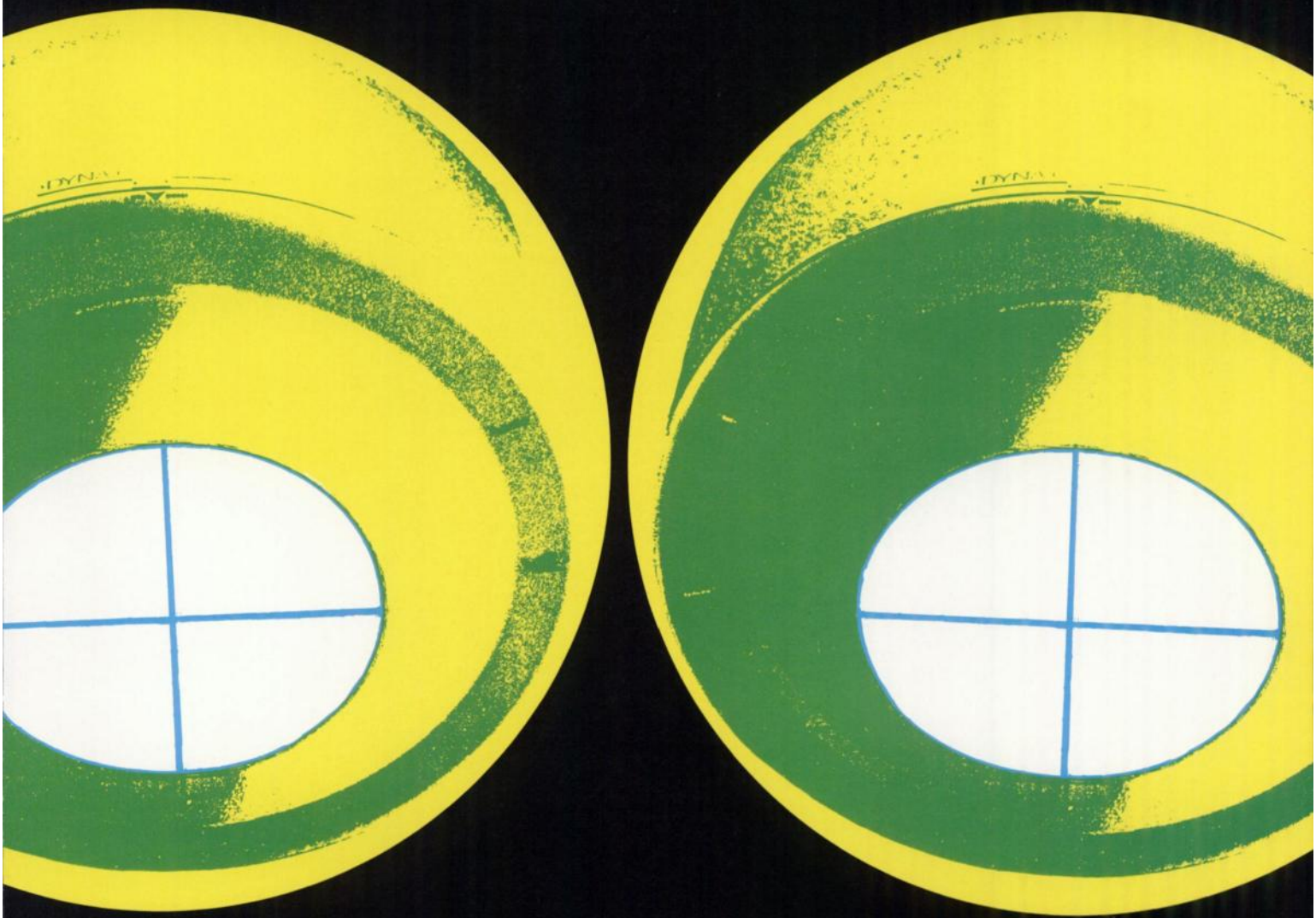
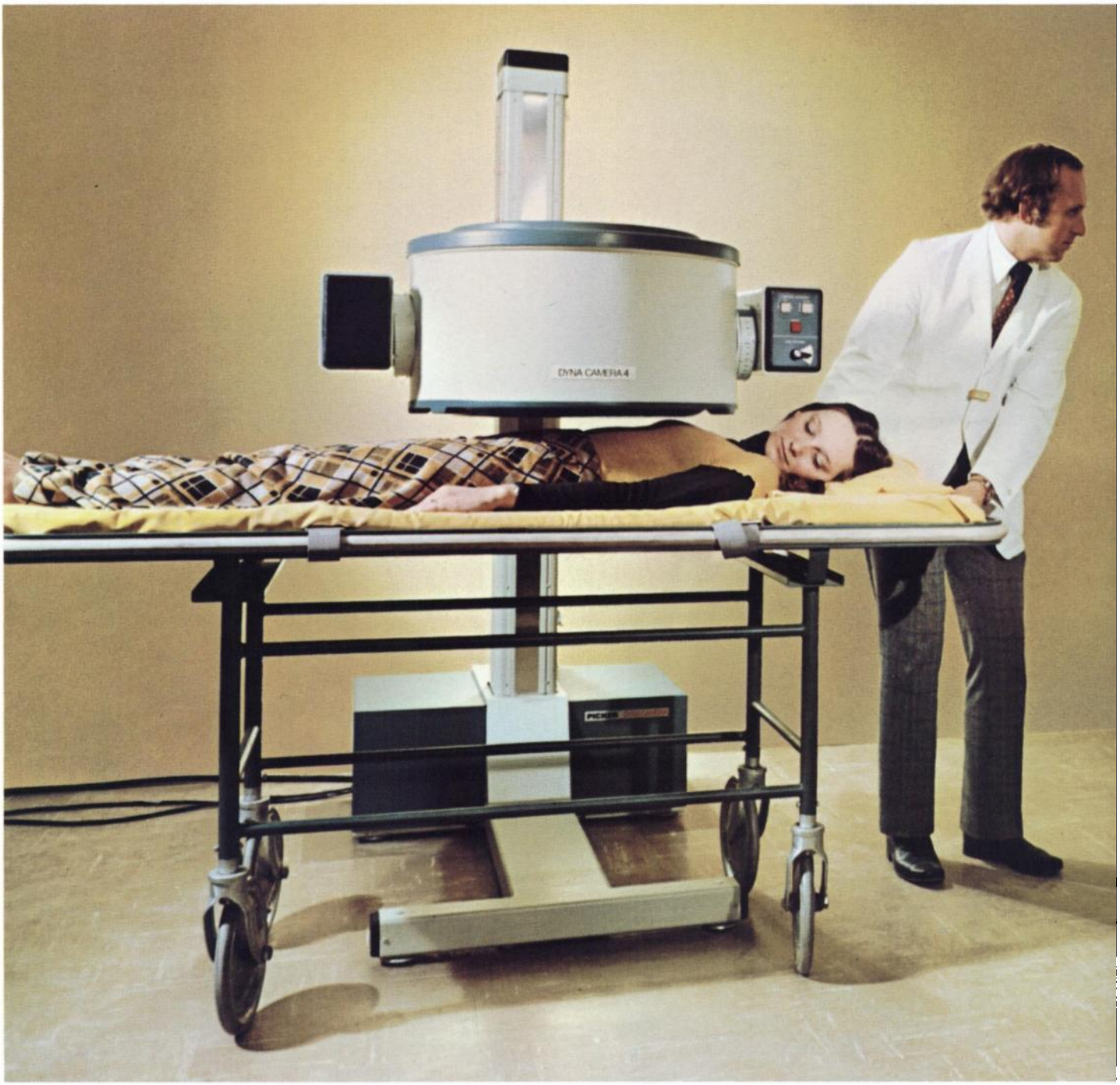
Tel. (617) 275-7120

THE DYNAMIC DUO



PICKER®
ONE OF THE C.I.T. COMPANIES

PICKER'S TWO NEW DYNA™ CAMERA SYSTEMS ARE DESIGNED TO GIVE YOU THE FINEST GAMMA SCINTILLATION IMAGES EVER PRODUCED.



Dyna Camera 3C and Dyna Camera 4 are Picker's two new breakthrough developments in Anger-type scintillation cameras. They combine improved resolution with functional versatility as no other scintillation cameras can. And only Picker offers choice of detectors.

☐ For the smaller hospital—Dyna Camera 4 (analog only).

☐ For the medium-sized hospital—Dyna Camera 3C (analog/digital capability) with tape deck and Omniview™.

☐ For medical centers and teaching hospitals—Dyna Camera 4 (analog/digital capability with the Gamma 11 data analysis system).

But the real virtuosity of Picker's Dynamic Duo becomes apparent with special-purpose applications:

☐ Cardiology

☐ Endocrinology

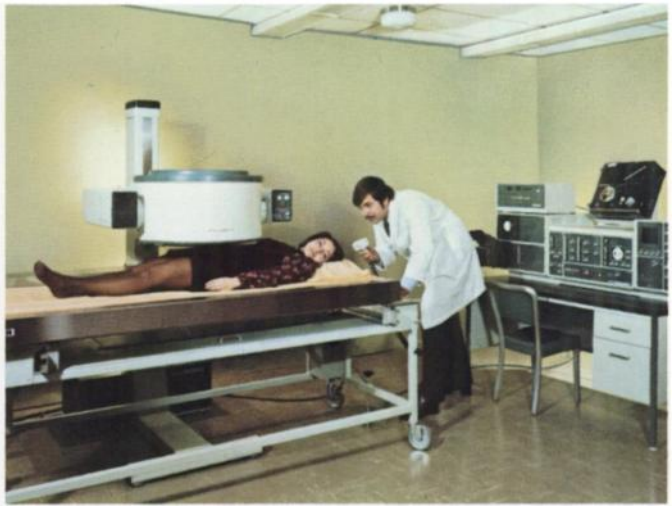
☐ Neurology

☐ Hepatology

☐ Pulmonary Studies

☐ Metastatic Bone Studies

For electronic sophistication, high resolution quality and



maximum versatility, Picker's Dyna Camera 3C and Dyna Camera 4 are outstanding. We've got the right combination to satisfy your gamma imaging needs now—and way into the foreseeable future. For full details, contact your local Picker office, or Picker Corporation, 595 Miner Road, Cleveland, OH 44143.

Picker's latest scintillation camera design, the Dyna Camera 4 *(above, left)*, provides excellent resolution, combined with a high degree of flexibility.

Picker Dyna Camera 3C, shown *(top, right)* with Omniview table for whole-body imaging, provides even better resolution than the widely used Dyna Camera 2C.

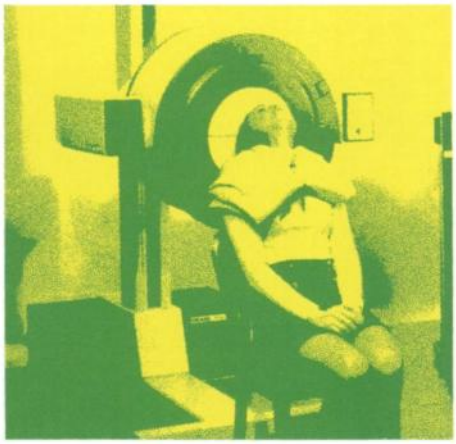
The new Dyna Camera 3C control *(center, right)* features advanced state-of-the-art electronics for better imaging and much greater versatility.

User designed to provide complete control of all functions for optimum gamma imaging results for greater patient throughput.

Dyna Camera 3C

☐ Large imaging area views any organ completely, including both lungs, both kidneys or an enlarged liver and spleen.
☐ New high-resolution detector produces clear diagnostic images for accurate lesion perception.
☐ Excellent uniformity throughout the entire image area eliminates the possibility of instrument artifacts producing false positive readings.
☐ High-speed buffer circuits combined with efficient collimators provide the fastest imaging possible for minimum patient discomfort and high patient throughput.
☐ Choice of analog or precise digital imaging of organs may be selected with controlled gray scale smoothing of the digital display to best portray the organ.
☐ Calibrated dual regions of interest for delineating and integrating dynamic function data in any selected areas of clinical interest.
☐ Digital count integration for on-line analysis and quantitation of regions of interest organ profiles, and dynamic function histograms.
☐ Exposures are controlled by exclusive preset information density for highest quality scintigrams each and every exposure.
☐ Simplified patient positioning. Large field and built-in storage scope allows technician to easily and exactly position the patient.

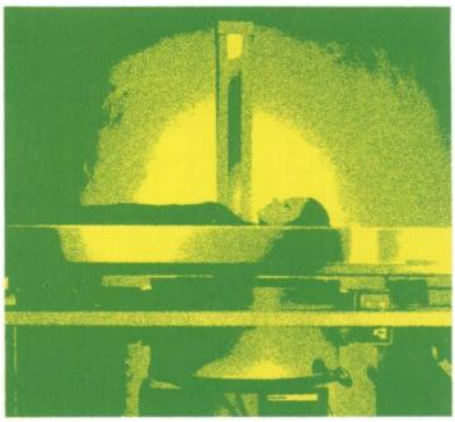
All above are standard built-in and exclusive features, not add-on extra-cost options. Dyna Camera's completely integrated system design means lowest overall cost, greatest operating convenience, and highest gamma imaging flexibility.

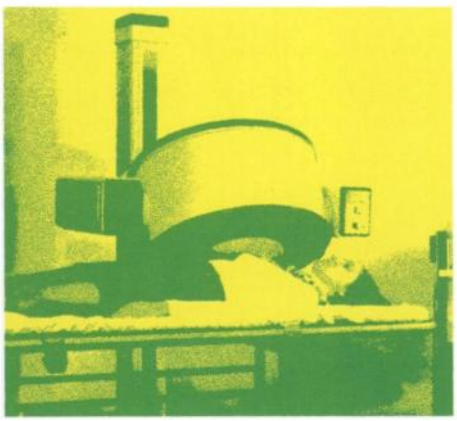


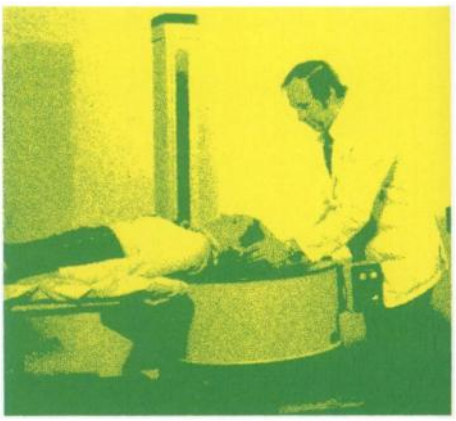
Dyna Camera 4

☐ High-resolution images, a result of advanced detector techniques producing a clear, sharp diagnostic gamma-image presentation.
☐ High-speed ultra-low dead time using analog buffering and delay line techniques.
☐ Exposure-brightness computer for best exposures every time.
☐ Basic camera at a basic camera price yet includes many unique Dyna Camera features.
☐ Preset information density statistical control for quality data.
☐ Joystick control of the calibrated region of interest for count density quantitation of normal vs abnormal areas of the patient's organs.
☐ Choice of detectors designed to meet general purpose or specialized diagnostic needs.
☐ Excellent uniformity utilizing Picker's patented variable-density thin-light-pipe design.
☐ Built-in patient anatomical landmarking system.
☐ Patient identification on every film.
☐ Joystick control for hot-area or standard-area calibration, the heart of the information-density controller.
☐ Built-in detector PM-tube-balancing circuitry.
☐ Wide choice of clinical application collimators with Picker quick-change self-alignment feature.
☐ Completely user designed to automate quality clinical imaging. Hidden panel for the lesser used controls.

For complete details, including information on full line of accessories for Dyna Camera 3C and Dyna Camera 4, contact your local Picker office, or Picker Corporation, 595 Miner Road, Cleveland, OH 44143.







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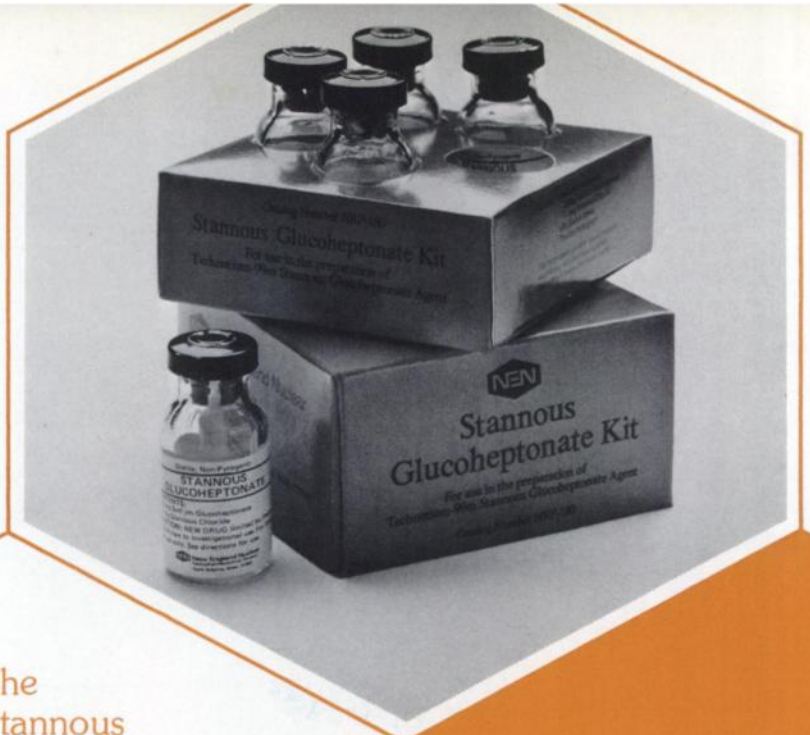

The NEN Stannous Glucoheptonate Kit provides lyophilized stannous glucoheptonate to be used in preparing technetium Tc 99m stannous glucoheptonate agent by the injection of technetium pertechnetate sodium Tc 99m. The resulting diagnostic agent, upon intravenous administration, is being studied for its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

Kidney/Brain Imaging Agent

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Lung Scan Kit

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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.

Mallinckrodt® NUCLEAR

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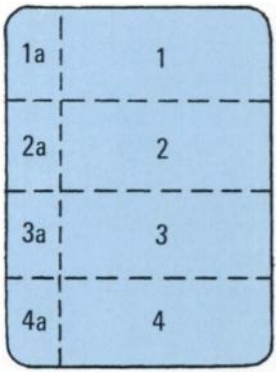
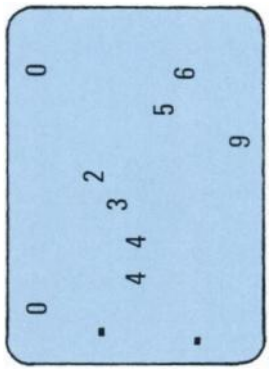
[1]Dworkin, H. J.; Smith, J. R. and Bull, F. E.: Reaction after Administration of Macroaggregated Albumin for a Lung Scan. **New England J. Med., 275**:376, August 18, 1966.
[2]Roberts, H. J.: Fatal hemoptysis in pulmonary embolism probably precipitated by pulmonary scanning—Report of a case and suggested precautions. **Angiology, 21**:270, 1970.

Some Plain Talk About Radiation Monitoring.....

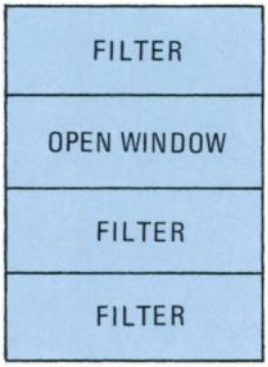
THE RADI-GUARD MULTI-AREA DOSIMETER



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



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



Standard personnel badge filter array.

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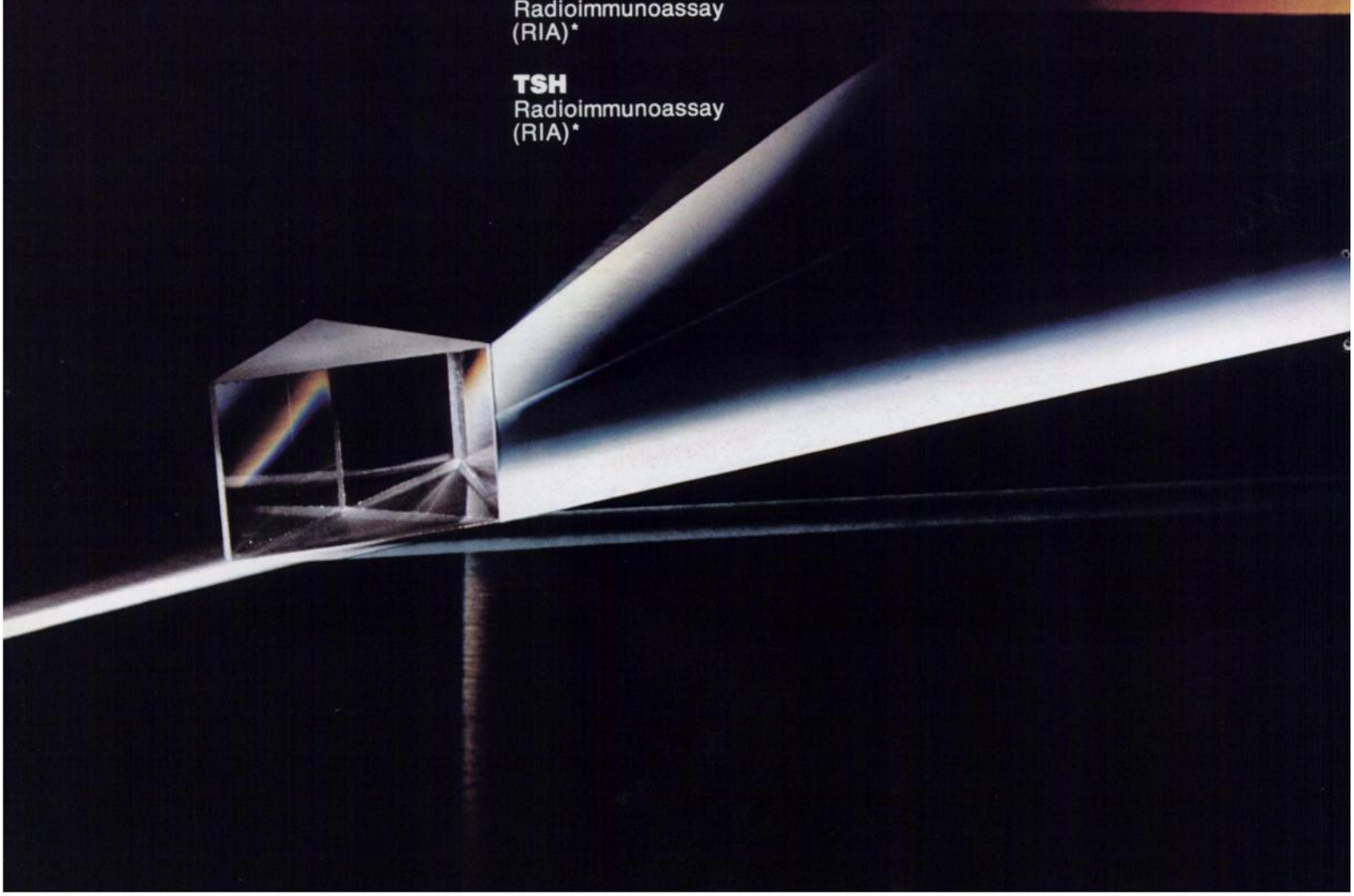

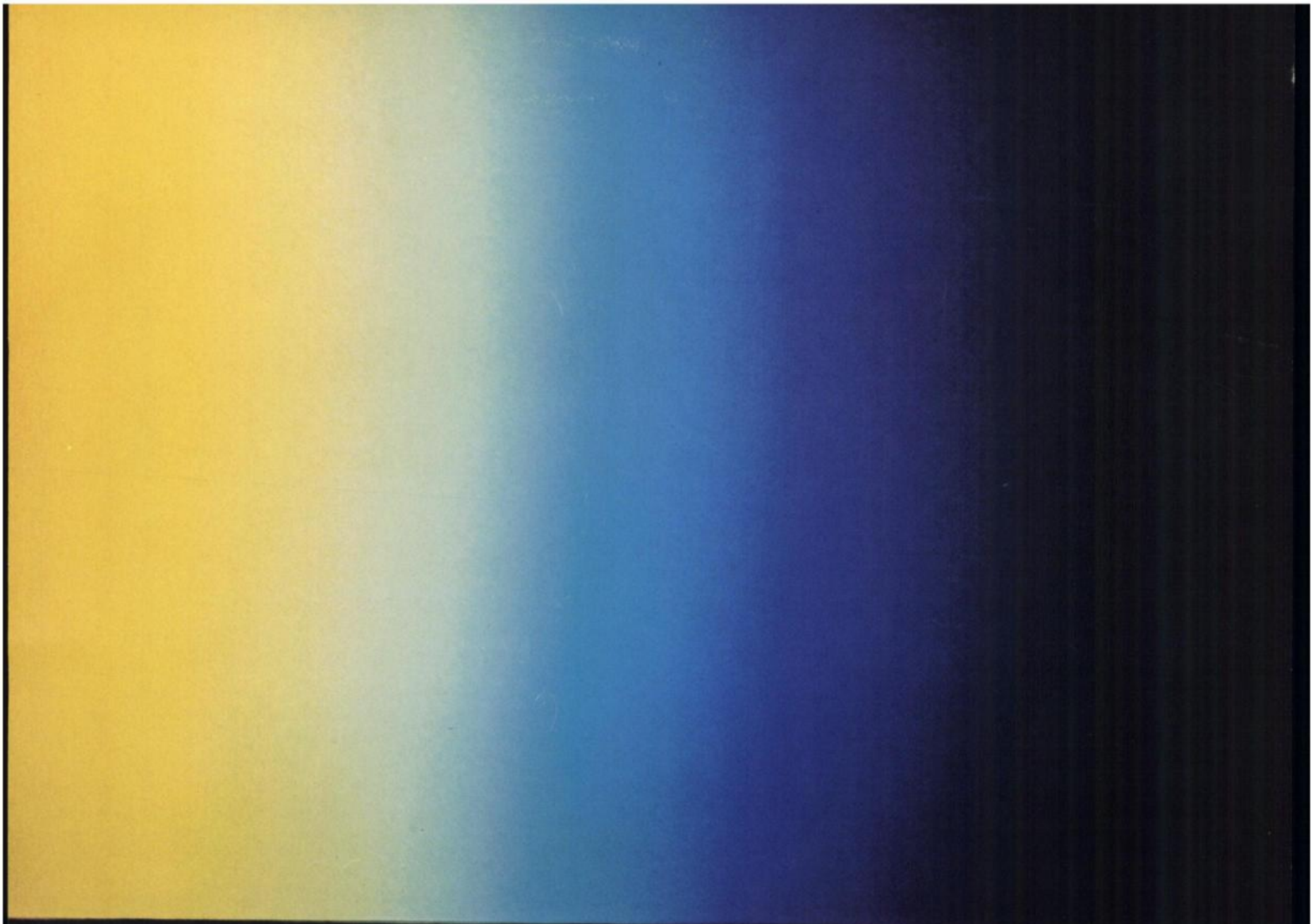

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408056

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

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

CEA-ROCHE

ROCHE

Carcinoembryonic Antigen assay

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

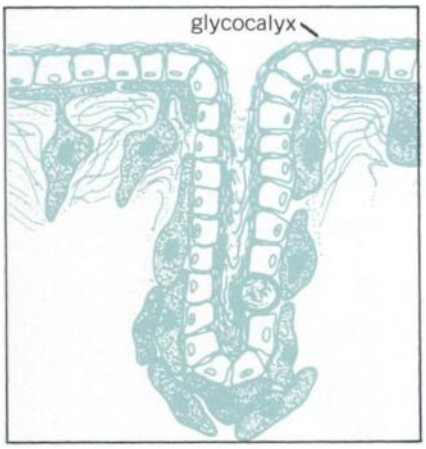
the discovery of carcinoembryonic antigen

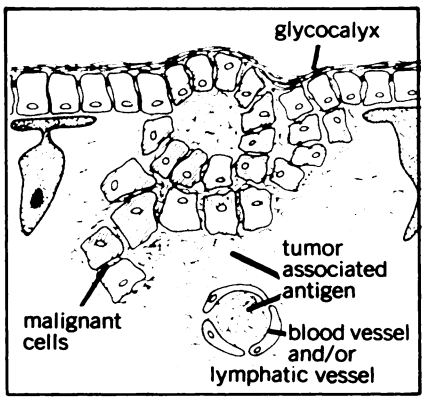
The term carcinoembryonic antigen (CEA) was first used in 1965 by Gold and Freedman of the Montreal General Hospital to describe a glycoprotein which is a constituent of the glycocalyx of embryonic entodermal epithelium; it is also present in extracts of carcinoma cells.[3-6]

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

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

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





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

a long-term commitment to cancer research

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

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

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

an extensive clinical evaluation

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

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

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

CEA-ROCHE

Carcinoembryonic Antigen assay

Clinical applications
Limitations

CEA-ROCHE as an aid in the management of cancer

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

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

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

CEA-ROCHE as an aid in the diagnosis of cancer

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

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

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

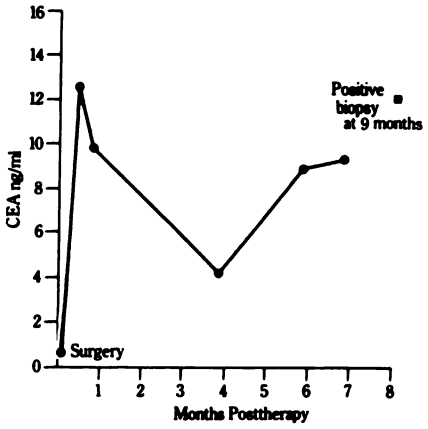
In a special study of 883 patients, cigarette smoking with titer elevations were associated with atypical sputum cytology.[23] Decreases in CEA titer often occurred within 30 to 60 days after cessation of smoking.

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

limitations of CEA-ROCHE

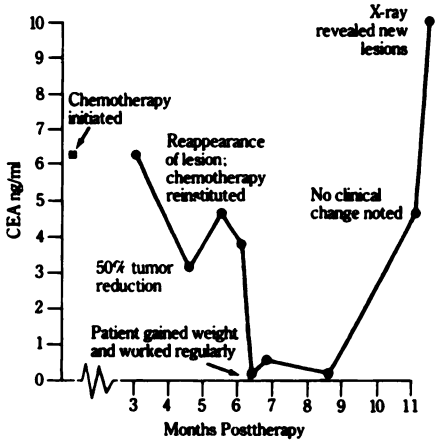
CEA-ROCHE is not recommended as a screen to detect cancer. CEA titers are not an absolute test for malignancy, nor for a specific type of malignancy. In the management and diagnosis of the patient suspected or known to have cancer, all other tests and procedures must continue to be given emphasis. CEA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

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



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

representative case history of patient being treated for malignancy with metastases



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

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

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

CEA-ROCHE
Carcinoembryonic Antigen assay

A significant contribution to the management and diagnosis of cancer

availability of CEA-ROCHE

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

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

comprehensive information available

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

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

K-9

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

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

☐ I would like Roche Clinical Laboratories, Inc. to perform CEA-ROCHE testing in my practice. Please send me information in this regard.

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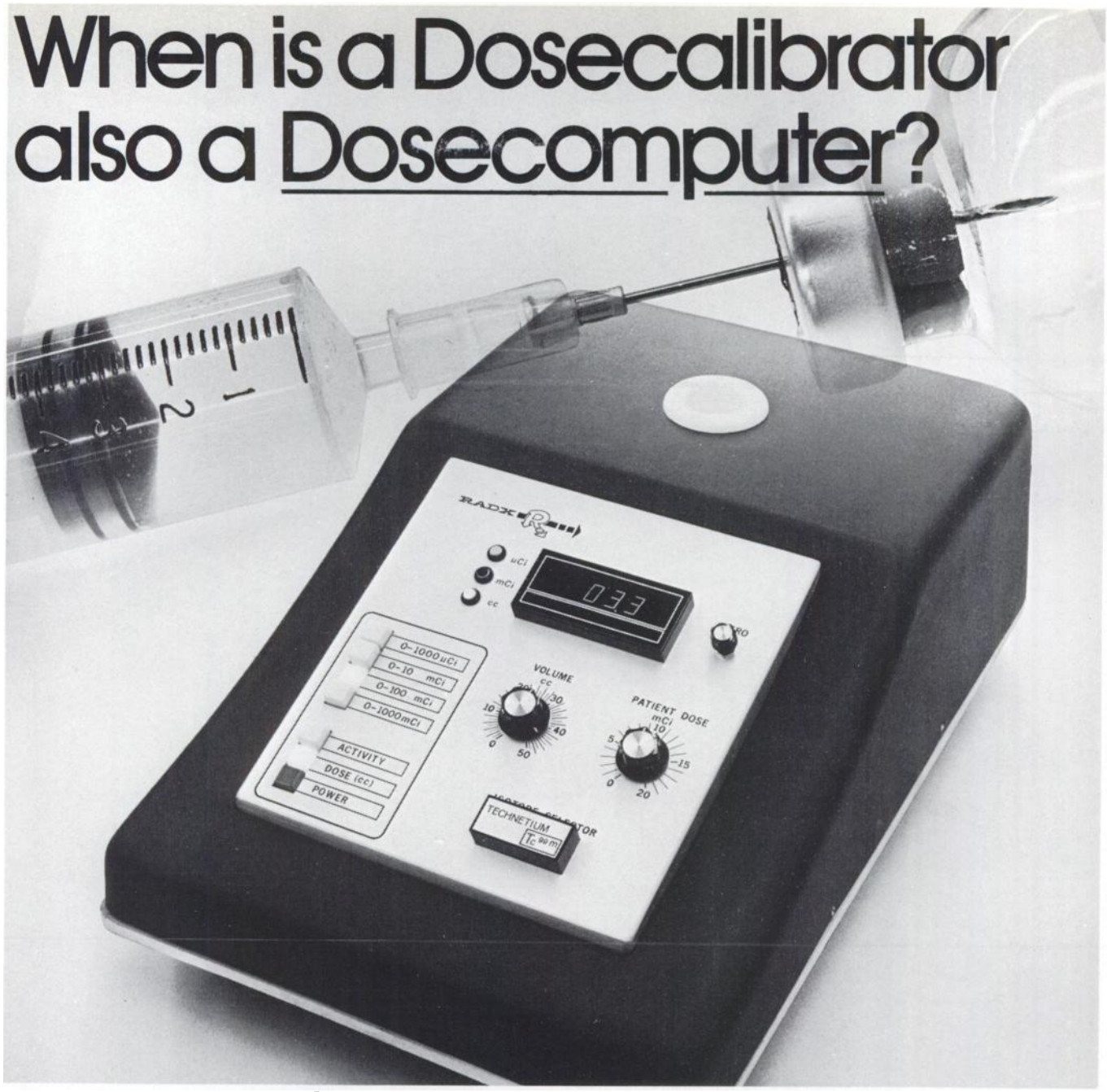

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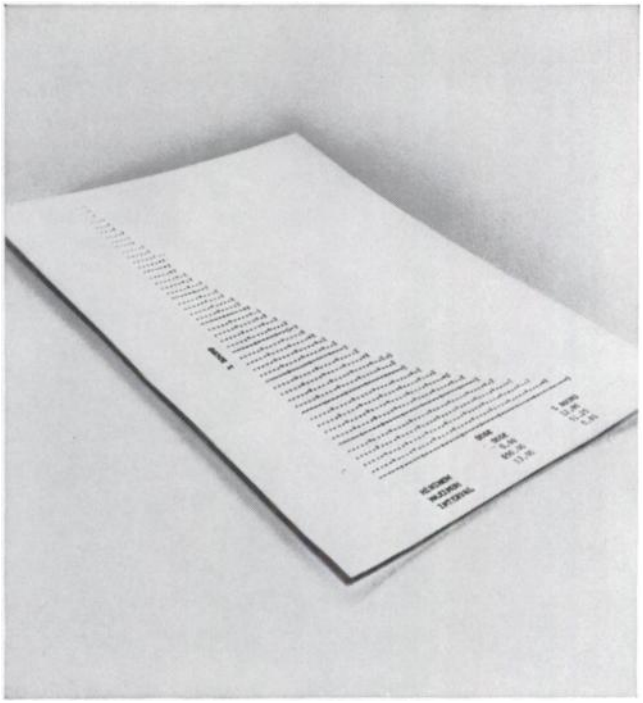
The Radiochemical Centre Amersham

The Radiochemical Centre Limited, Amersham, England.
In the Americas: Amersham/Searle Corp., Illinois 60005. Tel: 312-593 6300.
In W. Germany: Amersham Buchler GmbH and Co., KG, Braunschweig.
*trademark



Test tubes to answers.

The complete radioassay systems.

Searle Analytic (formerly Nuclear-Chicago) offers you the only complete on-line radioimmunoassay/ competitive protein binding (RIA/CPB) systems.

Systems that automate the entire radioassay procedure—from analyzing RIA/CPB samples to printing out immediate, meaningful results. You only load standards and samples, establish assay protocol, start the system, and retrieve final, hard copy answers. Our systems do all the rest!

Assay preparation isn't changed at all. Yet answers are transformed directly to averaged count rate, normalized percent bound, standard deviation, dose, corrected dose, and confidence range for each sample group. It's all performed by our RIA/CPB Data Processor, which can be linked to either our beta or gamma spectrometer systems. The combination provides unprecedented speed and convenience in data-reduction.

But we didn't stop with immediate answers in RIA. For the wide variety of kits now in commercial use, our spectrometer systems let you program and count many combinations of tests in the same run. Or, with our exclusive **SRA 2™ System,** simultaneously operate both beta and gamma systems from a single RIA/CPB Data Processor.

Whatever the demand—raw RIA/CPB data, spectrometer systems for any use, or the right systems for your particular lab—we provide complete answers. You'll find your questions answered in our free brochure, RIA/CPB Data Systems. Write to us today.

SEARLE

Searle Analytic Inc.
(Formerly Nuclear-Chicago)
Subsidiary of G. D. Searle & Co.
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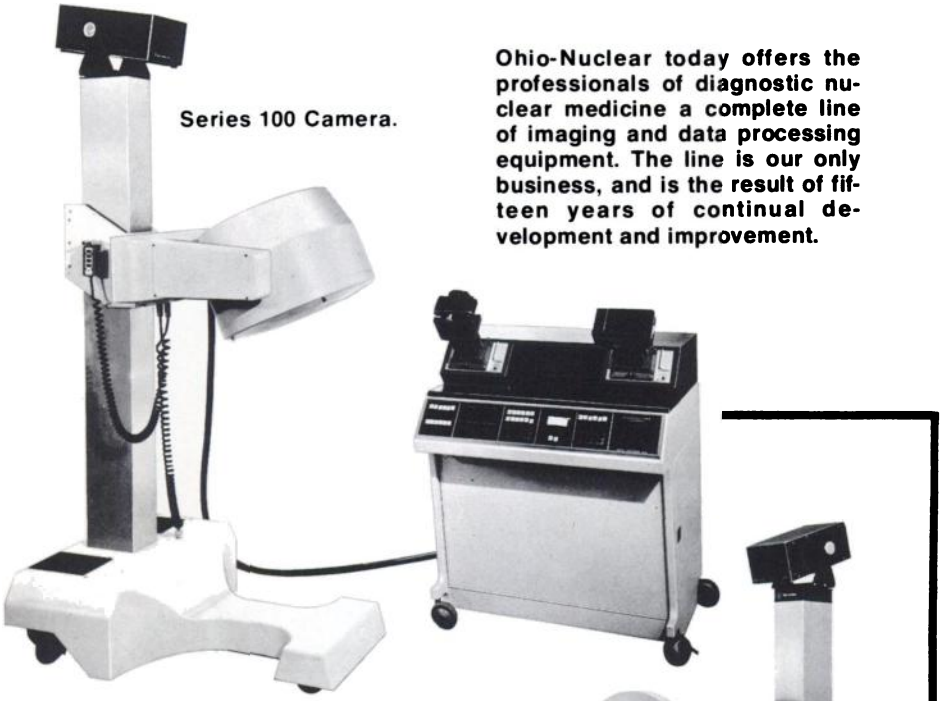
Searle Sales and Service Offices in Major Cities World Wide

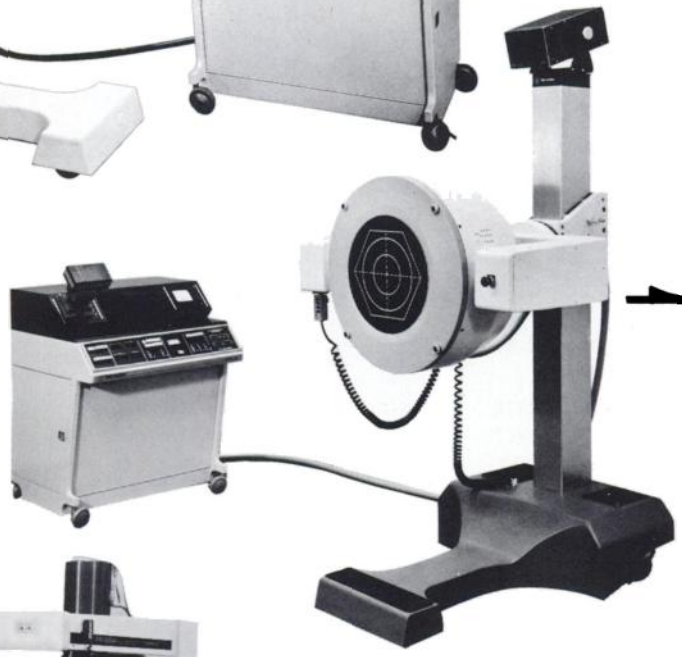
ALS-403

there's more to our image



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.



Series 110 Camera.

Series 84 Scanner.

Area Scan.

Imaging

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.

Area Scan. May be added to any Series 100 or Series 110 Ohio-Nuclear Camera. Moves the detector instead of the patient. Requires minimal space (fits in a 10' x 10' [3.05m x 3.05m] room). Excellent for whole body scans or scans of large areas.

ECG Gate Permits cardiac blood pool imaging at end-systole and end-diastole. Uses isolated ECG pre-amp for maximum patient protection.

than better resolution

Processing

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.

Yes. We offer better resolution, and much more. We offer total systems, designed to improve diagnostic nuclear medicine. We'd like to talk to you.

ohio-nuclear, inc.

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GammaCoat™
^{125}I Cortisol

Introducing the next generation of cortisol determinations — GammaCoat by Clinical Assays — the first solid phase Cortisol RIA. The greatly simplified extraction procedure, a test tube coated with cortisol — specific antibody and a ^{125}I cortisol derivative tracer brings accurate RIA cortisol determinations within reach of every clinical laboratory. A special additive is used to minimize the effects of variable serum proteins on the assay.

The entire RIA procedure is carried out in 6 easy steps:

1. Denature the patient plasma by heating in a borate buffer.
2. Add geltris buffer into coated tubes.
3. Add plasma extract or standard. Incubate 10 minutes.
4. Add tracer. Incubate 45 minutes.
5. Aspirate and wash.
6. Count the coated tubes.

The whole procedure takes less than two hours. Centrifugation and decanting are completely eliminated.

A ^{3}H Cortisol RIA with dextran coated charcoal separation is also available.

Also available are:

GammaCoat Digoxin ^{125}I
GammaCoat Renin Activity ^{125}I
Vitamin B_{12} ^{57}Co
Folic Acid ^{3}H
Digoxin ^{3}H
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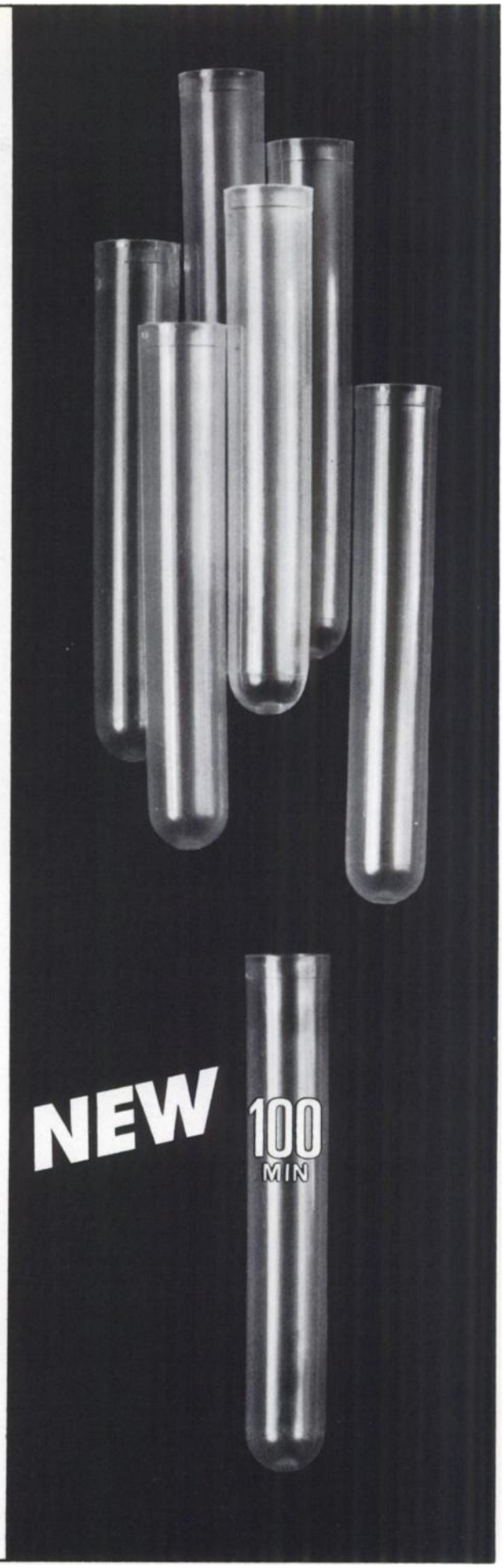


For full details contact:

Clinical Assays, Inc.

or call the nearest Fisher Scientific for fast service.

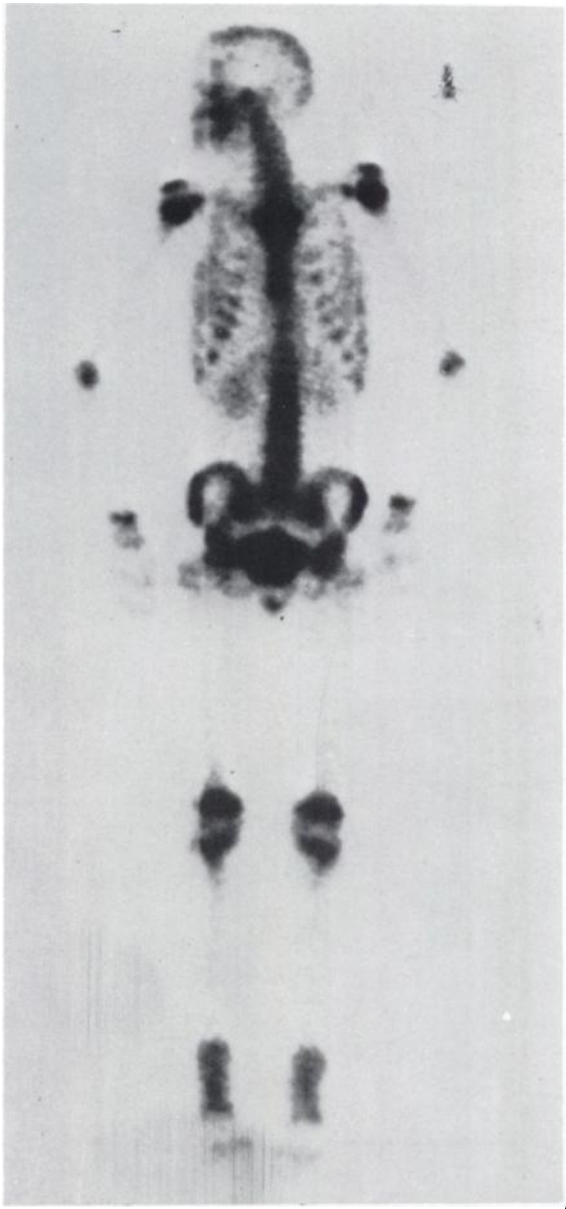
237 Binney Street • Cambridge, Mass. 02142
(617) 492-2526

The oscilloscope camera designed for optimum gamma camera whole body imaging.

Several manufacturers of gamma cameras offer instruments equipped with whole body imaging capability. No matter which one you decide to purchase you face the problem of obtaining a satisfactory hard copy scintiphoto in terms of image size and image quality. A triple lens Polaroid image of the whole body is certainly not a satisfactory solution, neither is the blurred image produced by 11" x 14" format cameras limited to conventional double emulsion x-ray film. A 4" x 5" presentation is a better answer, but the image size obtainable with cameras of this type currently on the market is still too small.

A solution to the problem of recording high image quality whole body transparency scintiphotos is the Matrix Instruments 5" x 7" Format Oscilloscope Camera. This camera offers the best balance of image size and image quality, recording superior quality transparency scintiphotos on a wide range of x-ray film processor compatible films. In particular, the fast f1.9 lens of the camera allows use of the slower single emulsion radiographic films that yield the best image quality. A three position sliding back records side by side whole body PA and AP views. Variable and calibrated magnification and focus allow choice of the required image size. A patient identification feature records patient data directly on the film. Clearly, this is a camera designed for whole body imaging.

To obtain more information and sample studies recorded with the 5" x 7" Format Oscilloscope Camera, and its 8" x 10" version, mail the coupon or call us.



Whole body image recorded with 5" x 7" Format Oscilloscope Camera.

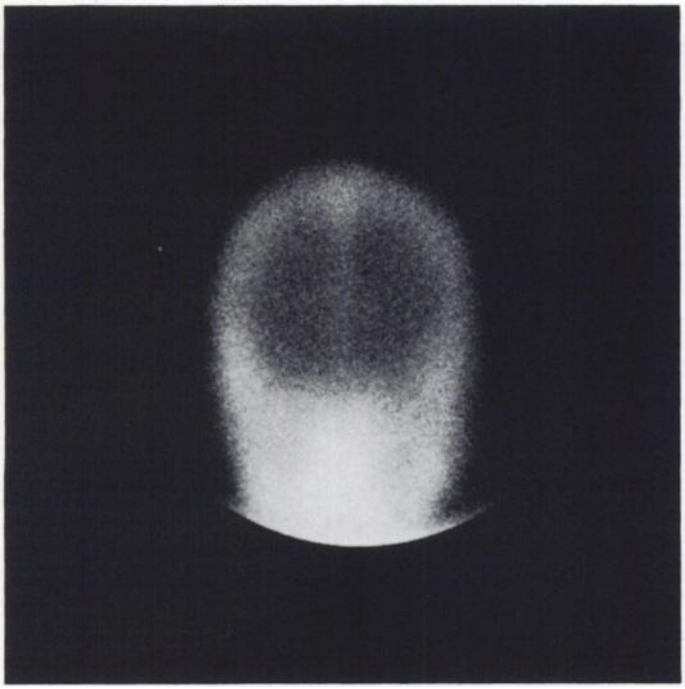
 # MATRIX INSTRUMENTS

2 Penn Plaza
New York, New York 10001
(212) 946-5227

Please send 5" x 7" Format Oscilloscope Camera and 8" x 10" Format Oscilloscope Camera literature and sample studies.

Name
Hospital
Address
City
State
Zip

This static scan looks normal. The patient isn't.



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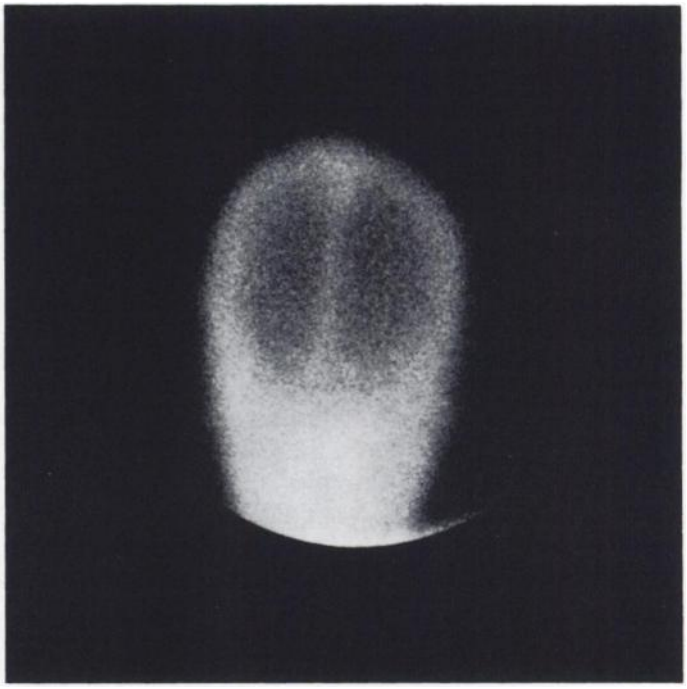
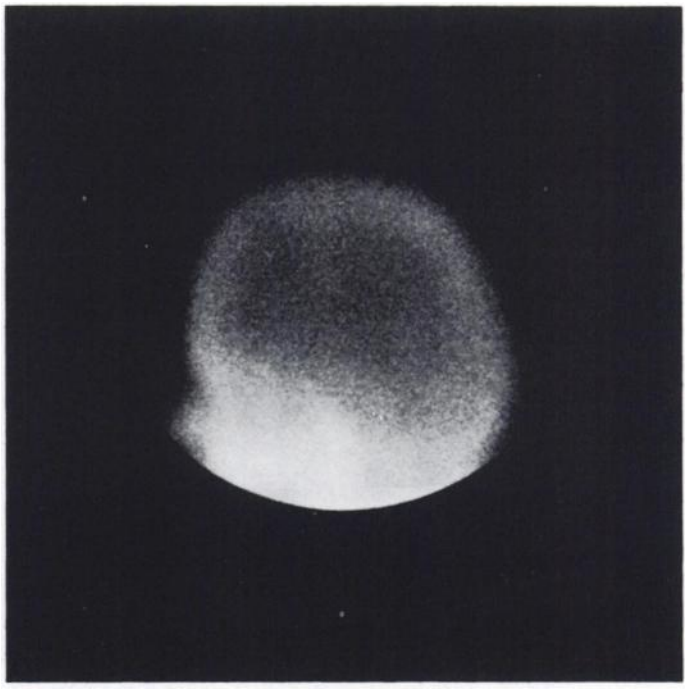


L POST R

P RIGHT LAT A



A LEFT LAT P

The problems of qualitative evaluations of radioisotope distribution within the body have at last been solved. You can now link a scintillation camera to a Digital Equipment Corporation Gamma-11 computer for quantitative description of radionuclide flow.

In this system a cathode ray display is used for presentation of flow pattern data computed according to Region of Interest areas. These areas are indicated by means of a movable cursor (light spot) controlled from the keyboard. By relating pathological and clinical observations to this data, the physician can then establish significant differences in flow pattern and the areas in which they occur.

In the case study (left) of a right hemisphere space-occupying lesion, all static images show the distribution of radionuclide activity to be within normal limits. A quantitative Gamma-11 study using a series of 20 pictures, each containing two seconds of flow information, revealed, however, a difference of flow pattern between the left and right sides of the brain—a situation suggestive of a vascular lesion subsequently confirmed by a follow-up carotid angiogram.

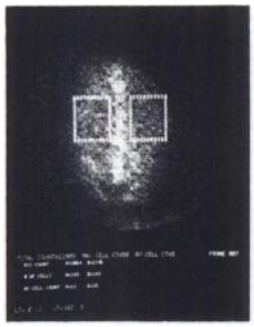
Lung ventilation/perfusion studies, kidney perfusion and tubular functional studies, and left-to-right heart shunt studies are some of the many other diagnostic procedures for which the Gamma-11 is now being used.

Detection and quantitation of left-to-right shunts can be readily accomplished by analysis of time-activity curves generated from ROI's placed over the lung fields during radionuclide angiocardiography. This relatively simple diagnostic procedure (particularly suited for children) greatly reduces patient trauma by eliminating the need for cardiac catheterization. When carefully performed it allows clinical management of certain patients suspected of having left-to-right shunts. Because this method carries no risk, it can be repeated as often as required to assess the patient progress. This method provides pulmonary to systemic flow ratios (Qp/Qs) directly.

Besides quantitative evaluation of ROI curves, Gamma-11 performs such other functions as flood correction, thresholding and contrast enhancement, image smoothing and profile slices. All data acquisition and processing of gamma camera information is accommodated by a modular machine language operating system. FOCAL-PLUS, an easy-to-use, highly interactive programming language, allows direct user modification of image displays, i.e. ROI curve fitting, as well as applications extensions beyond the basic system.

For further information on the techniques of Gamma-11 quantitative analysis or on the features of this low-cost system and how they are being applied, write or call Digital Equipment Corporation, Maynard, Mass. 01754. (617) 897-5111, Ext. 2277. 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.

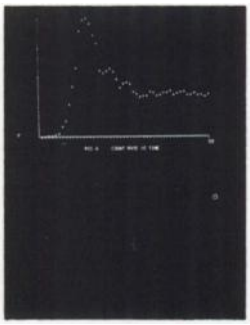
digital



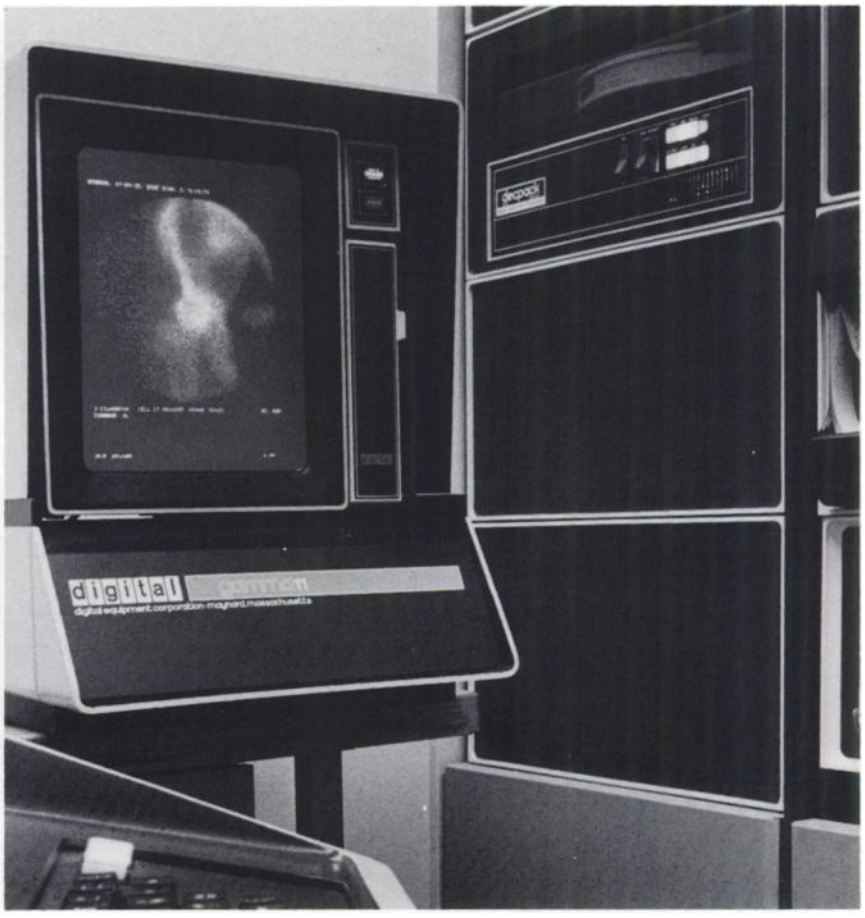
Composite of 1 frame/2 sec. flow study for ROI definition.

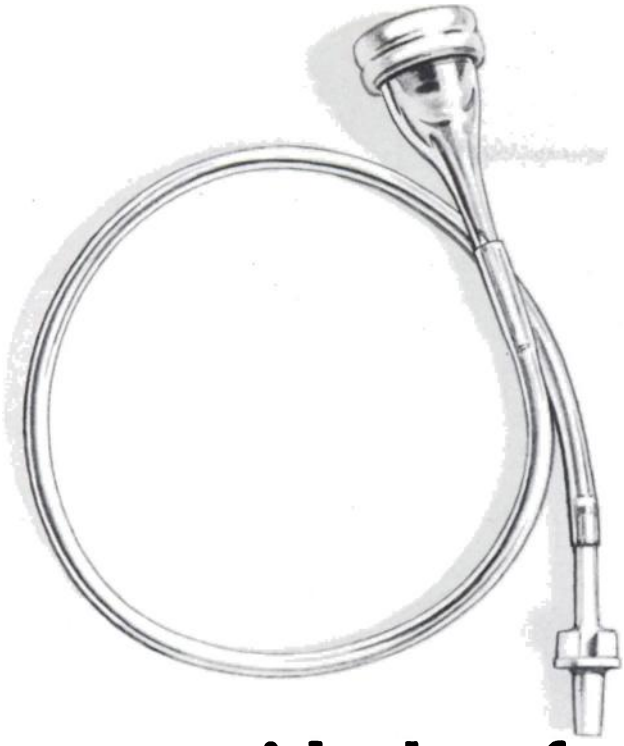
The decreased flow on the right side is suggestive of a vascular lesion.

Right heart + lungs – left heart. ROI's marked over both lung field, SVC, right atrium and right ventricle.

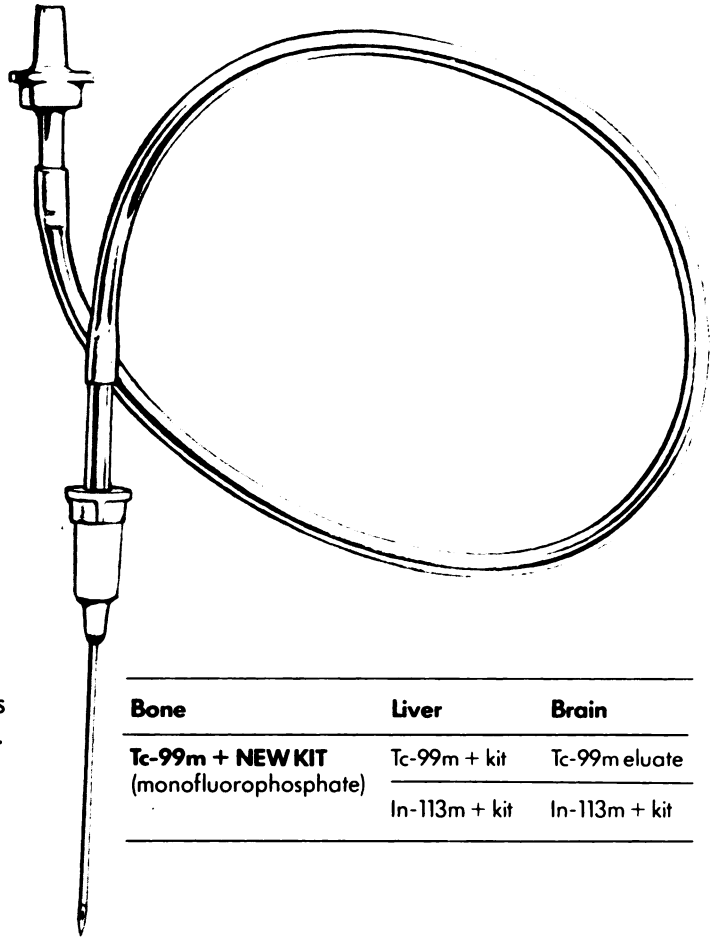


Pulmonary time-activity curve (2 points/sec.) showing a left-to-right shunt.





Two quick plugs for our scanning kits



First the quick plugs: they're the input and output assemblies on our range of sterile generators, and they literally plug in. You don't need to dismantle the lead shielding. We make two types of sterile generators for use with kits: Tc-99m and In-113m. They're simple and safe to use, and they produce a high purity eluate to a predetermined, consistent standard. They're quick, efficient and totally reliable.

Now, the scanning kits: there's a new one for technetium generators.

In each kit the inactive labelled compounds are formulated to precisely controlled standards. Together with the generators, the scanning kits offer a dependable, convenient system for the routine preparation of sterile diagnostics.

Bone	Liver	Brain
Tc-99m + NEW KIT (monofluorophosphate)	Tc-99m + kit	Tc-99m eluate
	In-113m + kit	In-113m + kit

The Radiochemical Centre Amersham

Further information is available on request.
The Radiochemical Centre Amersham, England
In the Americas: Amersham/Searle Corp, Illinois 60005. Tel: 312-593-6300
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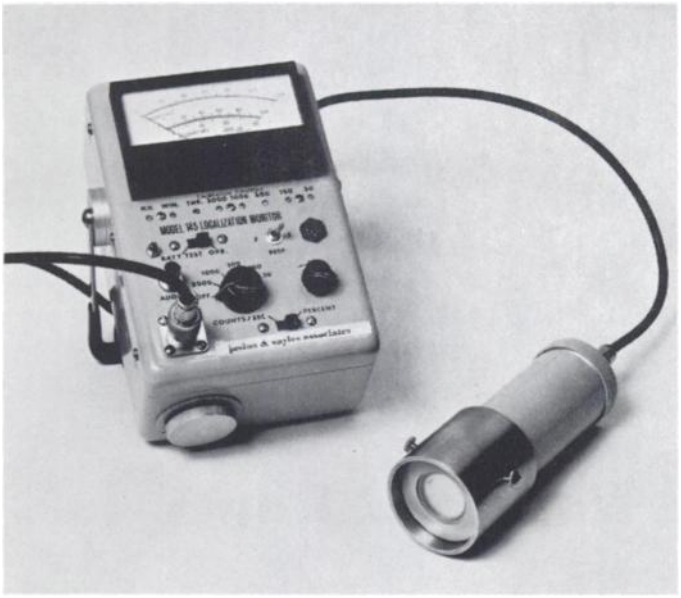
MODEL 145 LOCALIZATION MONITOR

Detection of Deep Vein Thrombosis

and other in vivo applications



- CPS & PERCENTAGE READOUT
- COMPACT & PORTABLE
- BATTERY OPERATED (3 D cells)
- FULLY TRANSISTORISED
- LINEAR SCALE & WIDE RANGE
- RECORDER OUTPUT
- VARIABLE DEPTH COLLIMATOR
- UNLIMITED CHANNEL SELECTION
- MANUFACTURED & SERVICED IN THE U. S. A.
- CLINICALLY PROVEN FOR OVER ONE YEAR

CONTROLS

High voltage
Threshold
Window
Battery test
Response (fast & slow)
CPS or percent switch
Reset

For DEEP VEIN THROMBOSIS DETECTION, the Model 145 offers the important features of **portability,** standard **D cell** operation yielding at least 100 hours of uncycled use, **unlimited** channel selection, and **prompt** servicing.

Using I-125 labelled fibrinogen and the Model 145, early detection of deep vein thrombosis of the legs can be accomplished. With the Model 145, the leg is scanned after intravenous injection of the labelled fibrinogen. As a thrombosis develops, the radioactive fibrinogen is detected with the Model 145 and measured directly in percentage, where 100% is determined over the precordial area.

SPECIFICATIONS

RANGE: 30, 100, 300, 1000, 3000 cps and 0 - 120%

TIME CONSTANT: Fast 2 sec., slow 14 sec.

SIZE: 4½ x 5½ x 8 inches (HxWxL exclusive of handle).

WEIGHT: 6.5 lbs total

DETECTOR: 1mm x 1 inch NaI (TL) mounted on PMT and 7 mg/cm^2 aluminum window. Optional – 1 inch x 1 inch NaI (TL) detector with thin window at extra cost.

jasins & sayles associates

892 Worcester Street – Wellesley, Massachusetts 02181

telephone (617) 235-6691

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

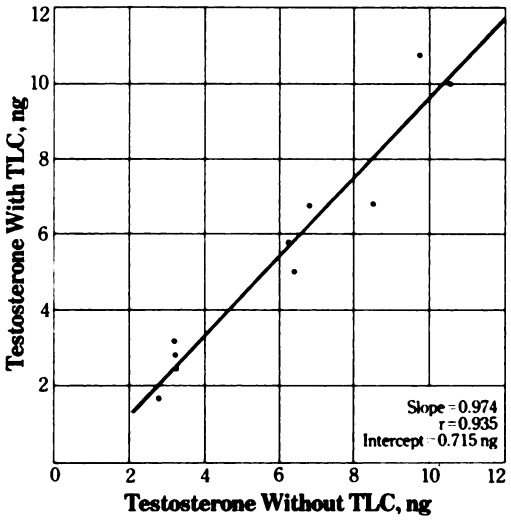
Customer Service Information:

MICROMEDIC DIAGNOSTICS INC.
1800 E. LINCOLN AVENUE
FORT COLLINS, COLORADO 80522
TEL. (303) 484-8480

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:

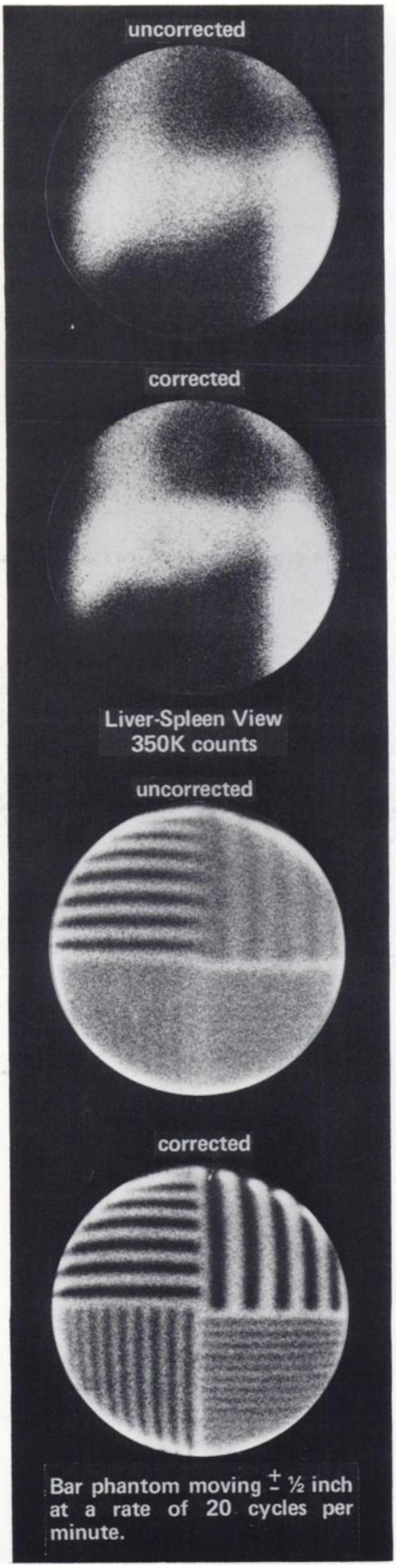
Testosterone Values of Pooled Sera Correlation of Values With and Without Thin Layer Chromatography



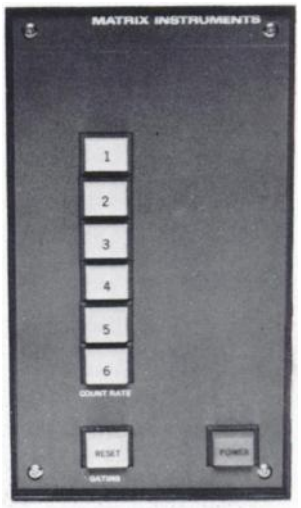
A further advantage: MDI double antibody procedures are highly reliable and reproducible. Once equilibrium is attained, reactions are not time dependent...unlike some R.I.A. procedures demanding precise timing.

Ordering Information:
Contact Marketing Manager, R.I.A.:
Tel. (215) 592-3582.

Produced by Micromedic Diagnostics, Inc. for Micromedic Systems, Inc., a subsidiary of Rohm and Haas Company.



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.

MATRIX INSTRUMENTS

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New York, New York 10001
(212) 946-5227

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

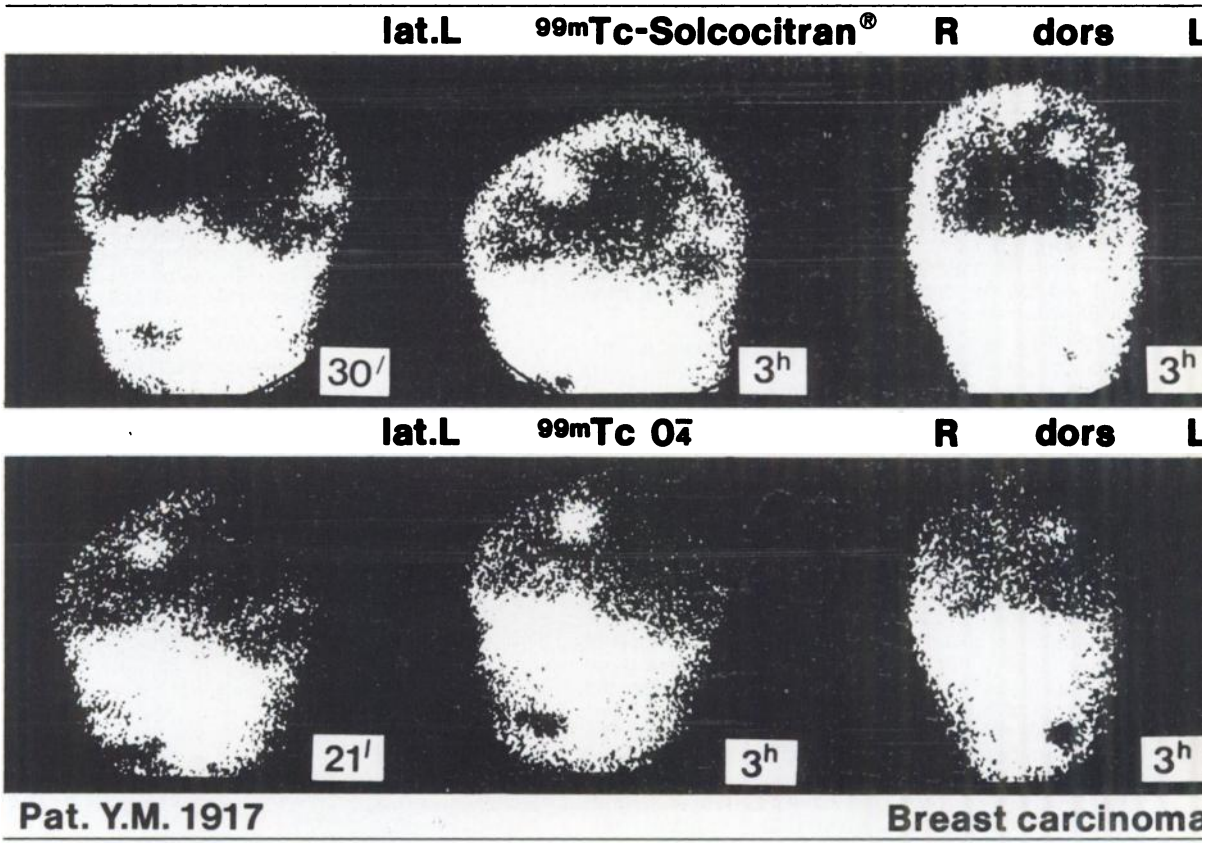
Name
Hospital
Address
State
Phone
Title
Dept.
City
Zip

^{99m}Tc SOLCOCITRAN®

Patient Y. H.:
Injected activity 15 mCi pertechnetate ^{99m}Tc after perchlorate administration. The initial examination was repeated 48 hours later, after administration of 15 mCi Solcocitran-^{99m}Tc.

Interpretation:
The Solcocitran scans gave a much clearer image with a better impact. The tumors were much more clearly visible and Solcocitran allowed detection of three metastases in the posterior fossa which did not appear on the pertechnetate scan.

Diagnosis:
Solitary metastases resulting from primary breast carcinoma.



SOLCO NUCLEAR

^{99m}Tc SOLCOCITRAN®

1. Solcocitran is a product synthesized basically from citric acid and a common reducing agent, and marketed in the form of a single-step labelling kit for the use with technetium-99m from any commercial generator, shake and inject.
The product shows a very [redacted] of the brain and bone, showing no active uptake in the normal tissues.
Solcocitran ^{99m}Tc has been used successfully in the differential diagnosis of malignant brain and bone processes and permits demonstration of the existence of very small neoplastic lesions even in those cases where the normally used tracers indicate false negative results.
As compared with the known scanning agents, this product has the highest and most selective uptake in neoplastic tissues.
2. Several hundred patients have been examined with the product, and of these 200 cases have been completely documented with histopathological findings, surgery and/or autopsy reports. [redacted] have been found in the examined group.
The uptake of Solcocitran has been found to be the same in primary tumors and their metastases: activity determinations per unit tissue weight gave identical results.
Tumor-to-normal-tissue ratios have been found to be of the order of 112:1.
In all of the examined cases, Solcocitran ^{99m}Tc clearly showed the full extent and significance of the neoplastic processes involved.
3. Solcocitran ^{99m}Tc is essentially excreted, in the normal patient, by the kidneys. Several hours after injection an uptake can be detected in the abdominal region. Apart from this metabolic elimination of Solcocitran ^{99m}Tc, which permits kidney scanning, the only uptake that can be found is in neoplastic tissues.
In the two indications (brain and bone) that have been examined completely, no uptake could be detected in the normal tissues.
Unlike ^{99m}Tc-DTPA and ^{99m}Tc-Pertechnetate, the ^{99m}Tc-Solcocitran complex is [redacted] tumors and metastases and does not rely on defects of the blood-brain barrier alone.
Although the exact metabolism of the molecule at tumor level is not yet fully known, there are good grounds for believing that Solcocitran ^{99m}Tc enters the pathological metabolic pathways of the tumors cell. During this process the polycitrate vehicle is believed to be metabolized and the technetium-99m deposited in the cell.
This mechanism would explain the [redacted] with time at the tumor sites.
4. At this time, we consider that only the brain and bone processes have been studied sufficiently to be listed as indications for the use of Solcocitran. Other tumor sites are being investigated and the results will be reported on in the near future.
However, the preliminary results, as described under 2 and 3, justify a certain optimism regarding the possibility of using the product for the detection and localization of neoplastic processes in body regions other than the brain and bone.
5. Solcocitran ^{99m}Tc is supplied as a kit for the single-step labelling with technetium-99m. Each kit contains five single dose vials, each of which should be used for the examination of one patient.
Solcocitran has an [redacted] the product contains less than 1% of free pertechnetate. Analysis reports confirm that no substances are present which could lead to erroneous interpretation of scans.

Activities normally used with Solcocitran ^{99m}Tc:

= BRAIN studies	dynamic	15–20 mCi
	static	5–15 mCi
= BONE studies	static	5–10 mCi

Recommended times for scanning with Solcocitran ^{99m}Tc:

= BRAIN
- –dynamic studies: immediately after injection
- –early static: 20–30 minutes after injection
- –late static: 3–4 hours after injection

(Pure blood-brain barrier defects will show positive in the early scan and negative or very slightly positive in the late static study, according to significance and nature of the lesion and of blood clearance of the activity. The difference with true neoplastic lesions is characterized by a very strong continually increasing concentration of activity in the latter, while the pure barrier defects show the same activity or much less in the late static scan.)

= BONE: –2 to 5 hours after injection

For both indications, the more the activity has disappeared from the blood, which occurs rather quickly, the more clearly can the lesions be seen.

6. [redacted] have been noted using Solcocitran ^{99m}Tc. The contents of the vials are sterile and pyrogen-free and are ready for use.
7. For detailed information write or call collect to:

SOLCO BASLE LTD.
Nuclear Medicine Department
Rührbergstrasse 21
CH-4127 Birsfelden-Basle
Switzerland
Telephone: 061-420042

New 600-Sample Capacity Controlled-Temperature Auto-Gamma® System

- Evolutionary anti-jam sample elevator
- Unmatched simplicity of sample handling—no special carriers, caps or cups required

- New high speed changer is 41% faster—"Save an hour a day"

- Mix and match—accommodates samples up to 16.7 mm diameter
- Unique daytime/nighttime assay group operation
- Radioassay Ratio Display (B/T . . . B/Bo . . . $\%T_3$)
- Automatic NSB subtraction of RIA output
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- Constant temperature for stabilized counting

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Write for complete information. Request Bulletin No. 1203

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Packard introduced the world's first Tri-Carb Spectrometer System over twenty years ago. And ever since, we've been continually refining such systems to better meet the continually expanding needs of liquid scintillation counting.

Take our 2425 and 2450 Tri-Carbs for example. When they were introduced, both systems represented a major advance in liquid scintillation counting by offering unequaled total-system precision and performance... along with the unique, unmatched operating simplicity and convenience of SERVO-TRAY® sample handling (each individual 50-vial tray can be used and programmed for a separate assay by as many as 9 individual users).

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

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

Please send information on:

- ☐ Model 2425 Tri-Carb (150 sample)
- ☐ Model 2450 Tri-Carb (450 sample)

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

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

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

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

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

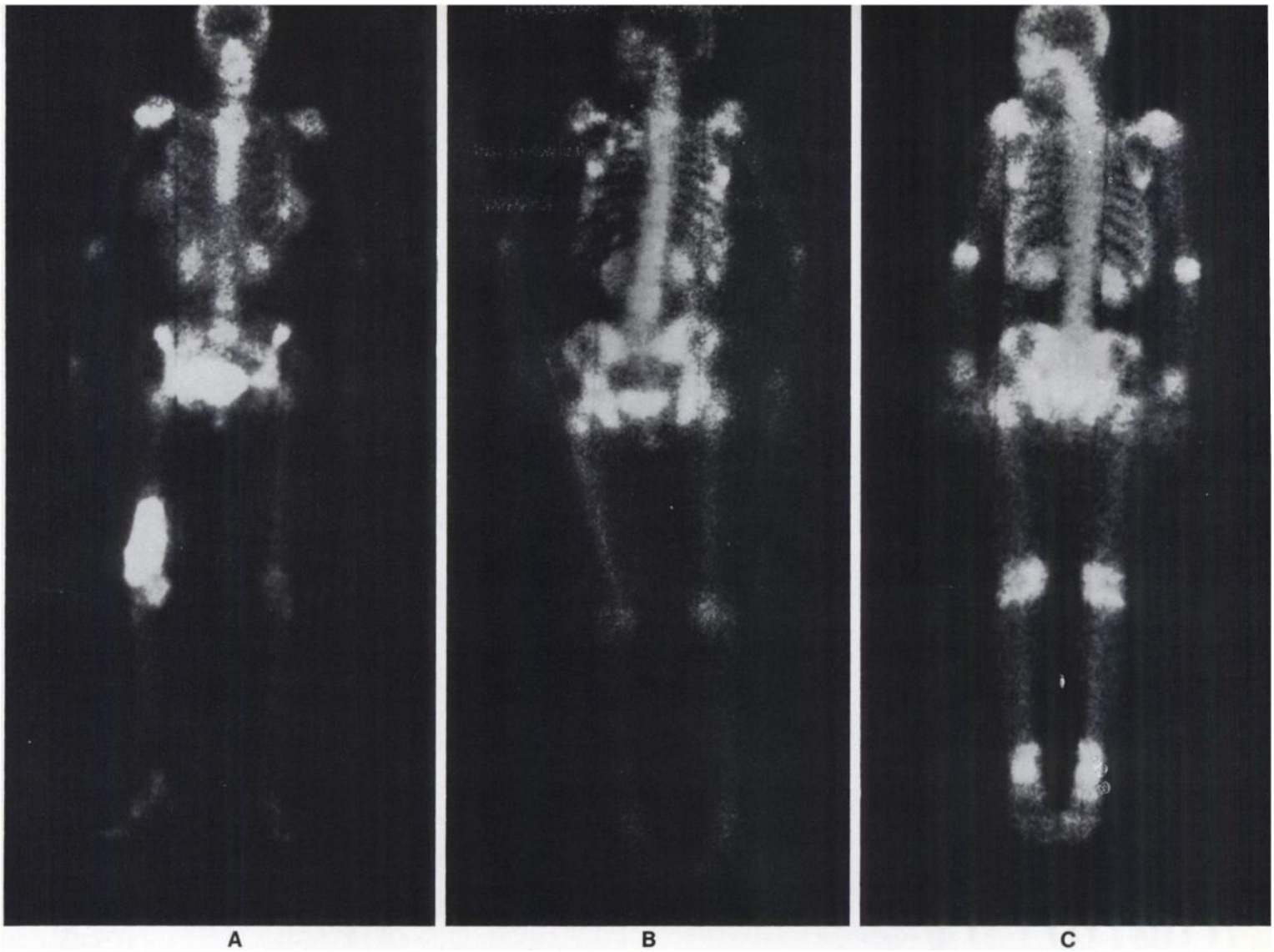
*Thin Layer Chromatography (Cellulose acetate/85% methanol)

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

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

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

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

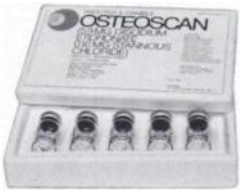


PROCTER & GAMBLE

OSTEOSCAN

(5.9 MG DISODIUM ETIDRONATE 0.16 MG STANNOUS CHLORIDE)

SKELETAL IMAGING AGENT



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

DESCRIPTION

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

ACTIONS (CLINICAL PHARMACOLOGY)

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

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

INDICATIONS

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

CONTRAINDICATIONS

None.

WARNINGS

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

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

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

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

PRECAUTIONS

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

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

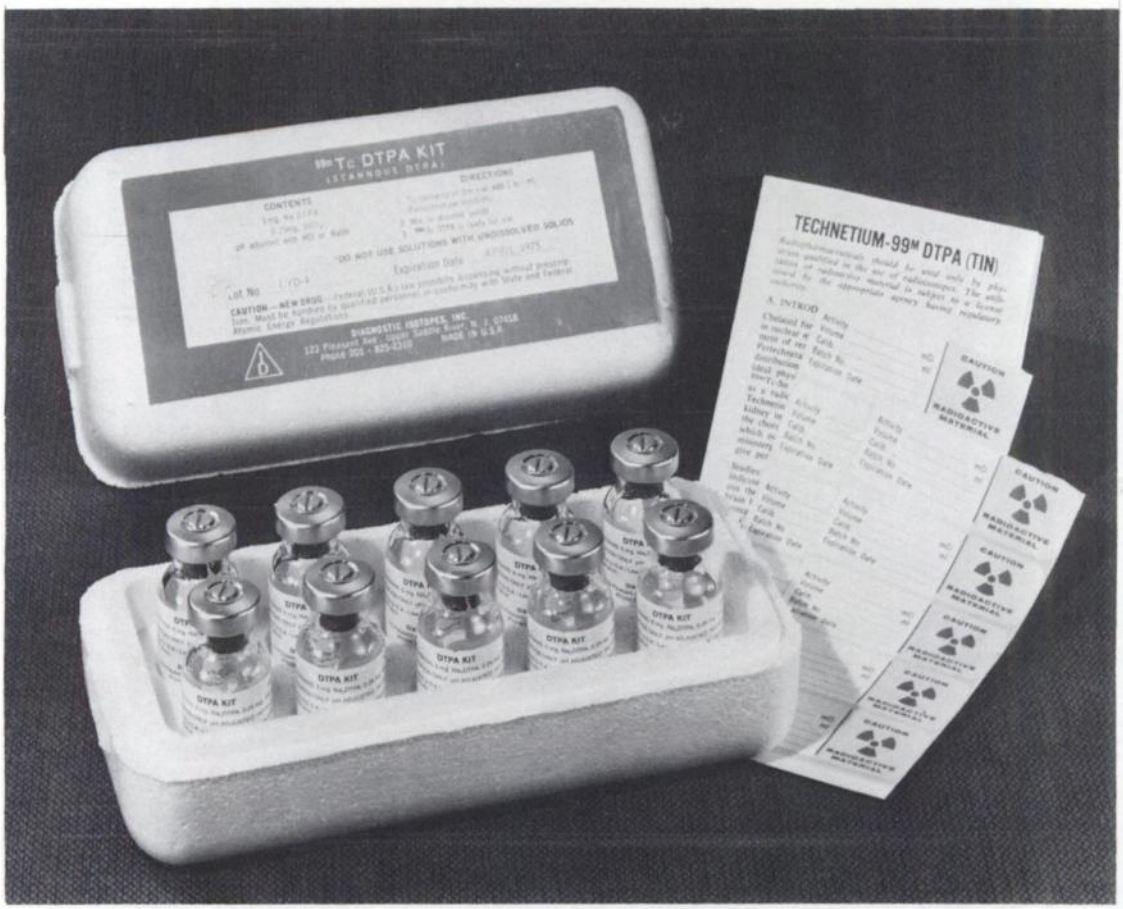
ADVERSE REACTIONS

None.

DOSAGE AND ADMINISTRATION

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

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



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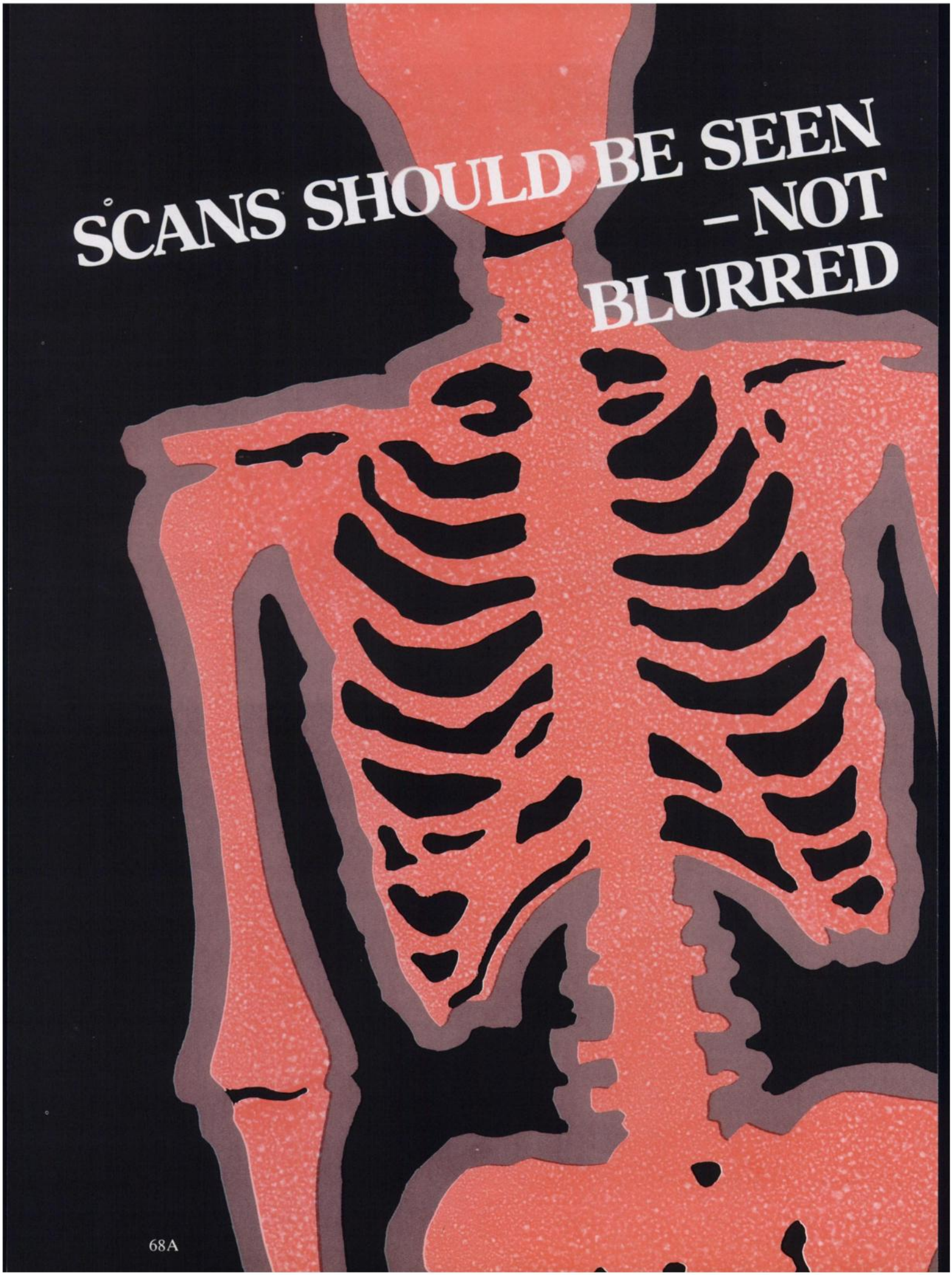
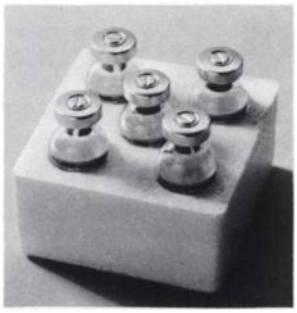

SCANS SHOULD BE SEEN
– NOT
BLURRED

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

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Hazelwood, Missouri 63042

Mark your calendar now for—

SNM CENTRAL CHAPTER

TECHNOLOGIST MEETING

"Three Days of Nuclear Medicine"

October 17–19, 1974

RADISSON HOTEL
Minneapolis, Minnesota

Three days of teaching sessions, invited and proffered papers, as well as commercial and scientific exhibits will cover all aspects of near medicine for the technologist.

Special emphasis will be placed on sessions on interdepartment relations, handling patients, and emergency procedures in the hospital.

For more information on the program contact:

Central Chapter Meeting
Society of Nuclear Medicine
475 Park Avenue South
New York, New York 10016

TECHNOLOGIST SECTION
SOCIETY OF NUCLEAR MEDICINE
SECOND ANNUAL WINTER MEETING

February 7-9, 1975 **Hyatt Regency Hotel** **Houston, Texas**

Announcement

Three days of seminars, workshops, and exhibits on all aspects of nuclear medicine.

Continuing education certificates will be awarded.

For further information and registration forms contact:

Technologist Section, Society of Nuclear Medicine

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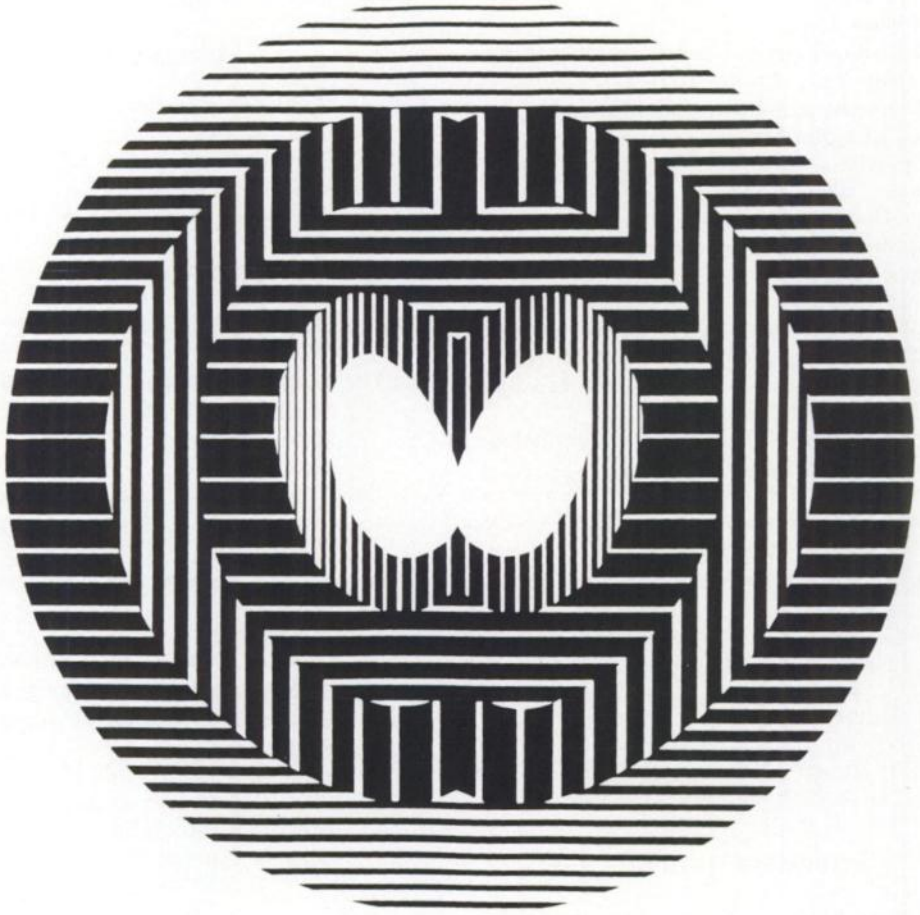
"Iodine 123 is a nearly 'ideal' radionuclide for thyroid imaging."[1]



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

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

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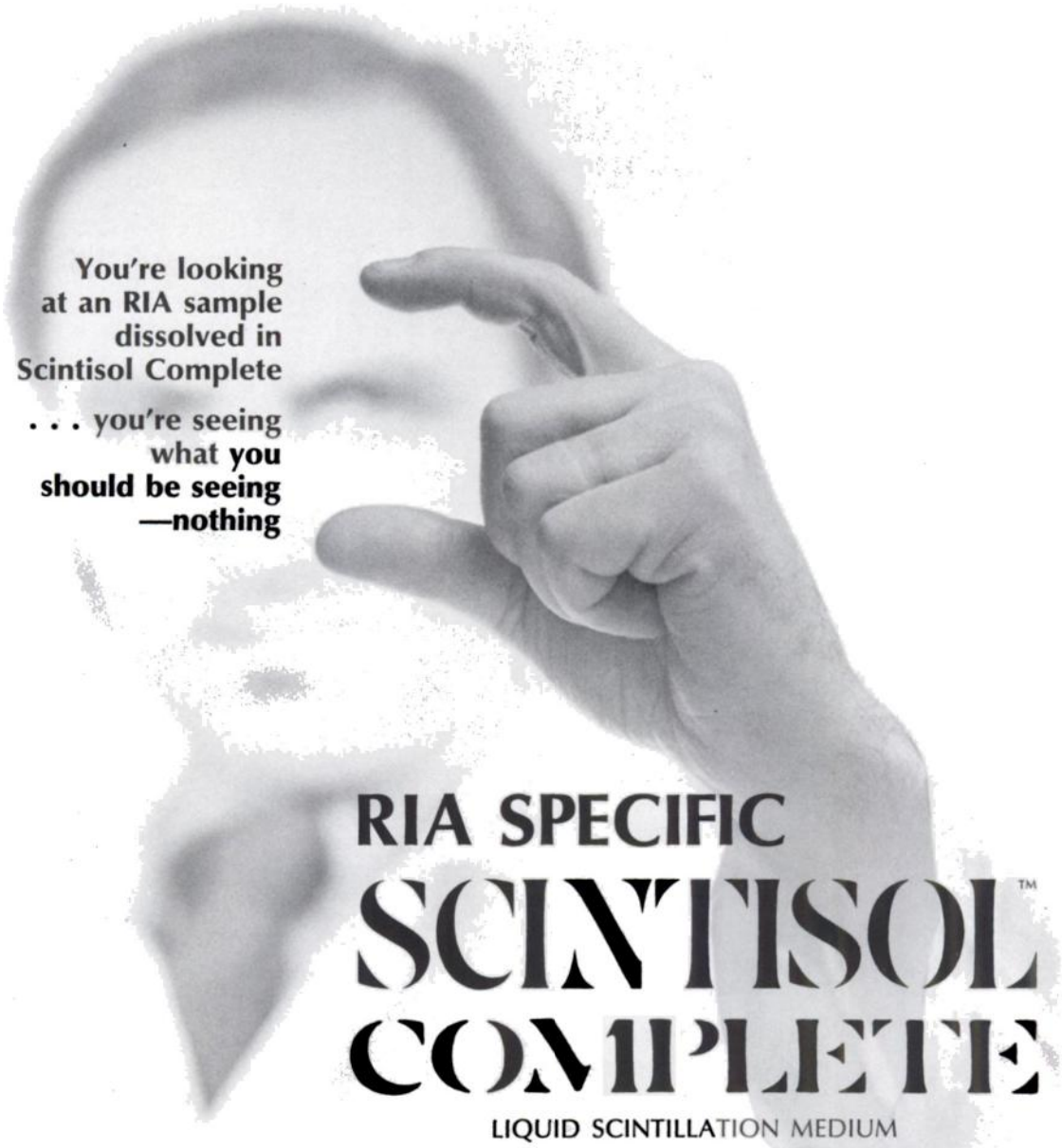

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PHOENIX, ARIZONA. ESTABLISHED nuclear medicine practice needs to add Board-Certified Associate. Salary open. Send curriculum vitae to: Nuclear Medicine Associates, P.C., 500 W. 10th Place, Mesa, Arizona 85201, Attention: Bland Giddings, M.D. Telephone: (602) 969-7325.

NUCLEAR MEDICINE RESIDENT. Two-year residency program in nuclear medicine at New York Hospital-Cornell Medical Center. Position available July 1, 1975. Contact Jerome Jacobstein, M.D., Division of Nuclear Medicine, New York Hospital-Cornell Medical Center, 525 East 68th St., New York, N.Y. 10021.

NUCLEAR MEDICINE RESIDENCIES & Fellowships. First- and second-year residencies available in July, 1975. University of California, Center for Health Sciences, 627 beds. Active clinical and research nuclear medicine service. Applicants must be graduates of an approved U.S. or Canadian Medical School or have a California license. Write Leslie R. Bennett, M.D., Chief, Nuclear Medicine Division, AR-144B CHS, University of California, L.A., CA 90024.

POSITION AVAILABLE AS HEAD OF Nuclear Medicine in new, 200-bed Medical Center Hospital. Specialty staff with strong applications in nuclear medicine and therapy. Excellent academic achievement necessary. Reference and curriculum vitae to be submitted with letter of interest, to Box 901, Society of Nuclear Medicine, 475 Park Ave., South, N.Y., N.Y. 10016.

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 902, SNM, 475 Park Ave. South, New York, N.Y. 10016.

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Contact
Department of Nuclear Medicine
(201) 321-7551

AANM

Association of Administrators of Nuclear Medicine

Organizational Meeting

Regency Hyatt Hotel **Houston, Texas**

February 6, 1975

For further information concerning this meeting, please contact:

LEO LOPEZ, Johns Hopkins School of Medicine, 725 North Wolfe Street, Baltimore, Md. 21205

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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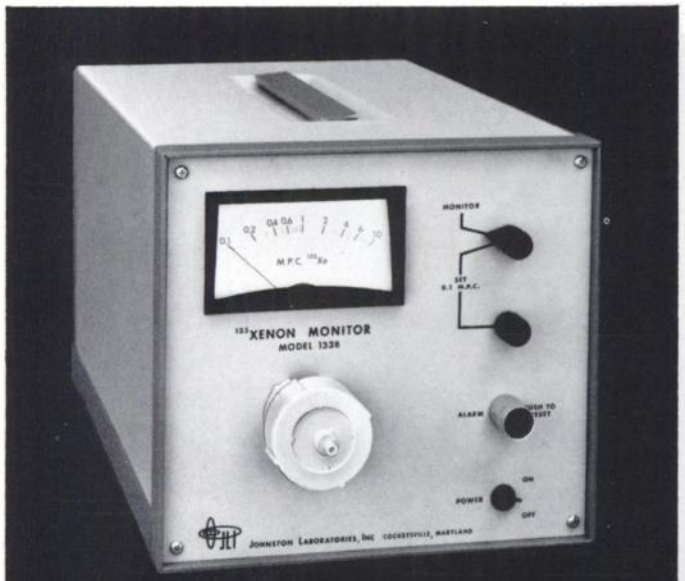
CM-342

Two New Problem Solvers from Johnston Labs.



LOW COST 133Xenon Gas Monitor

Protects Lab Personnel from Accidental Exposure to 133Xe Radiation.

Especially designed for routine air monitoring and leak testing in nuclear medicine laboratories performing Xenon studies.

Radiation hazards may result if multi-dose ^{133}Xe source containers are used or if expired air and ^{133}Xe from a patient will leak into the laboratory air.

A leakage of less than 10% of a 10 millicurie dose of Xenon administered to a patient in a single study can establish a hazardous concentration in the laboratory atmosphere.

The new Model 133B monitor reads 0.1 to 10 MPC of ^{133}Xe. It features a large, easy-to-read panel meter; both audible and visual alarms; and a recorder output. This new, low-cost monitor provides reliable, unattended operation. It is shielded against gamma radiation to prevent false alarms.

BACTEC*® R301. A fast, accurate measurement system for biological and chemical research.

The BACTEC system is used by hospitals and laboratories for the detection of bacteria in blood, spinal fluids, pharmaceuticals, radio pharmaceuticals, foods or other products requiring sterility. The technique is based on the release and detection of $^{14}CO_2$ produced by bacterial metabolism of ^{14}C labeled substrates in BACTEC culture vials.

Now, a new BACTEC model R301 has been designed for research use as an automated, radiometric Warburg apparatus of wide versatility. It can be used for in-vitro screening tests for human metabolic defects, amino acid utilization, metabolic study of blood, excised root experiments, chemical equilibrium, insect metabolism, and many other experiments devised by the researcher.

Its advantages over conventional techniques are: speed, accuracy, and simplicity of measurement; and the capability of maintaining a sterile enclosure and a controlled environment. Send for complete description of operation and application data. A thorough understanding of the system will enable you to visualize many potential applications in your field of research.

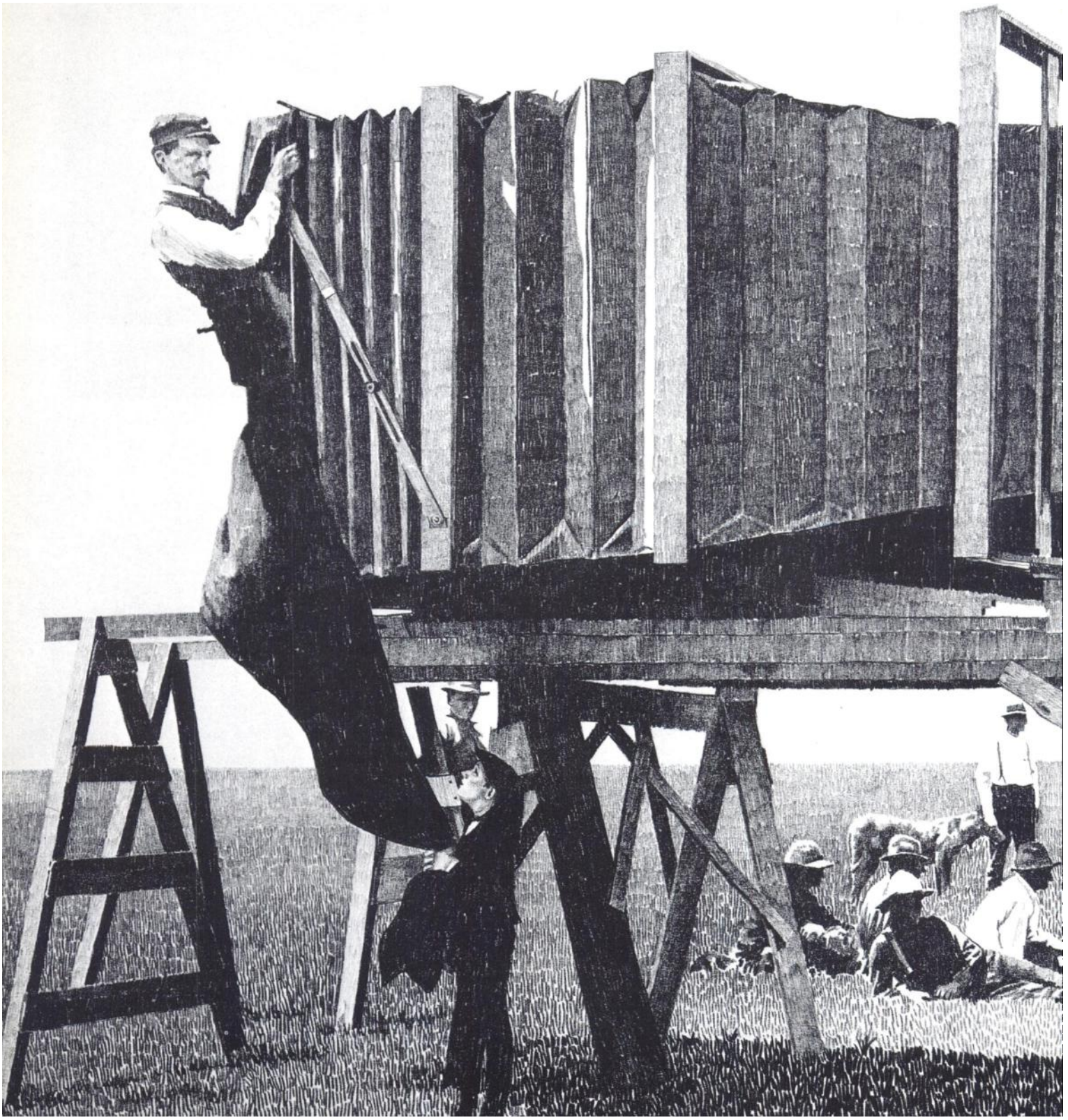
For complete specifications, write to:

Johnston Laboratories, Inc.

3 Industry Lane, Cockeysville, Maryland 21030 USA
Phone: (301) 666-9500 • Cable: "JOHNLAB"

*Patented: U.S. No. 3,676,679
Other U.S. & Foreign patents pending.

THE MAMMOTH, DESIGNED FOR A SINGLE PURPOSE



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

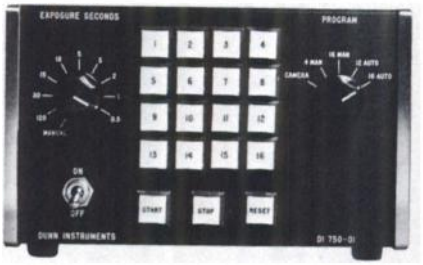
This widely accepted system offers you the immediate benefits of X-ray film . . . broad contrast and grey scale latitudes, excellent group viewing, ease of handling and storage, and the all important virtue of economy.

If you want to make the 750 connection but have money problems, we have a plan. Lease it; or buy it on time. But get one because it will save you money and give you far superior hard copy. Use your polaroid film budget to pay the lease. It's sound economics. With the 750, using inexpensive and available X-ray film, you'll save up to $300 a month, or more. For our detailed Information Packet, phone Bill Brown or mail in the "Mammoth" Coupon.

THE "MAMMOTH" COUPON

☐ Yes, I want to make the 750 connection.
☐ Yes, Bill Brown, show me the path to hard copy greatness. Send me your Information Packet.

Name_____
Institution_____
Address_____
Phone_____ Extension_____

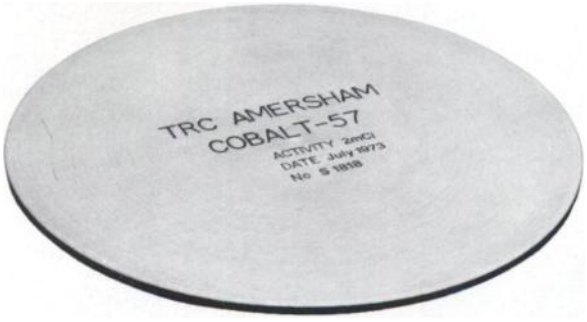


DUNN INSTRUMENTS INC.
1280 Columbus Avenue
San Francisco, Ca 94133
(415) 776-7033

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

We always give you good references

For Gamma Camera work



Sealed flood sources
To check uniformity and resolution (and for transmission imaging), we supply a choice of 2 sizes, 2 nuclides and 4 activities–^{57}Co (2 and 3 mCi) and ^{133}Ba (0.5 or 1.0 mCi). Uniformity; the maximum acceptable variation in count rate, including statistical variations, is ± 2% of the mean value. Sources are supplied for both conventional and wide field-of-view cameras. For maximum safety and convenience, each uniformly loaded active plastic source is surrounded by inactive plastic and enclosed in a sturdy anodized aluminium casing. The storage case, supplied with each source, includes lead shielding.

Anatomical position marker sources
These are available in a choice of 3 nuclides (^{57}Co, ^{133}Ba and ^{113}Sn) and 2 activities (10 or 100 μCi). Features include welded plastic construction, point source geometry with visible active centre and colour coding for quick identification of both nuclide and activity. Sources are packed in sets of 3 in shielded boxes, and replacements are available separately.

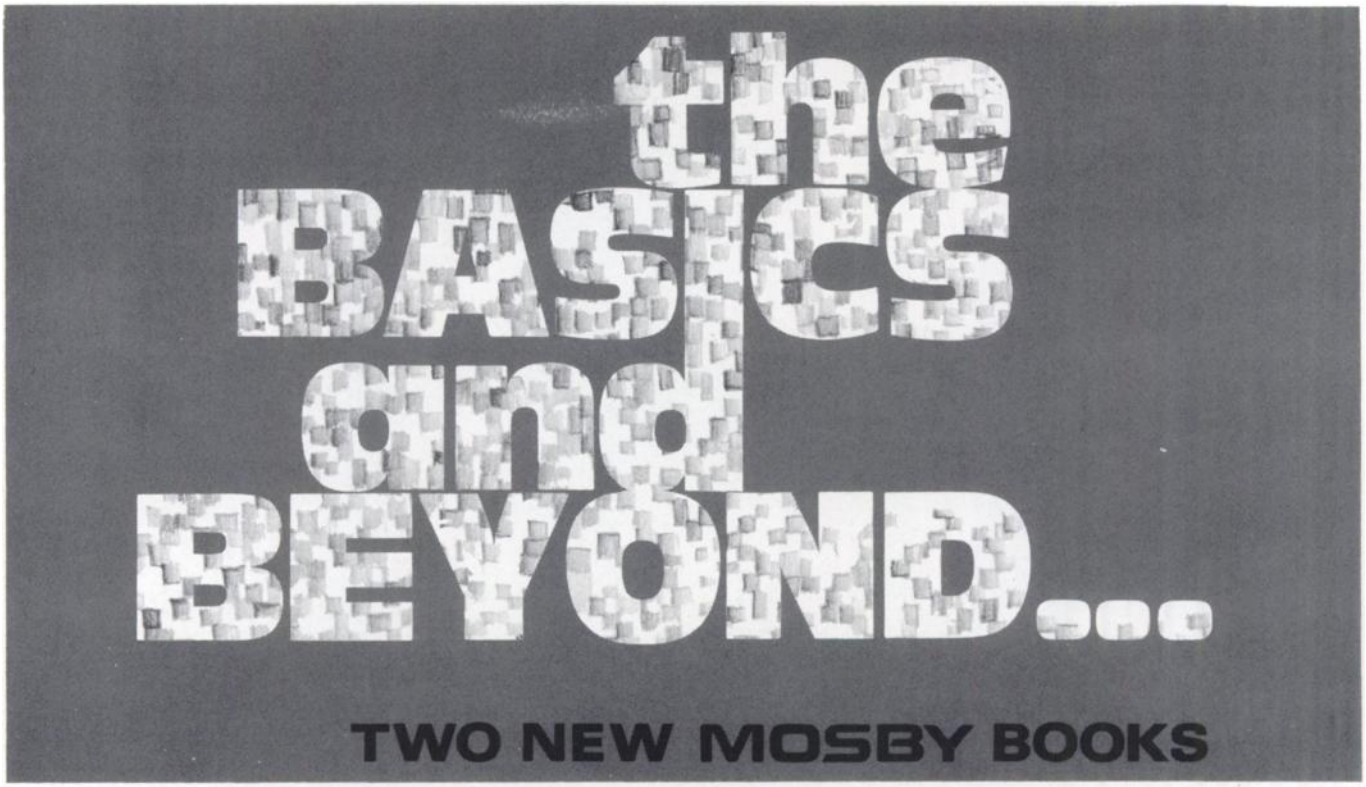
For Dose Calibrators

Checking sources
Welded, stainless steel primary source in plastic vial-shaped holder for checking day-to-day consistency in the operation of isotope assay calibrators; supplied in shielded wooden outer case for safety and convenience. Sources available are ^{137}Cs (250 μCi) and ^{226}Ra (100 μCi).

Radioactivity standards
Accurately standardised solutions for most medical nuclides, and simulated standards for ^{131}I, ^{99m}Tc, ^{87m}Sr and ^{113m}In.

The Radiochemical Centre Amersham

The Radiochemical Centre Limited, Amersham, England.
In the Americas: Amersham/Searle Corp., Illinois 60005 Tel: 312-593-6300.
In W. Germany: Amersham Buchler GmbH & Co., KG, Braunschweig.



A New Book!

BASIC SCIENCE PRINCIPLES OF NUCLEAR MEDICINE

This new book offers you the opportunity to better understand the scientific basis for practice in this emerging field. Beginning with a concise treatment of essential mathematical concepts, the coverage extends to relevant nuclear physics and applicable chemistry. A full chapter surveys the field of tracer kinetics. Chapters on radiation and biology, and health physics consider the effects of radiation on living tissue and examine dosimetry, radiation protection and medicolegal aspects. Each piece of equipment used is fully explained as well as the fundamental electronics underlying its use. An introduction to computer language and to the use of computers is provided.

Edited by CHARLES M. BOYD, M.D.; and GLENN V. DALRYMPLE, M.D.; with 11 contributing authors. May, 1974. Approx. 320 pages, 8" × 10", 264 illustrations. About $21.75.

A New Book!

CARDIOVASCULAR NUCLEAR MEDICINE

This new book presents a "state of the art" description of nuclear cardiology, focusing on the most commonly used and latest techniques. Each procedure is detailed by an expert in that particular area—and the topics discussed concern the latest developments in the field. For example, Dr. Sol Sherry's chapter on "detection of thrombi" discusses an important advance—the introduction of ^{125}I-labeled fibrinogen test. Other discussions are similarly current, clinically relevant and wide-ranging: you'll find not only procedures for imaging, but cardiac function testing, and relevant immunoassay procedures.

Edited by H. WILLIAM STRAUSS, M.D.; BERTRAM PITT, M.D.; and A. EVERETTE JAMES, Jr., Sc.M., M.D. August, 1974. Approx. 432 pages, 7" × 10", 301 illustrations, 10 color plates. About $39.50.

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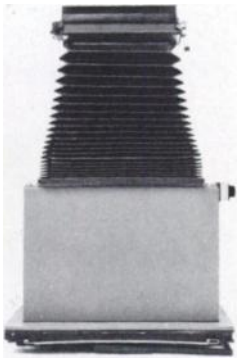
Multi-Imager...now available with built in ultra high resolution CRT.



Multi-Imager 1

Multi-Imager 1 uses the CRT of the gamma camera to record static, dynamic, whole body, and physiological function gated imaging procedures on transparency format. The system consists of an electronic programmer and a 5" x 7", 8" x 10", or 11" x 14" format oscilloscope camera.

Multi-Imager 1 offers:

- Up to 35 image frames on a single sheet of X-ray film in a choice of 5 formats
- Physiological gating permitting imaging of pre-determined multiple phases of the cardiac and/or respiratory cycles in separate frames
- Electronic frame advance dead time of less than one μsecond
- Film cost savings of up to several thousand dollars per year
- Compatibility with all gamma cameras

Both Multi-Imager 1 and Multi-Imager 2 can be acquired using your Polaroid film budget through our rental/purchase program. Mail coupon or call us for detailed information.

Multi-Imager 2

The built in ultra high resolution CRT and photographic system of Multi-Imager 2 allows expansion of Multi-Imager 1 performance. The dot size of our CRT is .0015", one tenth the dot size of a conventional gamma camera CRT. This allows recording of up to 80 image frames on a single sheet of x-ray film without resolution loss.

Multi-Imager 2 offers:

- Up to 80 image frames on a single sheet of X-ray film in a choice of 9 formats
- Choice of either 5" x 7", 8" x 10", or 11" x 14" film size
- Nine digit patient identification directly on film
- Push button exposure selection
- Fast, f1.9 photographic system allowing use of the slower single emulsion radiographic films that yield the best image quality
- Cardiac and/or respiratory gating capability
- Compatibility with all gamma cameras

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

Name

Hospital

Address

City

State

Zip

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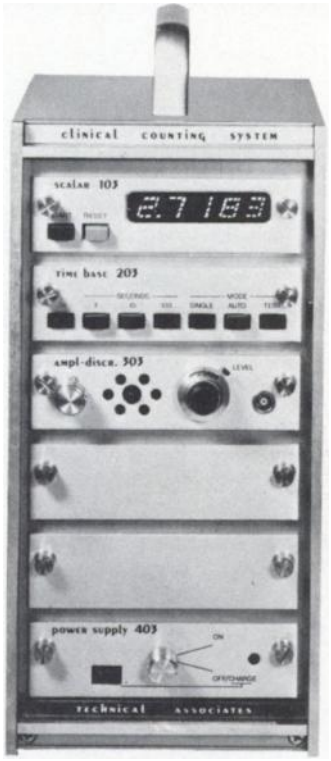
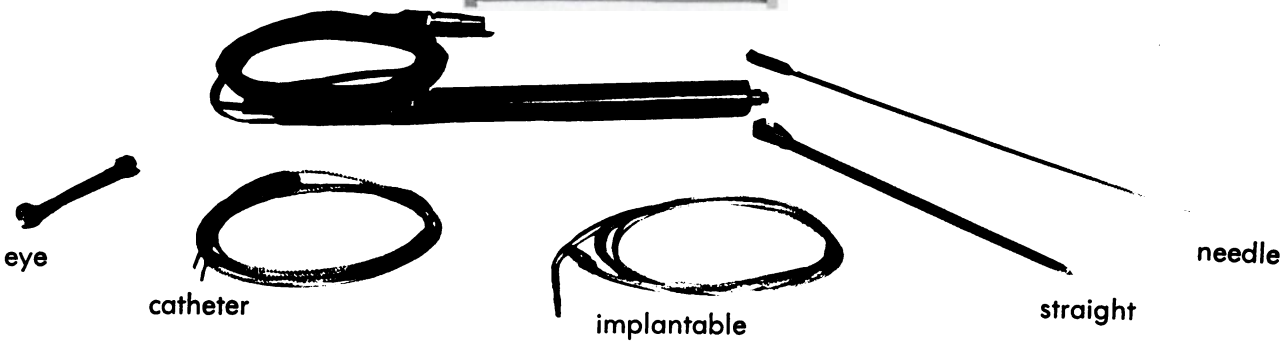
2 Penn Plaza
New York, New York 10001
(212) 946-5227

the proven clinical counting system





Solid State Probes

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Scintillator

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

TECHNICAL ASSOCIATES

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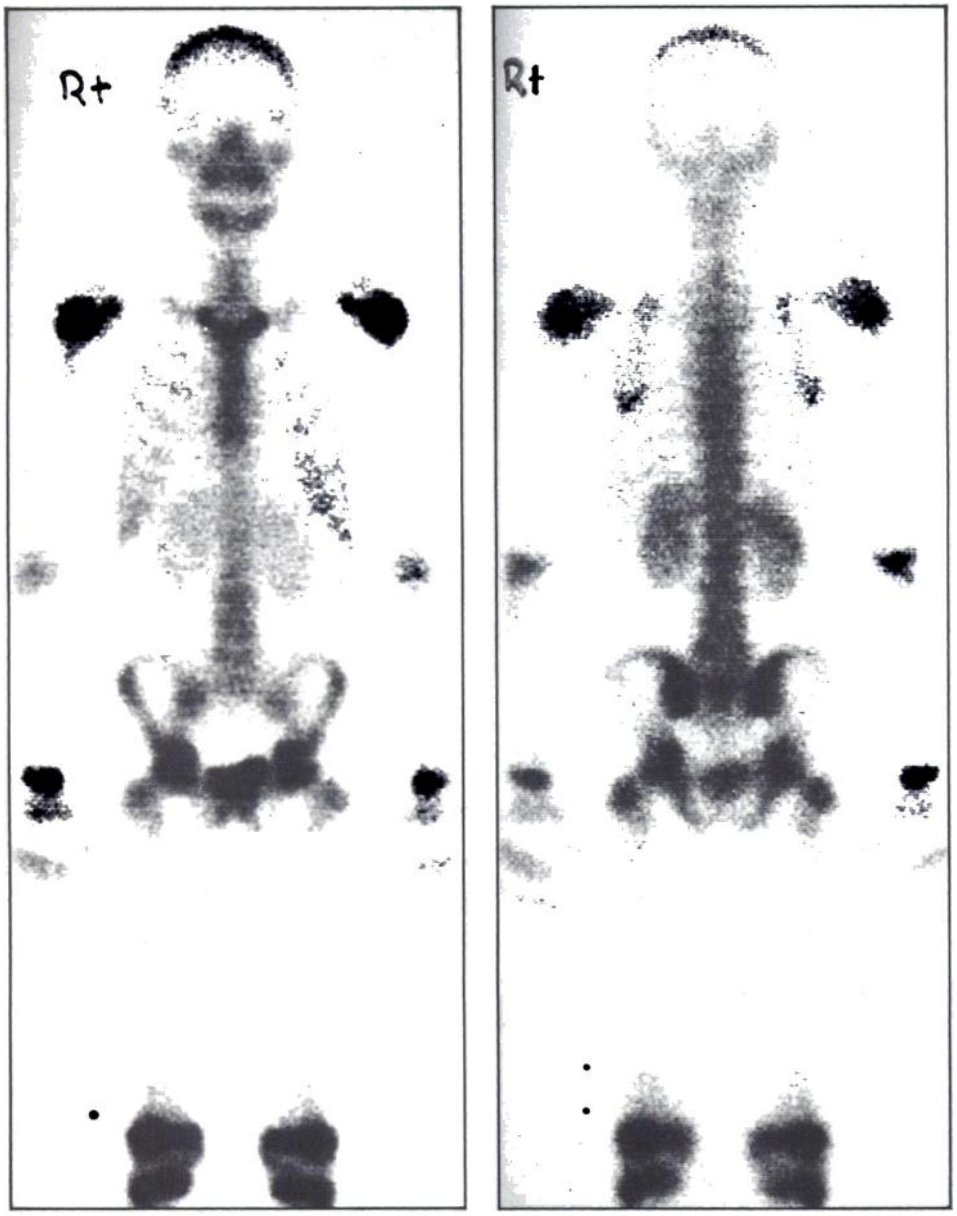
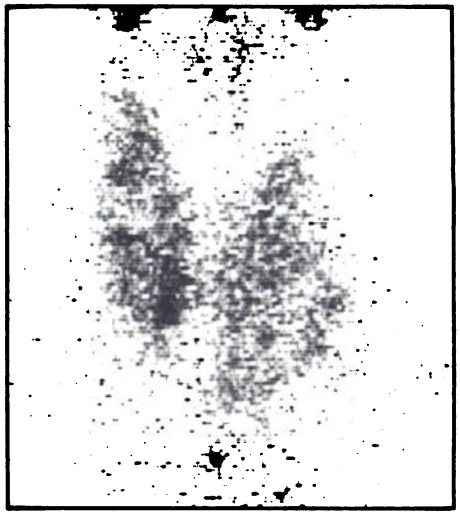
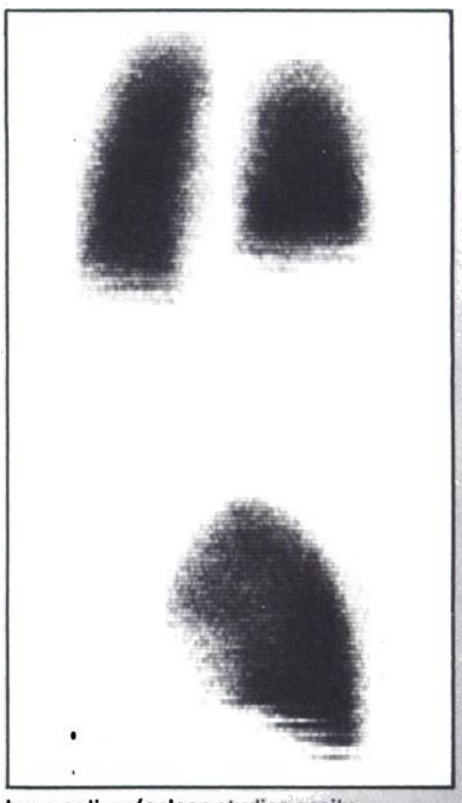
The more scans you do



12-year old boy—3:1 minification.



Enlarged thyroid.



Lung or liver/spleen studies easily **done because of** 24 inch field of view.

Maxiscan™ whole body scanner: proven in-hospital performance you can see.

the more it makes sense.

If you're considering the use of a gamma camera and attachments for whole body scans, you should be aware of an interesting phenomenon. What begins as two to three whole body scans weekly soon mushrooms to three or more per day. And while the camera is tied up with these scans, other exams are delayed. Department scheduling can be woefully disrupted.

Consider the GE alternative. The Maxiscan™ two-probe whole body scanner. One patient position. A single pass delivers two coincident views for more definitive diagnostic information. And, instrument component cost analysis demonstrates lower cost per scan.

Skeletal surveys cover a full 24 x 80 inches. The image, minified to fit 14 x 17 inch film, permits location and diagnosis of bone metastases, without a series of small area scans. For any single organ, select full size views or minifications of 2:1, 3:1, 4:1, or 5:1. Up to four scans may be displayed on one film, with precise quadrant placement and no image overlap.

Tiltable probes optimize brain scan views. Vertical scan option permits scanning of seated patients and vertex views of the brain. A mobile table can be equipped with automatic raising and lowering, providing easier patient positioning and transfer and numerous other advantages over fixed tables.

All scans can be viewed using standard film photorecording. Or, with GE's optional Video-display processing unit, you can see patient data in B&W or fully functional color. Image contrast and density are independently selectable, and are not affected by such variables as patient-to-patient count rate differences and scanning speed.

Why not arrange to see the Maxiscan unit's total performance demonstrated in a movie, together with in-hospital case studies. Call your GE representative.

General Electric
Medical Systems,
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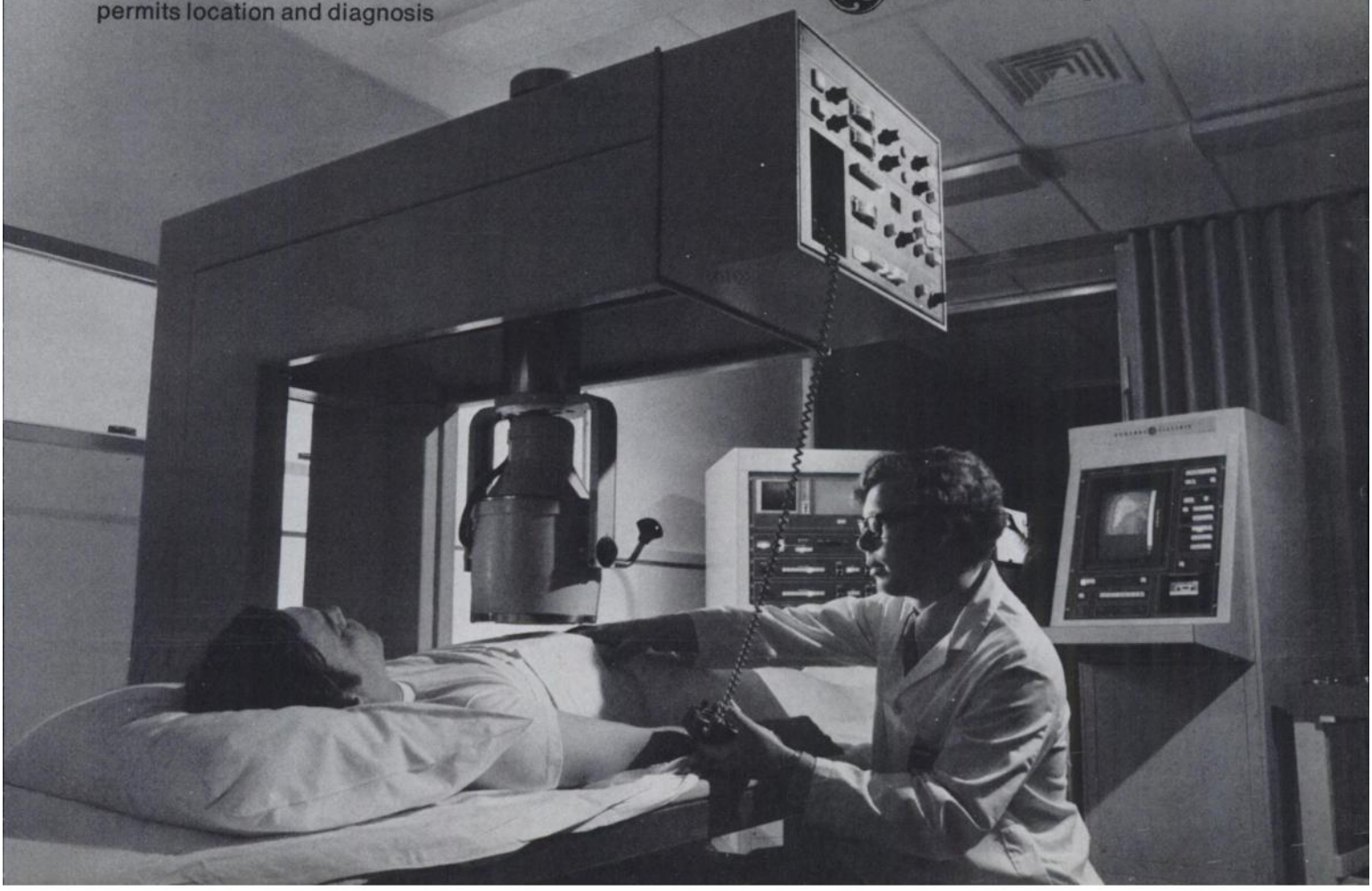
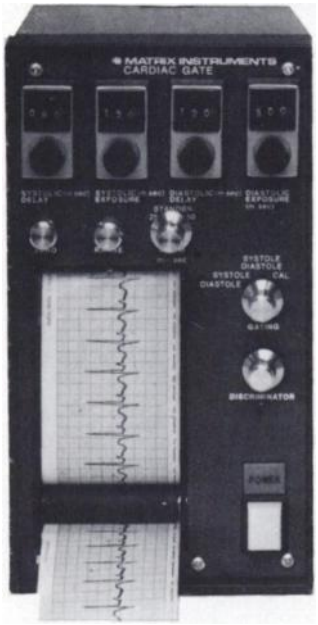
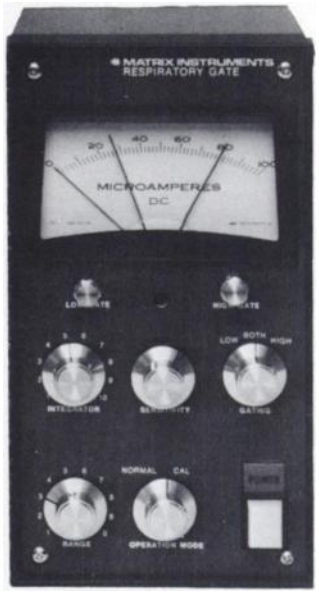


Cardiac and respiratory gating for gamma cameras and ultrasound scanners.

Cardiac Gate



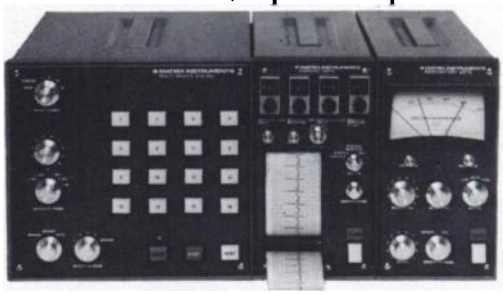


Respiratory Gate

The only system that can record both end-systole and end-diastole simultaneously. The Cardiac Gate allows cardiac blood pool imaging at end-systole and end-diastole. It is a complete ECG instrument, including a heated stylus strip chart recorder that records both the patient's cardiogram and the exposure gates. Independent delay and gate duration controls, calibrated in milliseconds, for both systolic and diastolic images allow optimum synchronization with each individual patient's cardiac cycle.

The Respiratory Gate is designed to minimize respiration motion artifacts in gamma and ultrasound imaging, particularly in liver and lung studies. When used with a gamma camera, the system operates without attaching any sensors to the patient. Unique circuitry allows direct sensing of organ motion by using the split crystal mode or areas of interest of the gamma camera. Thus, the motion of the organ itself is sensed, rather than indirectly through monitoring of respiration.

The Cardiac Gate and the Respiratory Gate can be combined to provide both cardiac and respiratory gating. When used with our Multi-Imager System all selectable states of the cardiac and respiratory cycles can be recorded simultaneously using multiple frame formats. Thus, both end-systolic and end-diastolic images, and both inspiration plateau and expiration plateau images can be recorded simultaneously using a two frame format. If both cardiac gating and respiratory gating is selected, a four frame format simultaneously records all four possible combinations: end-systole/inspiration plateau, end-systole/expiration plateau, end-diastole/inspiration plateau, and end-diastole/expiration plateau.



 # MATRIX INSTRUMENTS

2 Penn Plaza
New York, New York 10001
212-946-5227

Matrix Instruments, Inc., 2 Penn Plaza, New York, N.Y. 10001
Please send Cardiac and Respiratory Gate literature and sample studies

Name _____ Hospital _____ Address _____ State _____ Phone _____
Title _____ Dept. _____ City _____ Zip _____

Mail coupon to receive actual size sample studies.

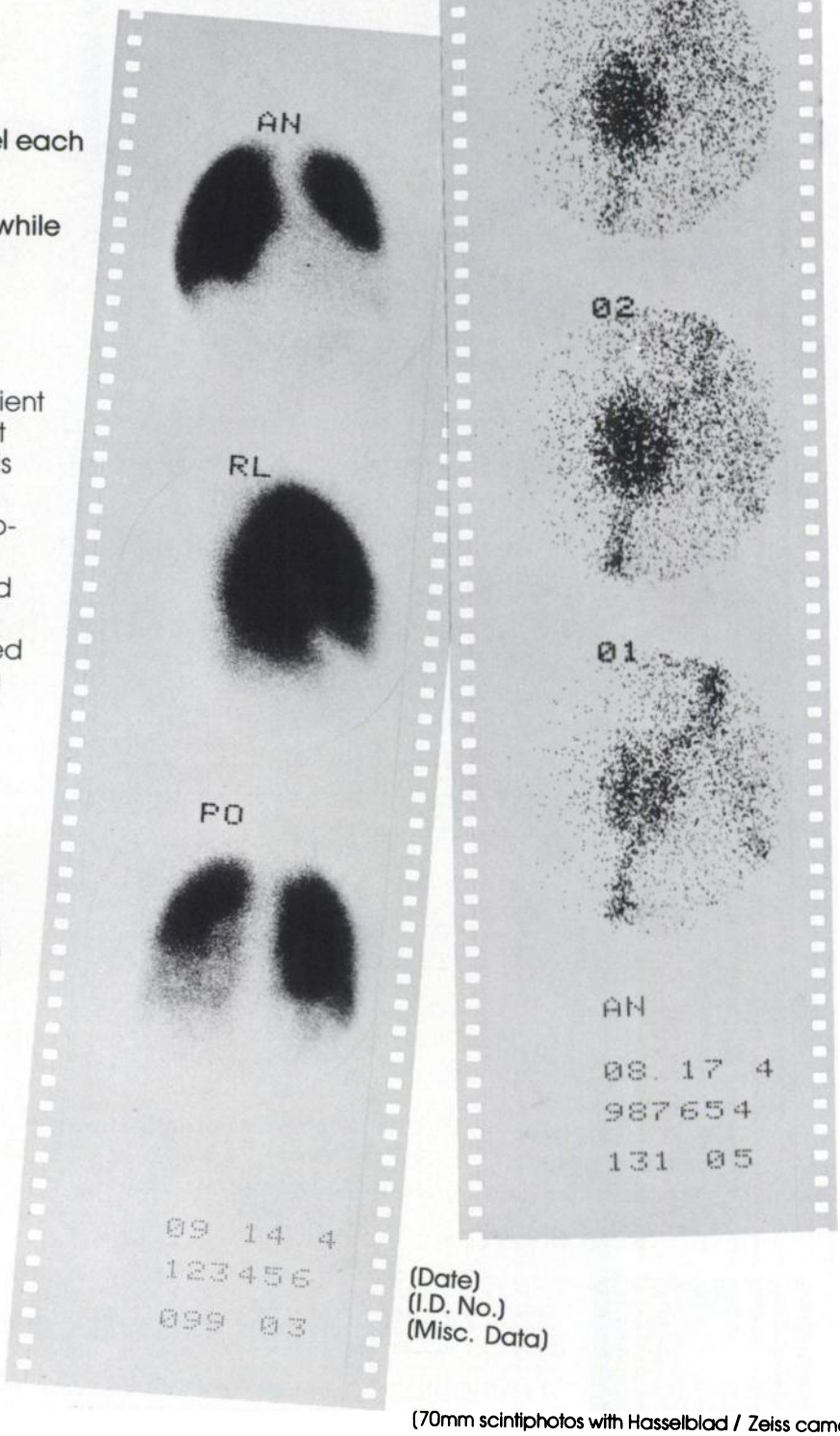
Patient I.D. System

- ☐ neatly and permanently label each patient's record
- ☐ minimize mislabelling errors while saving technologists' time
- ☐ display study parameters to enhance diagnostic value

The initial frame lists pertinent patient data and is easily viewed without magnification. Each static study is permanently labelled with the proper view; each dynamic exposure with a sequential number. Data is entered via keyboard and is displayed on the "B" scope for photography. Cables are included for direct connection to Gamma Camera or Thermograph CRT x,y,z input. An ultrasound option is available.

Model C-5200 Electronic Patient Identification System
$1850.00 F.O.B. factory

10-day trial with valid purchase order. No obligation.



(Date)
(I.D. No.)
(Misc. Data)

(70mm scintiphotos with Hasselblad / Zeiss camera)

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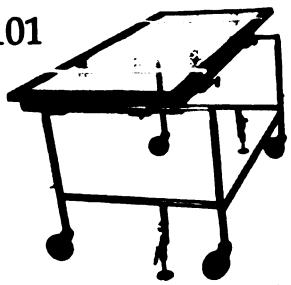
The XYZ-101 Imaging Table

• Simplicity • Versatility • Economy

The XYZ-101 Imaging table combines vertical motion with X & Y movement of the table top for maximum versatility with all cameras and scanners. And since it is entirely manually operated, it requires no heavy, complicated hydraulic systems, motors, or electrical connections.
As a result it is surprisingly low priced at **$1,295.00**

Other tables for
Nuclear Medical Applications

XY-101



Permits 10" of table top travel in both X and Y directions with graduated calibration scales for accurate re-positioning.

$995.00

EZ-101

Can be raised or lowered to exact height desired for patient transfer and gamma imaging.

$825.00

SC-101

Provides general purpose utilization.

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The Res-O-Mat® ETR® Test for thyroid function: what it can do, can't do and needs to do.

What the **ETR** test can do is deliver fast, highly accurate diagnosis of thyroid function. It's the first in vitro test to consider simultaneously total T4 concentration and the degree of hormone saturation of protein binding sites.[1]

It completely obviates the effects of pregnancy, the pill, iodides and many commonly used drugs. They don't even figure in the test system.

Based on actual clinical evaluation, this test has been shown to have a high degree of correlation with the true thyroid function of the patient.[2] [3] The **Res-O-Mat ETR** test has proven to be an extremely valuable method of monitoring thyroid therapy.

What the **Res-O-Mat ETR** test doesn't do is talk the routine language of traditional thyroid tests. It talks in **ETR units.** Precise, informative, but somewhat different. The test doesn't reflect protein abnormality. It isn't designed to. Its specific job is determining thyroid performance.

What the **ETR** test needs to do is to get a chance to prove itself to you. It's unfamiliar, so it's easy to resist. Those who have tried it usually see its advantages right away. They find themselves with a fast, highly accurate test.

Isn't that worth looking into?

(1) Mincey, E. K., Thorson, S. C., and Brown, J. L., et al. A new parameter of thyroid function—The effective thyroxine ratio. J. Nucl. Med. 13:165-168, February 1972.

(2) Gladding, T. C.: Effective thyroxine ratio (ETR)—A new test for thyroid function. J. Tenn. Med. Assn. 65:442-444, May 1972.

(3) Murray, I. P. C., Parkin, J., and Gubanyi, M.: The "Effective Thyroxine Ratio" in the assessment of thyroid function. Med. J. Australia 1:1190-1193, June 3, 1972.

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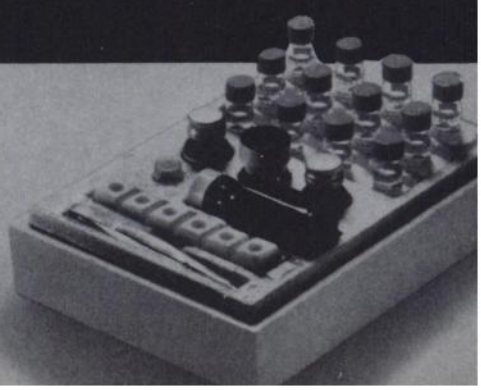
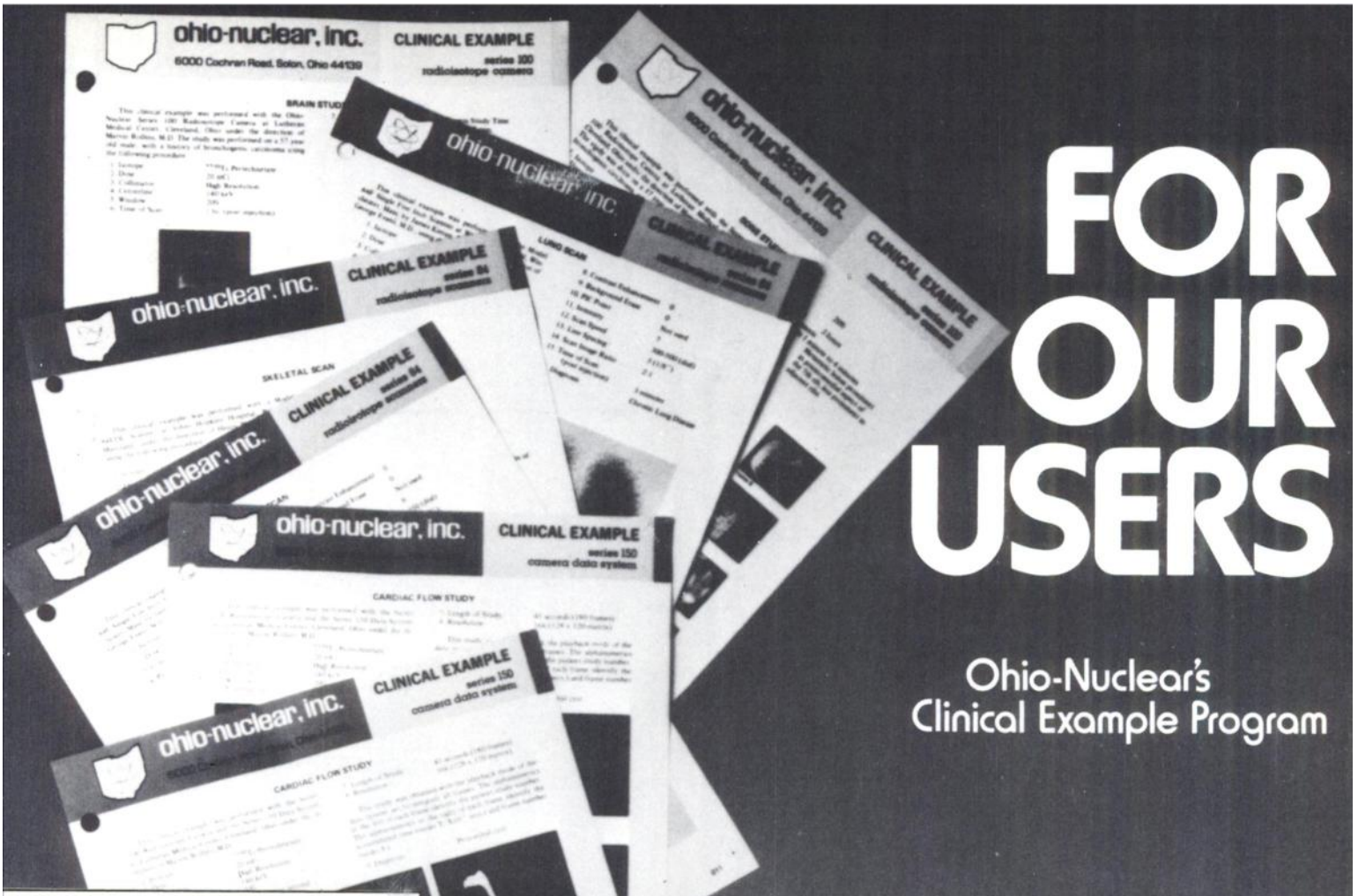
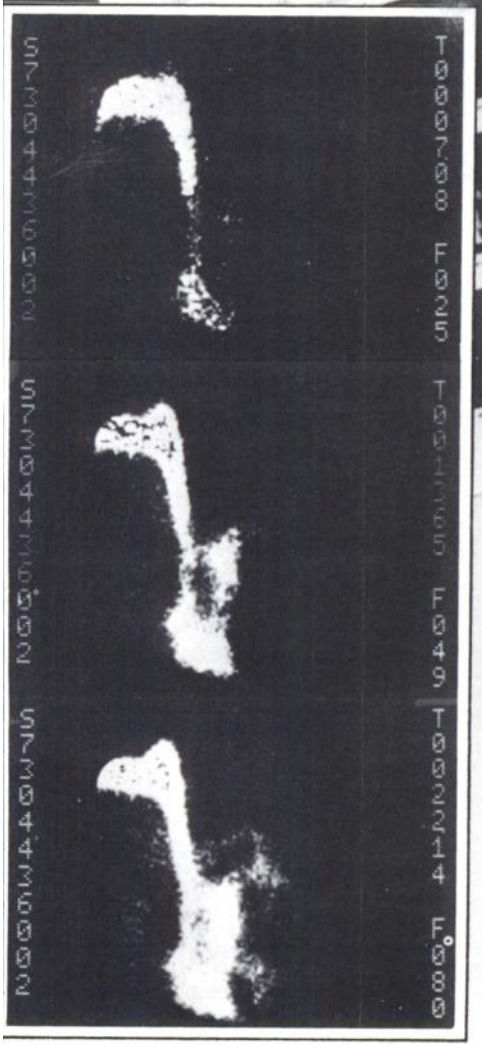
RADIOPHARMACEUTICALS
Mallinckrodt, Inc.
675 Brown Rd.
Hazelwood, Missouri 63042





FOR OUR USERS

Ohio-Nuclear's Clinical Example Program



Nuclear Medicine procedures are constantly changing and improving.

The real experts and innovators are you, our users.

We feel that the exchange of your techniques (some standard, some new and different) should lead to the continual improvement of results being obtained through the use of Ohio-Nuclear instrumentation.

We solicit them, through our Salesmen and Field Engineers, and reproduce them for your consideration.

If you are an Ohio-Nuclear user, and are not receiving our Clinical Example Program, please write us today.

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Total system RIA where chemistry comes first... 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.

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

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.

with RADX Plastic Film Holders

Viewing and filing images generated by today's high-speed scintiphotography cameras don't have to be a problem. Simply organize and protect your film with RADX plastic film holders. Easy to mount. Easy to view. Easy to file. The 35mm size holds three 6-frame (18 total) images in a 5 x 8 holder. The 70mm is available in two sizes. The 14 x 17 holds up to 25 images and the 8½ x 10½ holds up to 9 images. You can order these tough, durable transparent plastic holders in 100 sheet cartons or 500 sheet case quantities. Now that you know there's an easier way, call or write RADX. Send for samples and prices. Be sure to tell us your film size.

RADX
CORP

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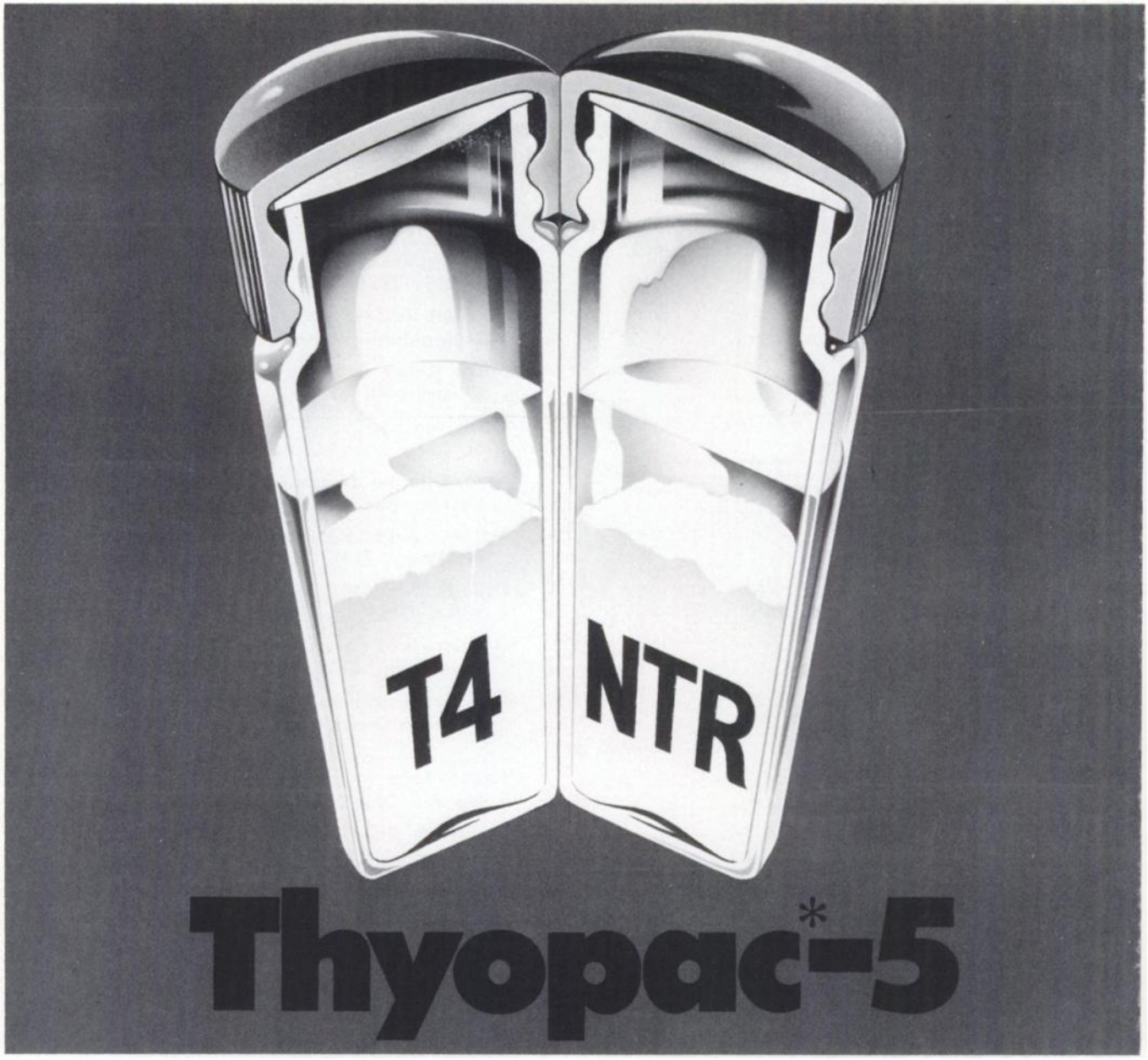
98A



From one simple test, two important results.

New Thyopac-5 is the first screening test which enables pathologists to perform a normalized thyroxine ratio (NTR) and a total thyroxine assay (T4) in the same vial. It thus separates simply, rapidly and precisely those patients with definite thyroid abnormalities from those with no dysfunction. After screening, Thyopac-3 and Thyopac-4 can be used to provide a more detailed diagnostic picture. In patients with normal thyroid function, Thyopac-5 automatically corrects for abnormal binding capacity, whether caused by unrelated clinical conditions such as pregnancy, hypoproteinaemia, or by medication such as oral contraceptives.
Full details available on request.

- two independent results from one test
- flexibility of choice: 3 assay sequences
- samples withdrawn at equilibrium
- independent of time and temperature

Thyopac*-5 a logical extension to thyroid function testing

The Radiochemical Centre Amersham

The Radiochemical Centre Limited, Amersham, England.
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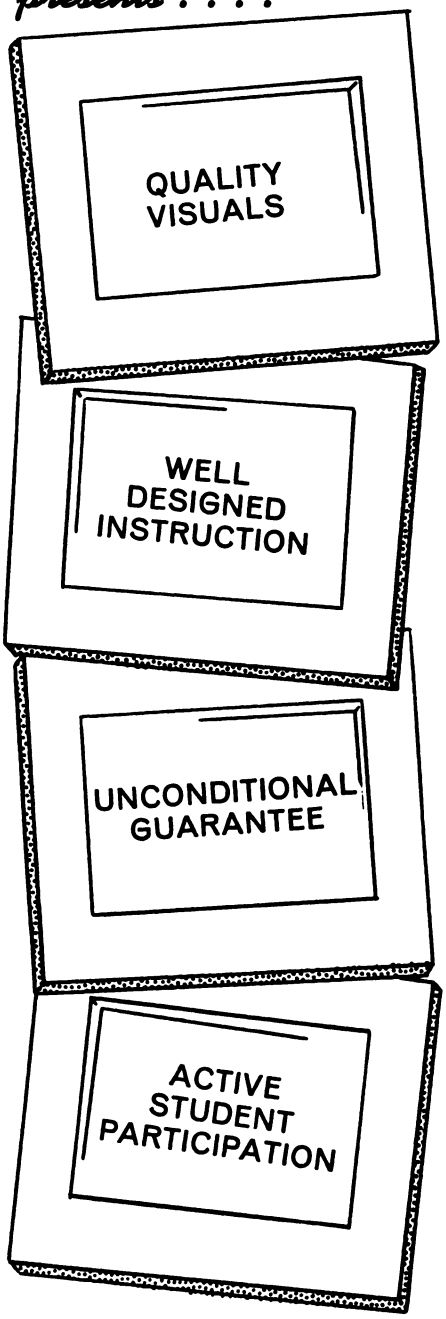

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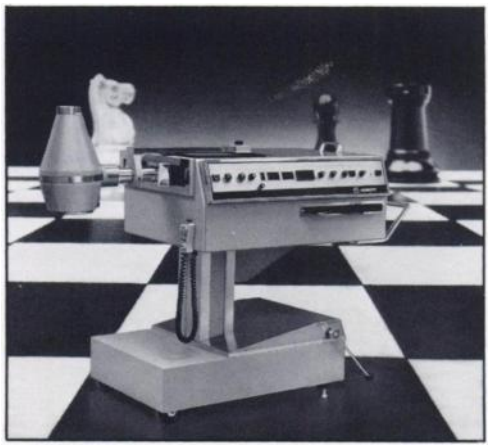

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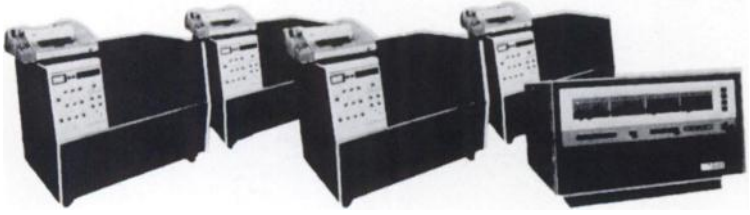

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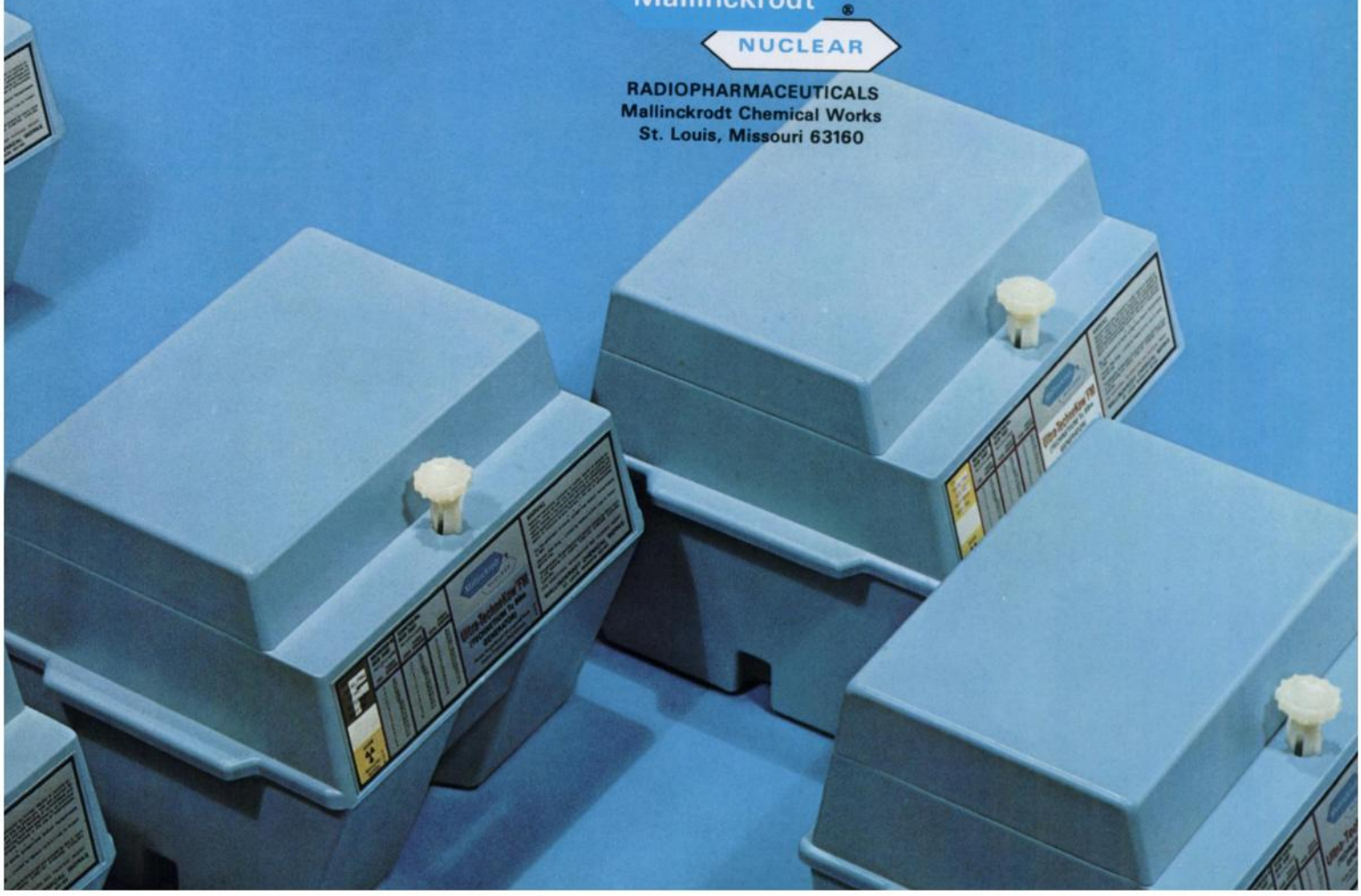


Roche Diagnostics announces an *in vitro* test to aid in the management and diagnosis of cancer

CEA-ROCHE

Carcinoembryonic Antigen assay

CEA-ROCHE: a diagnostic test of major clinical significance

Roche has long had a serious commitment to cancer research which has resulted in several important chemotherapeutic agents. Now, working in conjunction with the original researchers and with investigators at over 100 leading medical centers throughout the United States, England and Canada, Roche Research has adapted, refined and evaluated CEA-ROCHE, an *in vitro* test for the carcinoembryonic antigen (CEA) found in a variety of malignant and nonmalignant conditions. An extensive collaborative study, under way for almost three years, has tested CEA-ROCHE in over 35,000 assays in more than 10,000 patients using identical protocols, procedures and reporting methods.[1] Because of the importance of this assay, one of the most thorough and well controlled research programs conducted for a diagnostic product was undertaken. The following data were derived from these studies.

Decreases in CEA titers were reported to be associated with effective therapy.[2-7] Serial determinations of CEA proved to be of value in assessing the condition of the patient during therapy.[3-6,8] 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.[9,10] Except for primary pancreatic and colorectal carcinoma, titers above 20 ng/ml were, with very rare exceptions, associated with the presence of metastatic disease.[10] However, metastatic disease may also occur when the CEA titer is below 20 ng/ml.

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.[7,10-12]

In a special study of 883 patients, cigarette smoking with titer elevations was associated with atypical sputum cytology.[13] 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 where other reagents are used.

CEA-ROCHE: limitations

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.

CEA-ROCHE: nature of assay

CEA-ROCHE uses the Hansen Z-gel method and combines the specificity of an immunological procedure and the sensitivity of radiochemistry. It provides results at nanogram (billionth of a gram) levels and detects CEA levels as low as 0.5 ng/ml. Briefly, the principle of CEA-ROCHE is as follows: CEA is extracted from the plasma specimens and allowed to react with specific CEA antiserum. ^{125}I-CEA is then added and allowed to react with the remaining CEA antiserum. The ^{125}I-CEA bound to antibody is separated from excess free ^{125}I-CEA with zirconyl phosphate gel and the bound ^{125}I-CEA determined by counting in a gamma scintillation spectrometer. The partition of ^{125}I-CEA between bound and free fractions is a function of the amount of CEA present in the plasma. The amount of CEA present in the plasma sample is determined from a standard inhibition curve.

CEA-ROCHE: the test kit

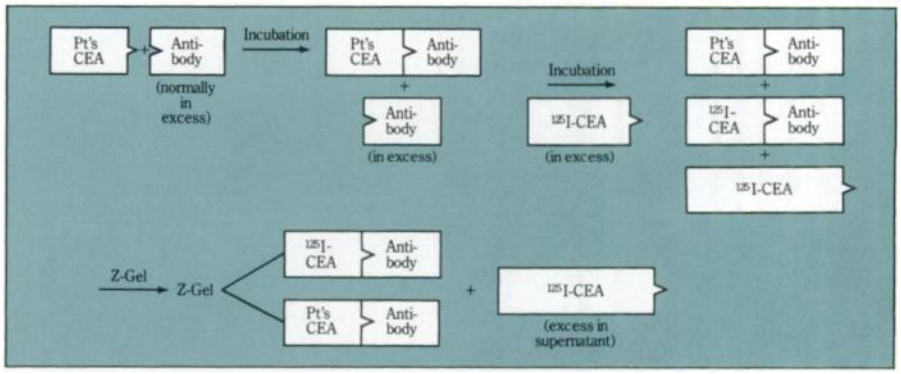
Each kit contains CEA antiserum, CEA standard, ^{125}I-CEA, EDTA buffer stock solution and zirconyl phosphate gel (Z-gel). All components are supplied in excess to assure sufficient material for at least 100 tubes (or for approximately 40 patient plasma samples assayed in duplicate with the necessary controls). Because of the stringent quality control procedures used in the production of CEA-ROCHE, you are assured of consistency from lot to lot. The CEA-ROCHE™ kit has a 17-day shelf-life and should be stored at 4° to 8° C. Store EDTA buffer and Z-Gel at 15° to 30° C.

■ materials available

Control specimens in four titer ranges (0-2.5 ng/ml, 2.6-5.0 ng/ml, 5.1-10.0 ng/ml, greater than 10.0 ng/ml); 2.5-ml dispensers for Z-gel bottles; presealed dialysis bags and ^{125}I-CEA to refurbish kits which may have expired are all available separately from Roche Diagnostics.

■ equipment needed

The laboratory must have the following equipment to perform CEA-ROCHE: micropipettes; vortex-type mixer; horizontal-head centrifuge; gamma scintillation spectrometer and access to approximately 150 liters/100 tubes of distilled or deionized water.



CEA-ROCHE Utilizing the Hansen Z-Gel Method

■ AEC license required

Because CEA-ROCHE contains radioactive material, an AEC or agreement State license is required. A copy of your license or completed License Declaration Form available from Roche Diagnostics is required before shipment can be made.

ROCHE DIAGNOSTICS: provides these special services to laboratories using CEA-ROCHE

Because of the clinical significance of the CEA-ROCHE assay and the critical area of medicine involved, Roche Diagnostics will provide laboratories wishing to run this test with advice and technical assistance in setting up the necessary facilities. Should any questions arise during testing, Roche Diagnostics will be pleased to provide further advice and assistance. A plasma evaluation service and consultation on volume processing are also available.

In addition, two in-depth brochures have been prepared:

1. CEA-ROCHE Clinical Monograph—providing complete clinical information.
2. CEA-ROCHE Procedure Manual—providing complete technical information.

Either or both may be obtained by completing and returning the reply coupon below.

Finally, Roche Diagnostics will be sponsoring an extensive educational program to physicians, including audio, visual and print material.

references:

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12. Moore TL, *et al: JAMA 222*:944-947, 1972
13. Hansen HJ, *et al: Human Pathology*, In Press

Gentlemen: E-9

☐ Please have a Roche Diagnostics representative call on me to discuss the use of CEA-ROCHE.

Please send me complete information on CEA-ROCHE.

☐ CEA-ROCHE Clinical Monograph

☐ CEA-ROCHE Procedure Manual

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CEA-ROCHE
Carcinoembryonic Antigen assay

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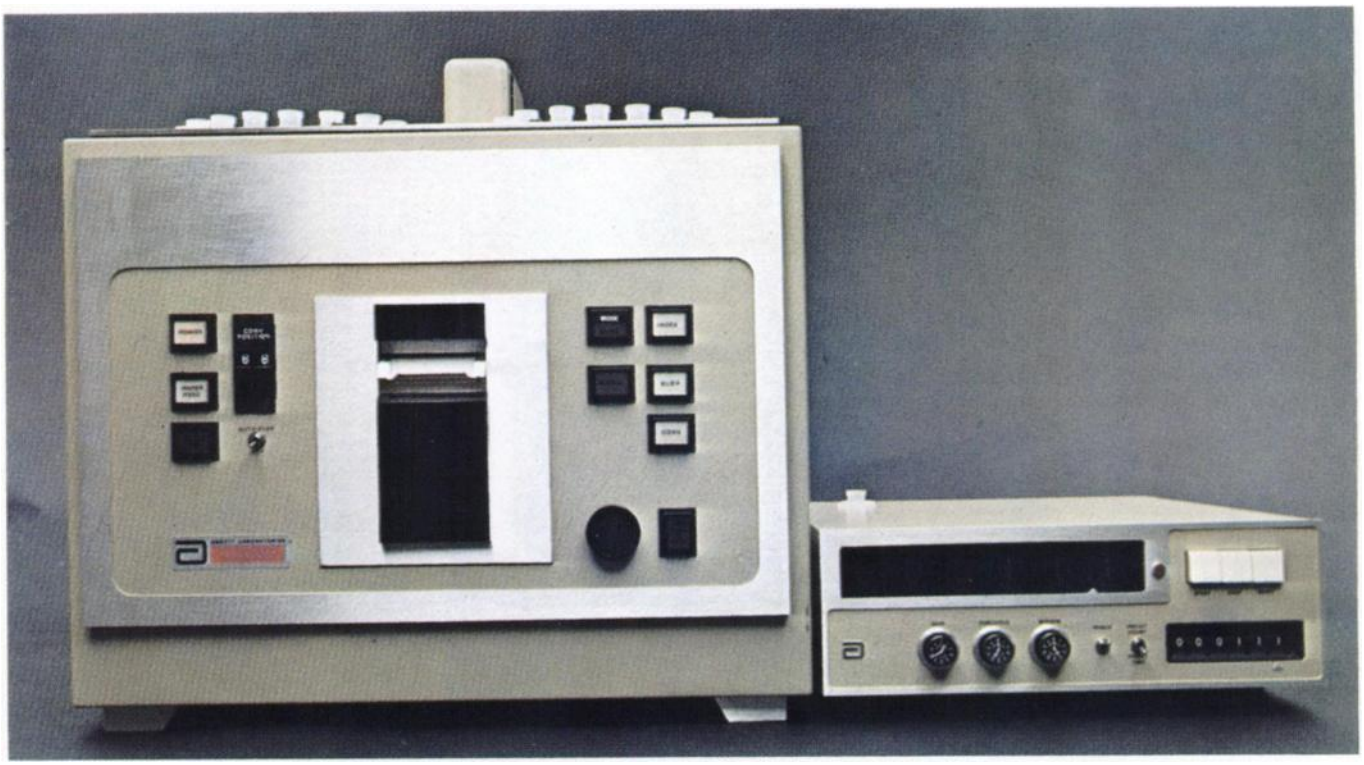

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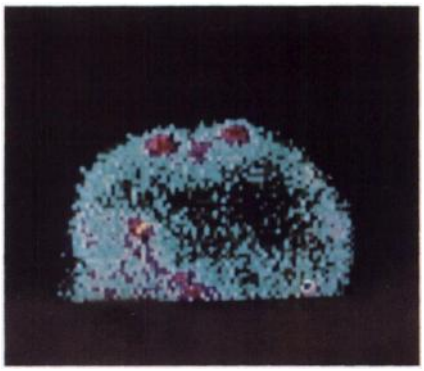
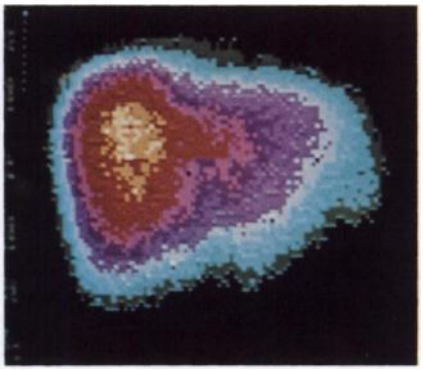
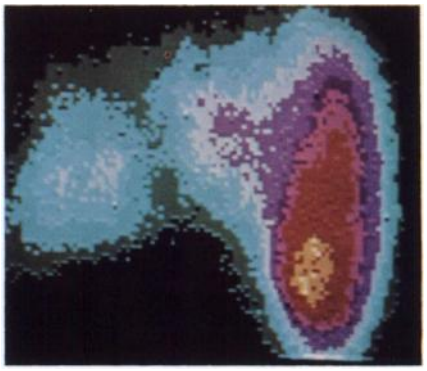


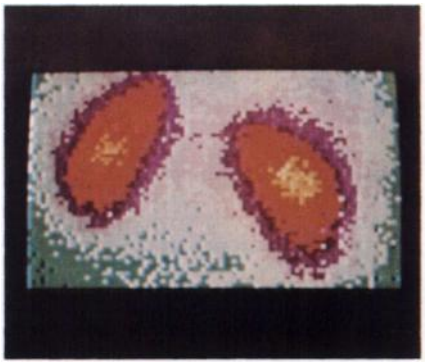
Abnormal Lt. Lat. brain-bone scan



Normal ant. liver scan



Ant. cirrhotic liver scan



Normal kidney scan

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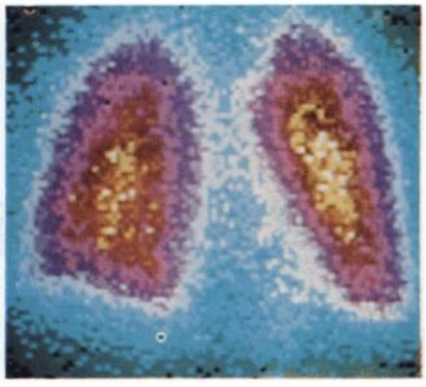
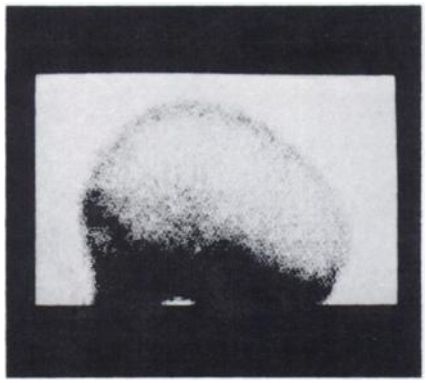
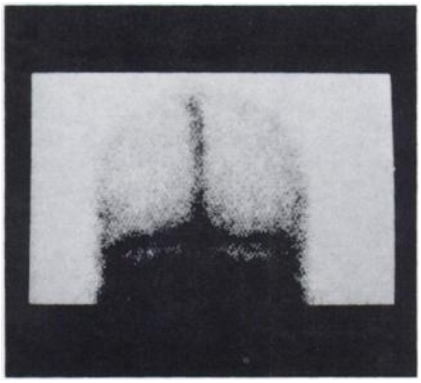


Normal ant. lung scan



Normal Rt. Lat. brain scan



Normal post. brain scan

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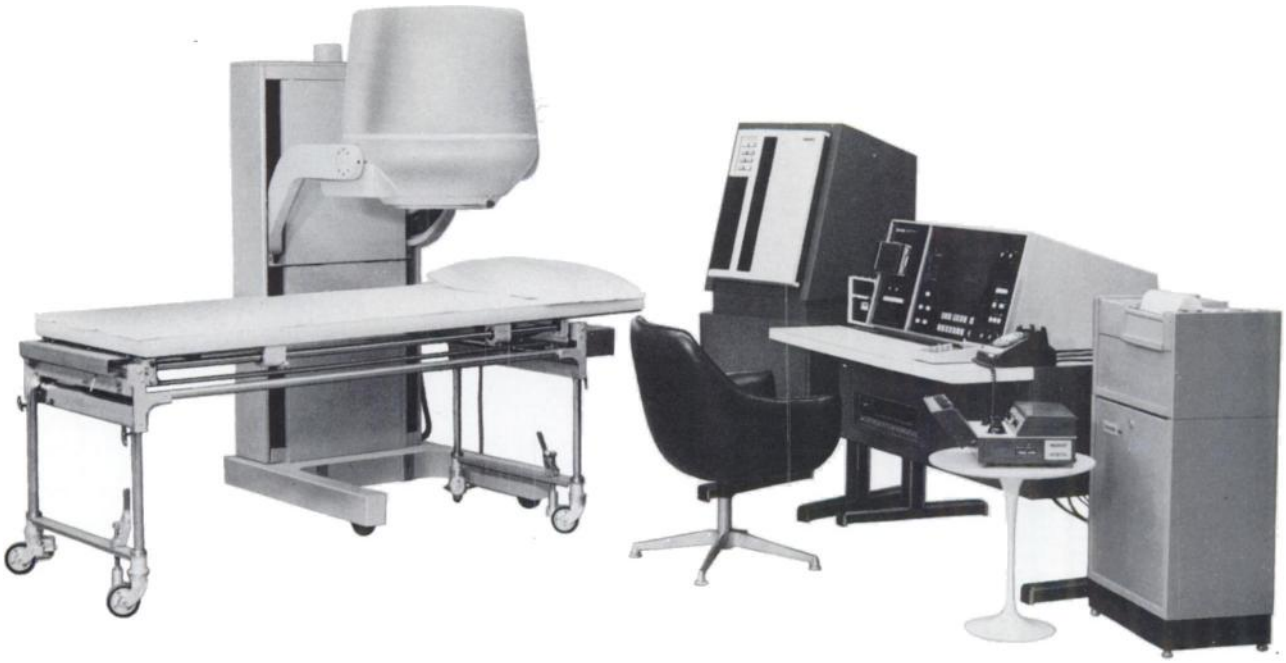

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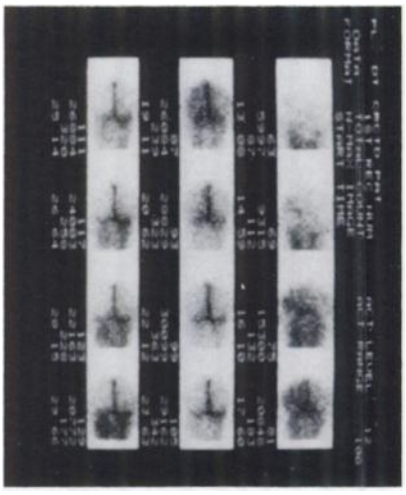
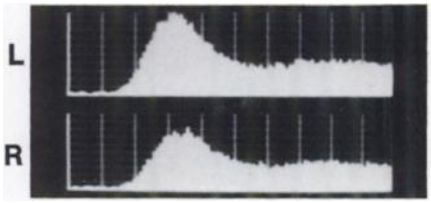
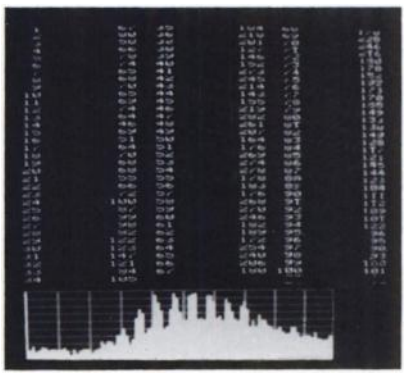


Cerebral blood flow study demonstrating delayed perfusion in the right hemisphere.

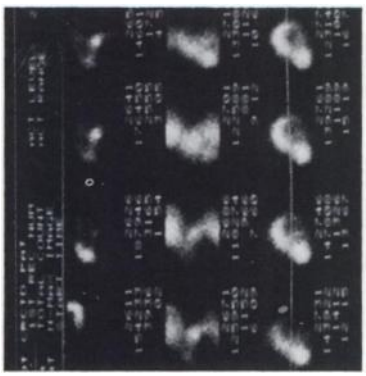
Quantitative brain dynamic showing 30% decreased perfusion on right side.



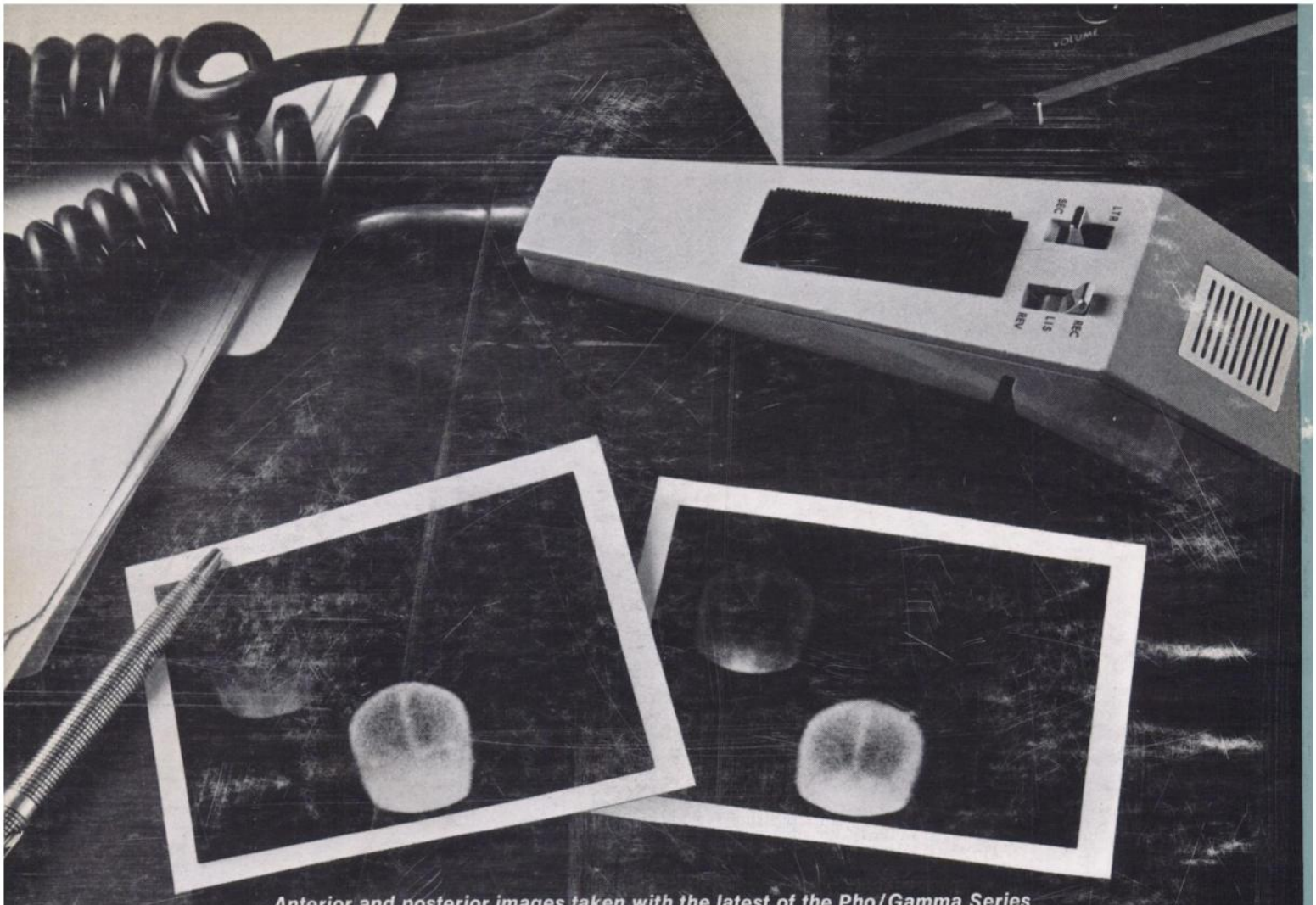
Curves produced in less than 30 seconds after conclusion of patient study.



Normal Lt. ventricular curve ejection fraction .60



Normal cardiac blood flow



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