

MEDI+PHYSICS'

Daily

is like having
your own
radiopharmacist
and cyclotron.

Service

You should be able to get radiopharmaceuticals reliably, any time, and on short notice.

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

Now you can order late today and receive shipment by tomorrow morning. And for most of the U.S., deliveries are made by dependable, surface transportation.

Result—better service than ever on your radiopharmaceutical requirements. Call the Medi+Physics laboratory nearest you.

medi+physics

**San Francisco (415) 658-2184
(Emeryville)**

**Chicago (312) 671-5444
(Rosemont, Ill.)**

**Miami (305) 888-4521
(Hialeah)**

**Los Angeles (213) 245-5751
(Glendale)**

**New York / New Jersey (201) 757-0500
(S. Plainfield, NJ)**

**Houston (713) 482-7535
(Friendswood)**

Dallas (214) 638-6763

Atlanta (404) 696-1044



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

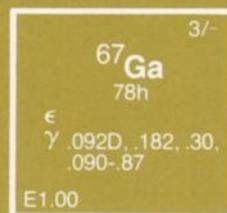
operation by any radioisotope technologist.

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.

Gallium Ga 67

Gallium Ga 67 is produced on a regular basis on NEN's own Cyclotron, by the proton irradiation of enriched Zinc Oxide. It is made into a dosage form of Gallium citrate Ga 67, and contains a preservative. It is now under clinical evaluation for such disease states as bronchogenic carcinoma, lymphomas, and Hodgkin's disease.



Send for additional information

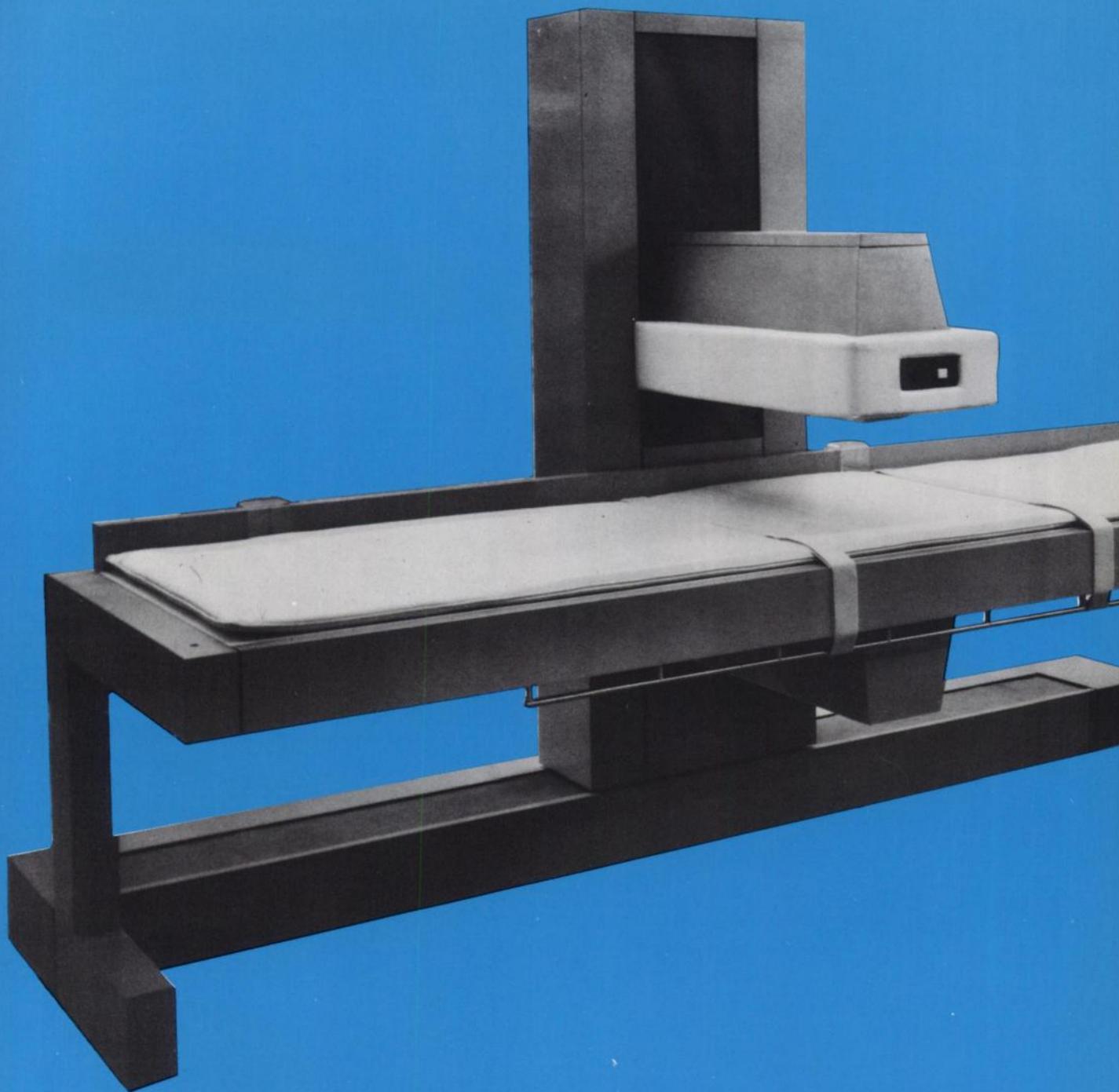
Name _____
Affiliation _____
Address _____
_____ Zip _____



**New England Nuclear
Radiopharmaceutical Division**

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

Canada: NEN Canada Ltd., Dorval, Quebec, H9P-1B3. Tel: (514) 636-4971. Telex: 05-821808
Europe: NEN Chemicals GmbH, D6072 Dreieichenhain, Siemensstrasse 1, W. Germany. Tel: Langen (06103) 85035



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

Radiodiagnostics

T3-Test kit

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



BEHRING INSTITUTE
S. Behring

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

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

CONTENTS
12 adsorption tubes
1 package of defined TBG capacity

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

STORAGE
8 weeks at proper storage
The expiry date is indicated
on the package.

For further information and service
please contact
the Farbwerke Hoechst AG
subsidiary
in your country



Now there are two more

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

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

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

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

radiation exposure. A 500 ml saline supply permits an uninterrupted milking schedule.

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

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

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

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

Subject to AEC or state licensing regulations

Mallinckrodt®

NUCLEAR

RADIOPHARMACEUTICALS
Mallinckrodt Chemical Works
St. Louis, Missouri 63160



Specific diagnosis

When you spend thousands of dollars for nuclear equipment, what should you be getting? **SERVICE.**

GOOD RESPONSE TIME. You get it, because we have enough men in our Service Group to handle even the peak demands created by seven hundred installations in the U.S. alone. More in Europe and other places, but that's another story.

OUR FIELD ENGINEERS ARE EQUIPPED, not only with their "little black bag" and an oscilloscope, but with so much gear in their service cars that we specify heavy duty suspensions on all vehicles we lease. Why?

MODULAR DESIGN in everything we build. That's important. Pull one out, and plug another in. Even down to individual ICs (integrated circuits) and transistors. And nobody else can offer you that. We do it at the expense of some short range profit. But our long range thinking tells us, if it's easier to maintain, you get better service. And we get a better customer.

And **EXCLUSIVE SPECIALIZATION.** Our Field Engineers work only on clinical nuclear equipment. That's what we sell. That's what we service. No other equipment. We're specialists.

We're also **RECOGNIZED IN THE INDUSTRY.** It's interesting. Two years ago, we had a tough time recruiting experienced Field Engineers. Today, they're coming to us, all the time. Does that tell you something?

Right. **WE'RE GROWING.** And that means a better opportunity, for the right man. During 1974, we plan to add five new Field Engineers each quarter, twenty for the year, just to keep up with our increasing sales.

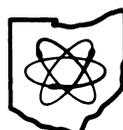
"DIRECT SERVICE IS MORE IMPORTANT THAN DIRECT SALES." Quote. Joe Teague, President, Ohio-Nuclear. Want proof? Last year, one of our sales territories was without a salesman for about six months. Yet sales continued, over projected quota. Why? Our Field Engineers were there, on the job. We figure those potential customers knew they could get service, knew the equipment was right for them, and decided we would somehow get the orders processed and the equipment installed. Which we did.

Finally, we're **COMMITTED** to service, wherever we sell. And we live up to that commitment, day after day, before and after that occasional breakdown that plagues any piece of sophisticated equipment. Ask our users. Or ask us, about service agreements. Details and cost vary with type and model of equipment. Write us for full information. We'll be here — this year, next year, and the year after.

your bag



and our bag



ohio-nuclear, inc.

6000 COCHRAN ROAD • SOLON, OHIO 44139
PHONE (216) 248-8500 • TWX NO. 810-427-2696

(U.K.), Radix House, Central Trading Estate, Staines, Middlesex, England • Phone Staines 51444

Skeletal Imaging Agent

Stannous Polyphosphate is provided in lyophilized form. Nitrogen flushed, it is reconstituted with pertechnetate Sodium Tc 99m for intravenous administration as a diagnostic skeletal imaging agent.



Please send additional information

Name _____

Affiliation _____

Address _____

_____ Zip _____



**New England Nuclear
Radiopharmaceutical Division**

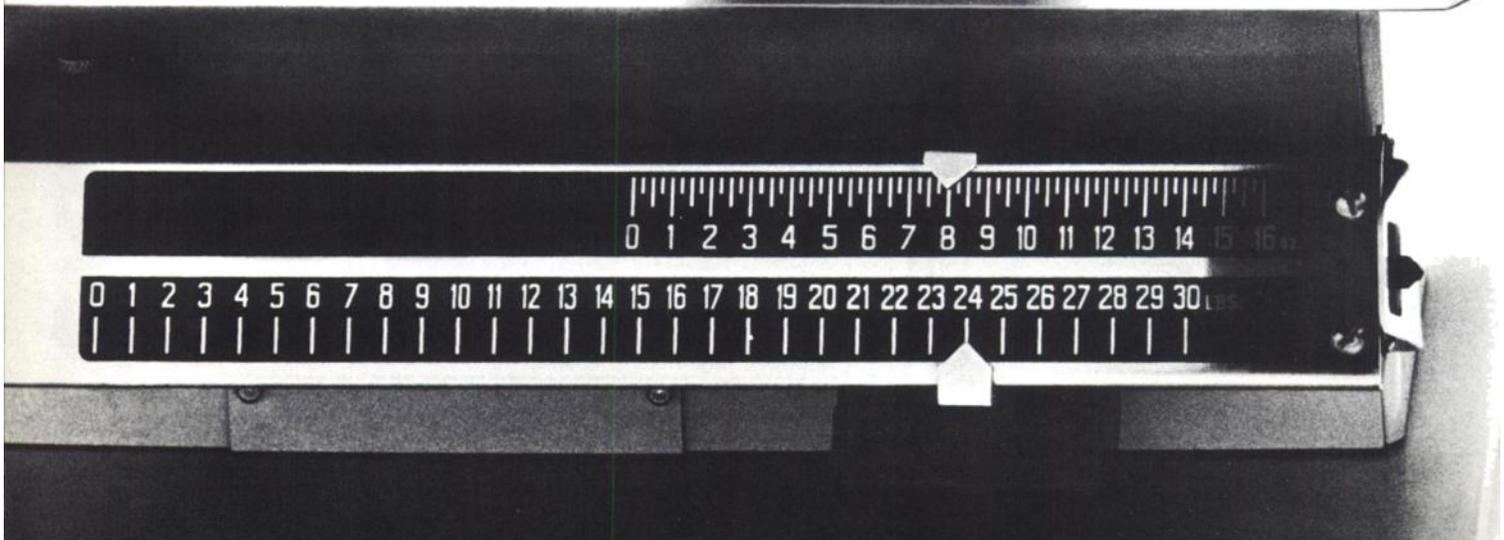
Atomlight Place, North Billerica, Mass 01862
Telephone (617) 667-9531

Canada: NEN Canada Ltd., Dorval, Quebec, H9P-1B3, Tel. (514) 636-4971, Telex 05-821808
Europe: NEN Chemicals GmbH, D6072 Dreieichenhain, Siemensstrasse 1, W. Germany, Tel. Langen (06103) 85035

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; 1½" 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 MAXISHIELD™ makes added protection part of the system. Removable base, cap and interlocking half rings on site to add 1½" of extra lead protection. Only the cap is removed for elution.



Medtopes®



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.

Medotopes®



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

© 1974 E. R. Squibb & Sons, Inc.

H604-040



Mike Finamore was told he had leukemia. Nine years ago.

When Mike Finamore was thirteen years old, he was told he had leukemia.

At that time, this meant he had five, maybe six months to live.

But just about then, leukemia research produced some dramatic results.

A special combination of drugs that would kill the leukemia cells in the blood and permit the person to live longer than ever before.

So Mike was treated.

And it worked.

He didn't die.

Instead, he became one of the fortunate few to have leukemia and live. And today his weekly treatments enable him to lead a normal life.

In fact, right now he's putting the roof on a house he built himself.

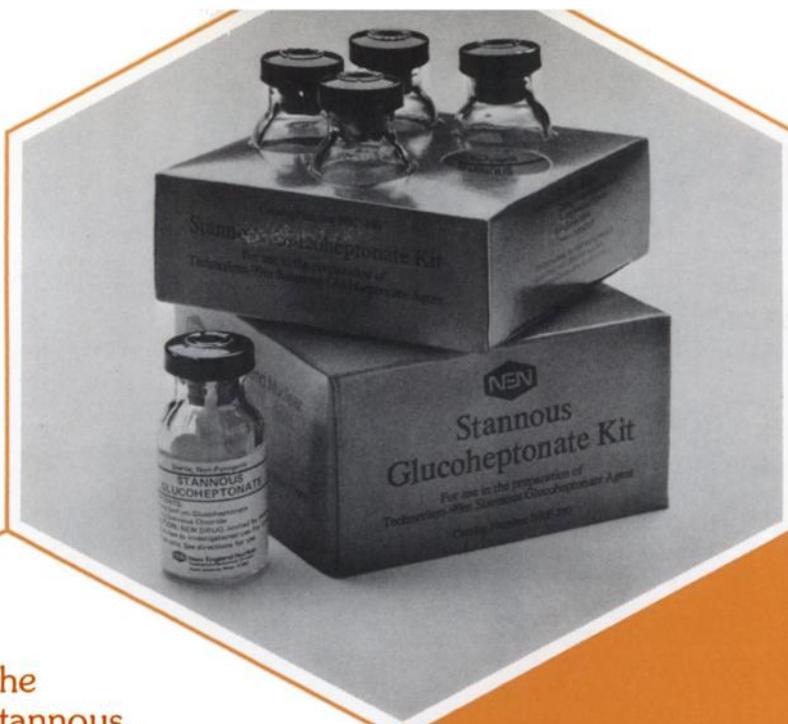
And when it's finished there will be a double celebration.

The new house. And Mike's 22nd birthday.

Most people expect presents. Mike's happy just to have a birthday.

**We want to wipe out cancer
in your lifetime. Give to the
American Cancer Society.**

This space contributed by the Publisher as a Public Service.



The
NEN Stannous
Glucoheptonate Kit
provides lyophilized stannous
glucoheptonate to be used in pre-
paring technetium Tc 99m stannous
glucoheptonate agent by the injec-
tion of technetium pertechnetate
sodium Tc 99m. The resulting diagnos-
tic agent, upon intravenous adminis-
tration, is being studied for its use-
fulness for kidney and brain
imaging and perfusion
studies.

Kidney/Brain Imaging Agent

Send for additional information

Name _____

Affiliation _____

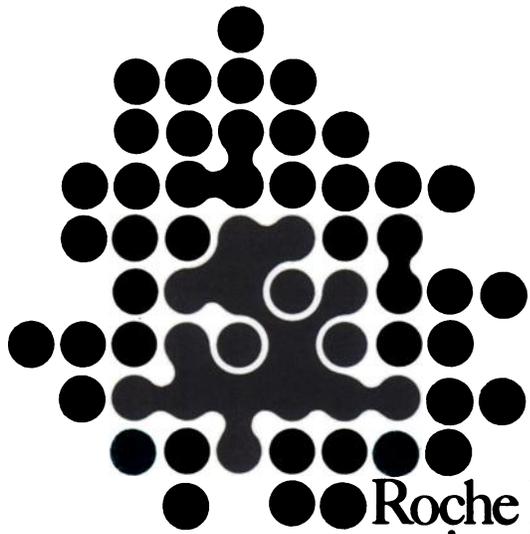
Address _____

_____ Zip _____

NEN New England Nuclear
Radiopharmaceutical Division

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

Canada: NEN Canada Ltd., Dorval, Quebec, H9P 1B3, Tel. (514) 636-4971, Telex 05-821808
Europe: NEN Chemicals GmbH, D6072 Dreieichenhain, Siemensstrasse 1, W. Germany, Tel. Langen (06103) 85035



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

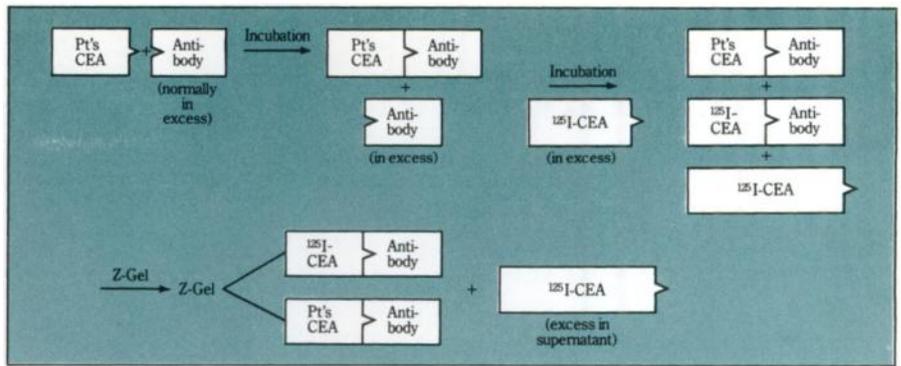
Each kit contains CEA antiserum, CEA standard, ^{125}I -CEA, EDTA buffer stock solution and zirconyl phosphate gel (Z-gel). All components are supplied in excess to assure sufficient material for at least 100 tubes (or for approximately 40 patient plasma samples assayed in duplicate with the necessary 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;



CEA-ROCHE Utilizing the Hansen Z-Gel Method

vortex-type mixer; horizontal-head centrifuge; gamma scintillation spectrometer and access to approximately 150 liters/100 tubes of distilled or deionized water.

■ 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:

1. Third Conference, Carcinoembryonic Antigen (CEA) Test Collaborative Study, Hoffmann-La Roche Inc., April 21, 1973
2. Dhar P, et al: *JAMA* 221:31-35, 1972
3. Holyoke ED, et al: *Ann Surg* 176:559-564, 1972
4. Reynoso G, et al: *JAMA* 220:361-365, 1972
5. Vincent R, Chu TM: *J Thorac Cardiovasc Surg* 66:320-328, 1973
6. Zamcheck N, et al: *New Eng J Med* 286:83-86, 1972
7. Gold P, et al: *Dis Colon Rectum*, In Press
8. Sorokin J, et al: *Gastroenterology* 64:894, 1973
9. Holyoke ED, et al: *Rev Surg* 30:305-311, 1973
10. Data available on request from Hoffmann-La Roche Inc, Nutley NJ
11. Rule A, et al: *New Eng J Med* 287:24-26, 1972
12. Moore TL, et al: *JAMA* 222:944-947, 1972
13. Hansen HJ, et al: *Human Pathology*, In Press

E-7

Gentlemen:

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

NAME _____

TITLE _____

LABORATORY/INSTITUTION _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

CA-2K



ROCHE DIAGNOSTICS
Division of Hoffmann-La Roche Inc.
Nutley, New Jersey 07110

CEA-ROCHE

Carcinoembryonic Antigen assay

The XYZ-101 Imaging Table



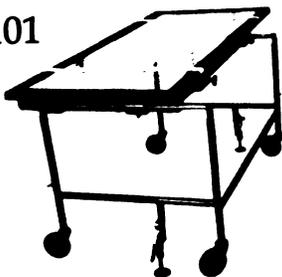
• **Simplicity** • **Versatility** • **Economy**

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.

\$425.00

• All prices F.O.B. Plainview, N.Y.



ATOMIC DEVELOPMENT CORP.

7 FAIRCHILD COURT ■ PLAINVIEW, NEW YORK 11803 ■ (516) 433-8010

Now You Have a Choice of Moves



GRAPHIC™ **the portable scanner**

Move it anywhere — for use or storage. The GRAPHIC scanner is compact, yet capable of performing thyroid uptake and other scanning duties... in any room. The GRAPHIC Rectilinear Scanner is your scanning lab on wheels.



Abbott Laboratories
Diagnostics Division
North Chicago, IL60064

Yes, I'm interested in having a choice of moves!

Please send me more information on the GRAPHIC™ Rectilinear Scanner and its applications in the ICU, Emergency Room, Isotope Laboratory and as a mobile unit.

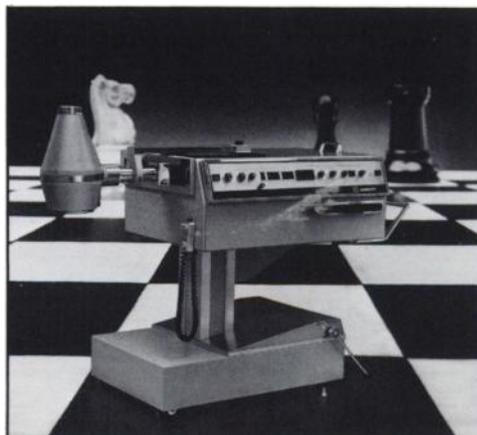
Name _____

Institution _____

City _____ State _____ Zip _____



The GRAPHIC™ Rectilinear Scanner



No Extra Space Needed

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

No Need For Additional Staff

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

teach your technician to get excellent scans from your GRAPHIC time after time.

Nuclear Medicine In Your Intensive Care Unit

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

Move Your GRAPHIC By Van

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

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

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

Mobility — Just One Of Many Advantages

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

- able to give more scans per day
- dependable
- built to last
- requires little care
- covered by full warranty
- backed with a full service commitment

World Leaders In Diagnostic Research



Abbott Laboratories

Diagnostics Division

North Chicago, IL60064

First Class
Permit No. 2
North Chicago
Illinois

BUSINESS REPLY MAIL

No Postage Necessary If Mailed In The United States

Postage Will Be Paid By —

ABBOTT DIAGNOSTICS DIVISION

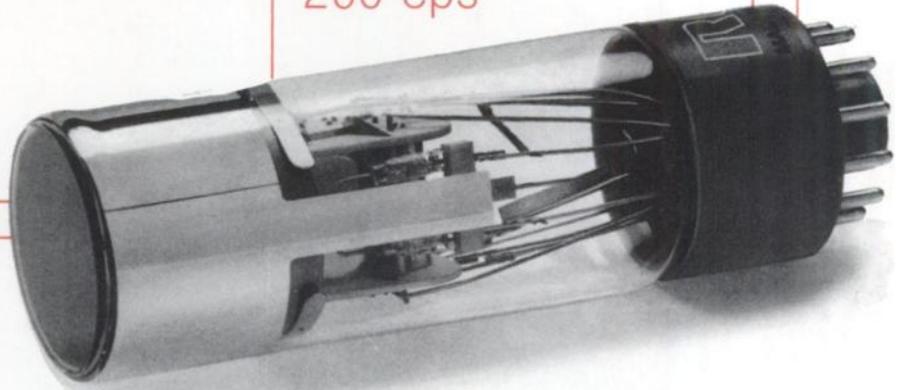
Abbott Park, AP-8

North Chicago, Illinois 60064

Dept. 929

Now RCA makes the big difference in PMTs for soft X-ray detection.

Parameters	RCA's new C31061
1. Pulse Height Resolution (with Fe55)	47% (typ.)
2. Peak-to-Valley Ratio	30:1
3. Dark Noise	200 cps
32 pe	
Σ	
1/4 pe	



It's the new RCA C31061 that outperforms its competitive photomultiplier in the most important parameters required in soft X-ray spectrometry. Best of all, the C31061 is a plug-in replacement for competitive brand XP1010. As a result, practically all equipments using that brand can be simply switched to RCA.

Behind the dramatic performance achievements of the C31061 is one of today's significant advances in photomultiplier technology: a new and unique electron-optics approach that results in improved cathode efficiency due to greater collection efficiency. It produces a new level of performance that can improve, significantly, a wide variety of X-ray and clinical instrumentation.

So why wait to make the big

difference in your equipment. The new RCA C31061 is available now through your RCA Representative or RCA Industrial Tube Distributor. Or contact Manager, Marketing, RCA Electro Optics, New Holland Avenue, Lancaster, PA 17604. Telephone (717) 397-7661. TWX 717-560-4430. Or complete and return the reply coupon.

Manager, Marketing, Electro Optics
 RCA, New Holland Avenue, Section 189G
 Lancaster, PA 17604

Please send me more information on the big difference in PMTs . . . RCA's C31061.

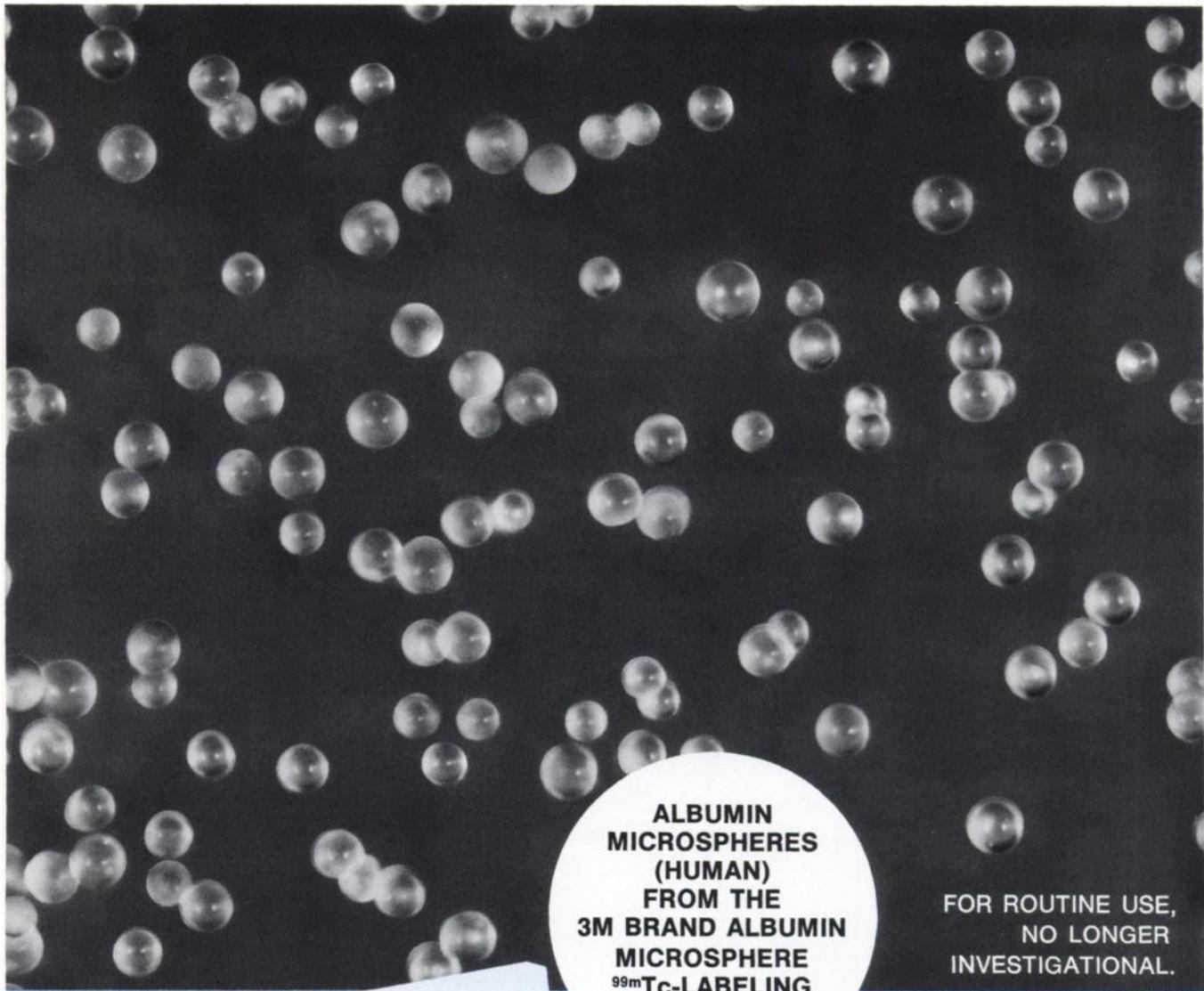
Name _____

Company _____

Street _____

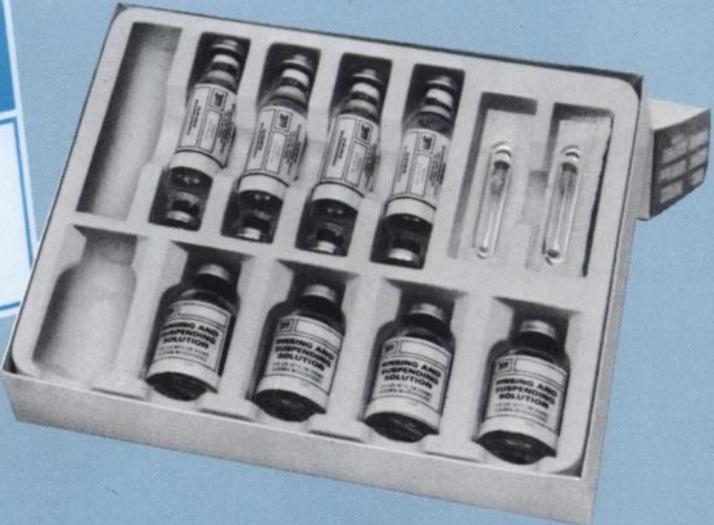
City/State/Zip _____

RCA Electro Optics



**ALBUMIN
MICROSPHERES
(HUMAN)
FROM THE
3M BRAND ALBUMIN
MICROSPHERE
 ^{99m}Tc -LABELING
KIT**

FOR ROUTINE USE,
NO LONGER
INVESTIGATIONAL.



FOR CONSISTENT LUNG IMAGES

day after day after day after day!

USE ^{99m}Tc ALBUMIN MICROSPHERES

- **Uniform Shape and Size**

Perfectly spherical, the 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. The result — no hot spots or extra-lung activity.

- **Integral, yet Biodegradable**

Each Albumin Microsphere is a single homogeneous sphere of albumin — they 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, if required. Microscopic analysis of lung tissue in the mouse showed 99 percent of the administered microspheres were gone after 29 hours.¹

1. Data on file at the 3M Company and the Bureau of Biologics.

- **Eliminate Interference from "Free" Technetium "Free" isotope**

need no longer interfere with the scan. The unique filter construction of the Microsphere Labeling Vial allows the free isotope to be removed, leaving just labeled microspheres for suspension.



- **Stable Kit**

Currently the expiration date of each kit is 6 months after the date of manufacture. You can stock the kit and have it available for immediate use. Even a department doing a moderate amount of lung imaging can take advantage of quantity discounts.

- **Each Lot FDA Approved**

Thoroughly tested by 3M, each lot is checked by the Bureau of Biologics, FDA, and approved for shipment. This provides a double-check of sterility, lack of pyrogens, and all the important performance parameters of the kit.

INDICATIONS Scintillation imaging of the lungs with ^{99m}Tc -Labeled Albumin Microspheres is indicated as an adjunct to other diagnostic procedures whenever information about pulmonary circulation is desired.

CONTRAINDICATIONS The safety of Albumin Microspheres in patients with a known right-to-left cardiac shunt has not been established and its use in such patients is contraindicated.

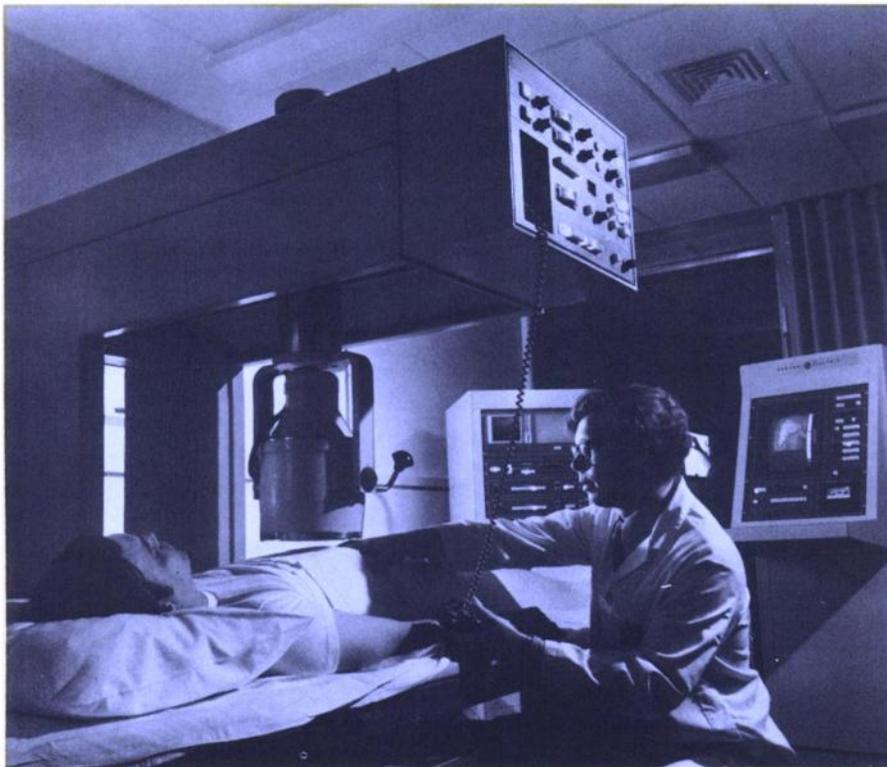
SIDE EFFECTS Although no anaphylactoid reactions have been reported in patients following the administration of Albumin Microspheres, the possibility should be considered that hypersensitivity reactions may occur rarely in patients who receive additional doses of the Microspheres.

HOW SUPPLIED Each kit contains five labeling units. Each labeling unit contains one day's supply of Albumin Microspheres (5mg — enough for 5 to 7 patients) plus all the reagents necessary to attach technetium to the microspheres.

For detailed information about Microspheres and the 3M Brand Albumin Microsphere ^{99m}Tc -Labeling Kit, write: **Nuclear Products for Medicine**, 3M Company, 3M Center, St. Paul, Minnesota 55101, or phone TOLL FREE (800) 328-1671.

3M
COMPANY

information compendium



Versatile information and procedural capability proven by in-hospital scanning performance

More usable diagnostic information, obtained with reduced procedural set-up time and less opportunity for technic error throughout, is marking the in-hospital performance of the Maxiscan™ two-probe whole body scanner.

This is true across the performance range of the unit: Whole body scans, single organ studies, scan minification, multiple scans on a single film, vertex views of the brain, a choice of image display with scans in black and white or full color, and more.

For skeletal surveys, the Maxiscan unit covers a full 24 x 80 inches. Saves time. Makes sure no ankles or elbows are cut off the image,

even with taller and wider patients. The minified image permits location and diagnosis of bone metastases, with whole body reference.

For single organ examinations, images may be viewed full size, or minified 2:1, 3:1, 4:1 or 5:1. Up to four scans can be displayed on one film, with precise quadrant placement and no image overlap. Provides better patient throughput while maintaining diagnostic quality images.

For all procedures, the unit's two probes, top and bottom, cover the patient's isoresponse curve without turning him over. And, collimators can be interchanged in seconds. For optional vertical plane

scanning, the unit permits studies with the patient upright; also permits vertex views of the brain with the patient reclining normally.

Videodisplay Processor

All scans produced with the Maxiscan unit can be viewed using standard film photorecording, or with GE's optional Videodisplay Processing unit. The VDP displays and quantifies patient count information in black and white or in fully functional color. Images, displayed on the unit's video monitor and produced from count information stored in the electronic memory, can be manipulated to enhance desired details. This aids interpretation and diagnosis. Enhanced VDP data can also be played back to the scanner and photorecorded on film. Scans, recorded on cassette tape, permit off-line playback and use in teaching. Count information from any scanner or camera can also be transmitted from one VDP to another over regular telephone lines.



Digital Dose Calibrator with a unique plus

Sliderule calculations have been replaced by the flip of a switch. That easily, the General Electric Digital Dose Computer — working in concert with the Digital Dose Calibrator — displays activity, plus assay volume, computed concentration, the patient's dose and the computed volume (dosage) required.

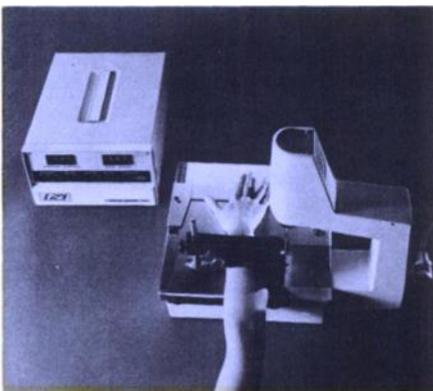
The procedure is performed by, first, placing the radioisotope in the Calibrator at the beginning of the day or after milking the generator. The Dose Computer then measures the activity and computes the con-

centration. Its run-down memory continually updates the Tc-99m concentration as it decays.

Calculations may also be performed on other radioisotopes without disturbing the stored information for the Tc-99m. The volume required for any patient dose is available whenever needed. And, this performance speed and accuracy are combined with integral safety features. After the once daily assay, the radioisotope is returned to shielded storage. The concentration of Tc-99m is entered into the run-down memory of the Dose



Computer, which is programmed for a 6.0 hour half-life. With $\pm 5\%$ accuracy maintained throughout 12 hours (2 half-lives).



Measure changes and losses of bone mineral in seconds

Without biopsy, without x-ray examinations, hospitals are now quantitatively assessing skeletal integrity for the diagnosis and treatment of maladies involving bone mineral metabolism.

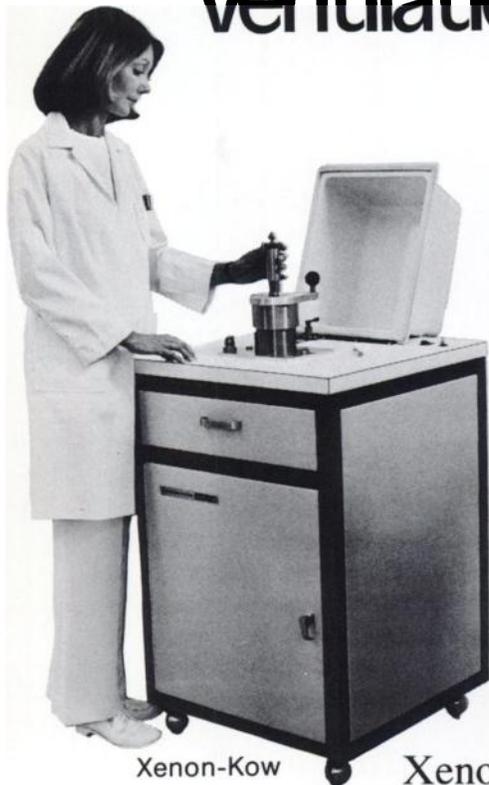
The non-invasive Bone Mineral Analyzer available from General Electric precisely measures changes and losses in bone mineral content and bone width. Permits studies at various stages of disease progress, to help project the likelihood of fracture and aid development of treatment programs.

This proven performance capability is provided by (1) a scanner which automatically transports a closely collimated beam of monoenergetic gamma rays (^{125}I) across the forearm in a programmed pattern; and, (2) a mini-computer which utilizes the generated data to calculate the mineral content and bone width, and digitally displays the measurements. This data can then be related to normal and specific patient populations.

The radioisotope for this compact, portable, easy-operating Bone Mineral Analyzer can be purchased from General Electric.

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

RADX **has the system** **...for Xenon** **ventilation and perfusion studies**



Xenon-Kow

Xenon-Kow

The Radx Xenon-Kow transfers high specific activity gas to a clinically useful dose — either gas or gas/saline solution. For ventilation studies ^{133}Xe gas can be transferred directly to the Radx Ventil-Con.

A safe, economical method of storing, dispensing and controlling radioactive gas. It utilizes the most inexpensive form of ^{133}Xe presently available — a 1 curie, 5cc glass ampoule. The system is contained in two free-standing consoles.



Ventil-Con

The Ventil-Con console dispenses controlled gas to the patient for pulmonary investigations. A system designed for the convenience of the technologist, the physician and the patient.

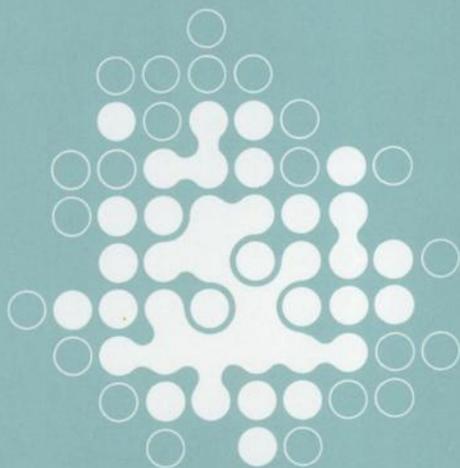
Call RADX or write for complete literature.

RADX
CORP

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

Roche announces
a significant contribution
to the management
and diagnosis of cancer

CEA-ROCHE 
Carcinoembryonic Antigen assay



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

Carcinoembryonic Antigen assay

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

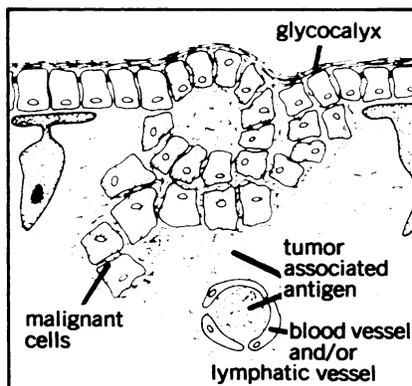
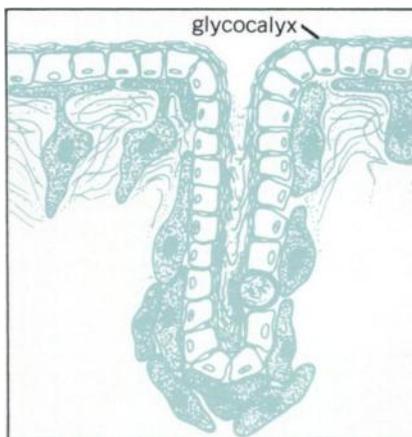
the discovery of carcinoembryonic antigen

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 endodermal 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

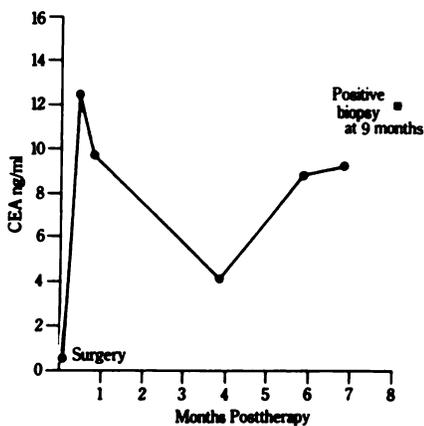
During the initial studies with CEA, it became clear that in order to obtain the reproducibility necessary to make the CEA assay an important and reliable diagnostic tool, strict standardization of procedure and reagents was required. Therefore, Roche embarked upon a unique investigational program. More 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

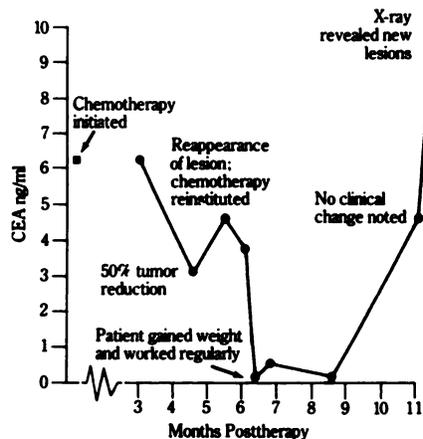
**representative case
history of patient being
treated for malignancy
without known
metastases**



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

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

CEA-ROCHE

Carcinoembryonic Antigen assay

A significant contribution to the management and diagnosis of cancer

availability of CEA-ROCHE

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

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

comprehensive information available

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

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

references

1. American Cancer Society: 1974 Cancer Facts and Figures
2. Cutler SJ, Heise HW: *JAMA* 216:293, 1971
3. Gold P, Freedman SO: *J Clin Invest* 44:1057, 1965
4. Gold P, Freedman SO: *J Expl Med* 121:439-462, 1965
5. Gold P, Freedman SO: *J Expl Med* 122:467-481, 1965
6. Krupey J, et al: *Immunochemistry* 9:617-622, 1972
7. Go VLW: Data on file, Hoffmann-La Roche Inc, Nutley NJ
8. Hansen HJ, Lance KE, Krupey J: *J Clin Res* 19:143, 1971
9. See Package Insert or Physicians' Desk Reference for complete product information.
10. Chu TM, Reynoso G: *Clin Chem* 18:918-922, 1972
11. Third Conference, Carcinoembryonic Antigen (CEA) Test Collaborative Study, Hoffmann-La Roche Inc, Nutley NJ, April 21, 1973
12. Dhar P, et al: *JAMA* 221:31-35, 1972
13. Holyoke ED, et al: *Ann Surg* 176:559-564, 1972
14. Reynoso G, et al: *JAMA* 220:361-365, 1972
15. Vincent R, Chu TM: *J Thorac Cardiovasc Surg* 66:320-328, 1973
16. Zamcheck N, et al: *New Eng J Med* 286:83-86, 1972
17. Gold P, et al: *Dis Colon Rectum*, In Press
18. Sorokin J, et al: *Gastroenterology* 64:894, 1973
19. Holyoke ED, et al: *Rev Surg* 30:305-311, 1973
20. Data available on request from Hoffmann-La Roche Inc, Nutley NJ
21. Rule A, et al: *New Eng J Med* 287:24-26, 1972
22. Moore TL, et al: *JAMA* 222:944-947, 1972
23. Hansen HJ, et al: *Human Pathology*, In Press

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.

Dr. _____

Address _____

Please return to Roche, P.O. Box 282, Nutley, N. J. 07110



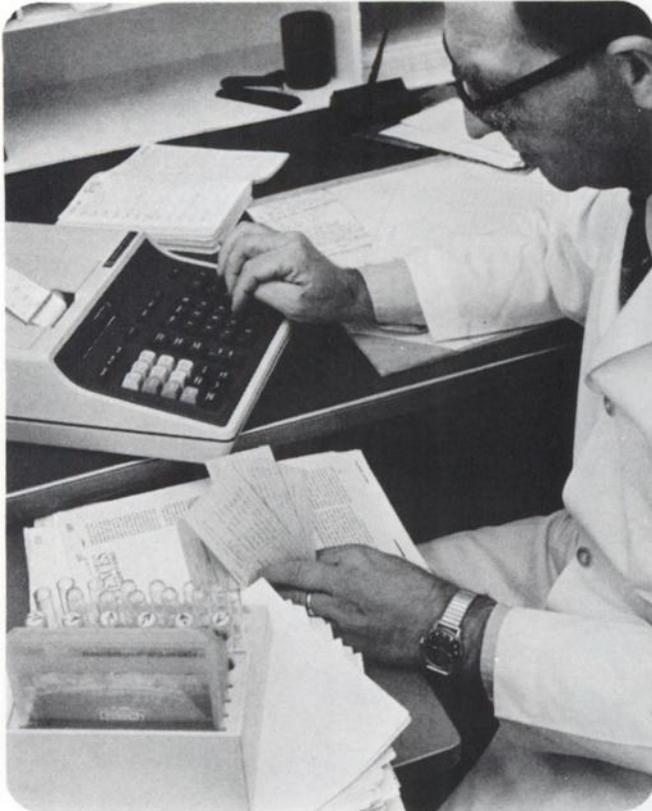
K-7

ROCHE DIAGNOSTICS
Division of Hoffmann-La Roche Inc.
Nutley, New Jersey 07110



Roche Clinical Laboratories, Inc.
Five Johnson Drive
Raritan, New Jersey 08869

CA-1K



Let Our Research Take The Work Out Of Yours.

If data analysis is your problem HP has developed the statistical tools you need for speeding research and cutting costs. These fast accurate computation systems can handle any task from routine data reduction and examination all the way up to advanced statistical and mathematical analysis.

Are you doing applied research? Basic stat analysis? Then your answer is the HP 9805. This preprogrammed, desk-top calculator is specifically designed for people who don't have time for the numbers game—for tedious scratch-pad calculations, slide rules, handbooks, and charts. It will calculate and print your solution at the press of a key: linear and parabolic curve fits, mean and standard deviation, correlation coefficients, histograms, and t for paired and unpaired data. And that's the minimum system! Think what you can do with Expanded Stat functions and a

plotter! And the basic system is just \$1295*.

But what if you're doing pure research that calls for large, sophisticated stat analysis? We can help you there, too. With our versatile, programmable HP 9830. You get desk-top convenience, combined with computer-like power. More than enough power for things like stepwise regression of up to 30 variables with correlation analysis, or four-way factorial analysis. The 9830 makes short work of probit analysis, RIA and just about any other statistical problem you're likely to encounter. And it accommodates a complete range of input and output peripherals. Best of all, it leases for under \$300* per month.

So, let our research take the work out of yours. Especially since you can save money in the bargain. Call or write for more information or a hands-on demonstration.

*Domestic USA prices only.



Sales, service and support in 172 centers in 65 countries.
P.O. Box 301 Loveland Colorado 80537

Hewlett-Packard, P.O. Box 301,
Loveland, Colorado 80537

I would like to know more about your stat solutions

Information only Hands-on demonstration

Name _____

Company _____

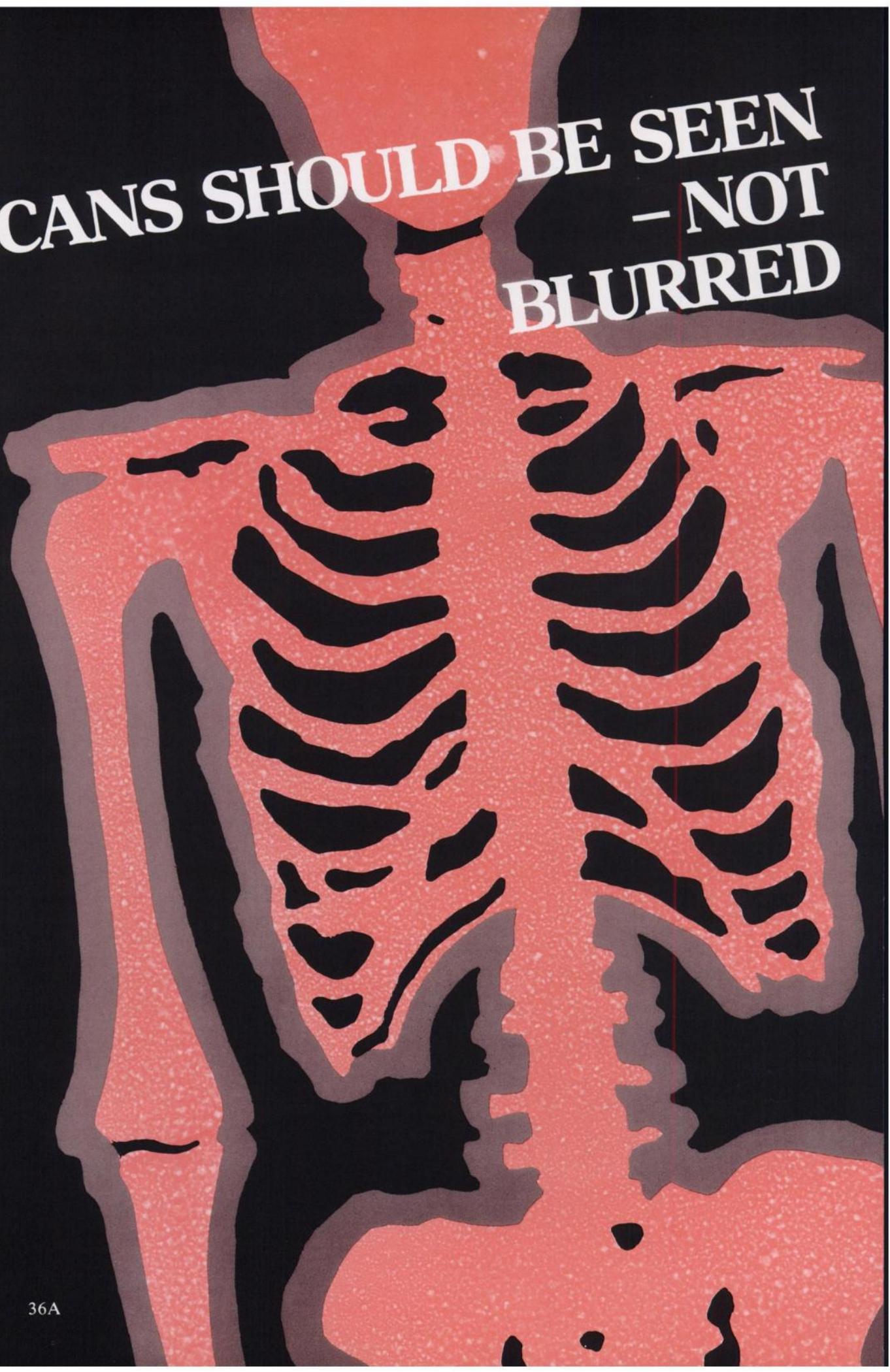
Address _____

Phone _____

My primary application is: _____

094/7

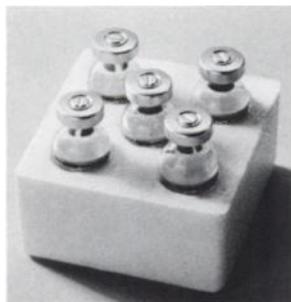
**SCANS SHOULD BE SEEN
- NOT
BLURRED**



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- $^{99\text{m}}$ -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 $^{87\text{m}}\text{Sr}$ 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 , $^{87\text{m}}\text{Sr}$, and $^{99\text{m}}\text{Tc}$ -Labeled Polyphosphate, Diphosphonate, and Pyrophosphate for Bone Scanning. *J Nucl Med* 14: 410, 1973 *Abstr.*
2. Ackerhalt RE, Blau M, Bakshi S, Sondel JA: A Comparative Study of Three $^{99\text{m}}\text{Tc}$ -Labeled Phosphorous Compounds and ^{18}F -Fluoride for Skeletal Imaging. *J Nucl Med* 14: 375, 1973 *Abstr.*
3. Bok B, Perez R, Panneciere C, DiPaola R: Bone Scanning Radiopharmaceuticals: A Comparison of Three Products. *J Nucl Med* 14: 380, 1973 *Abstr.*

TechneScan™
PYP™ KIT
(STANNOUS PYROPHOSPHATE)



SEE FOLLOWING PAGE FOR PRESCRIBING INFORMATION

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

DESCRIPTION

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

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

ACTION

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

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

INDICATIONS

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

CONTRAINDICATIONS

None.

WARNINGS

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

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

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

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

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

Sodium pertechnetate Tc-99m solutions containing an oxidizing agent are *not* suitable for use with the **TechneScan PYP Kit**. The contents of the kit are not radioactive. However, after the sodium pertechnetate Tc-99m is added, adequate shielding of the final preparation must be maintained.

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

PRECAUTIONS

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

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

ADVERSE REACTIONS

None.

DOSAGE AND ADMINISTRATION

The recommended adult dose of **TechneScan PYP Tc 99m** is 5 to 15 millicuries (1 to 14 milligrams of stannous pyrophosphate).

TechneScan PYP Tc 99m is injected intravenously over a 10- to 20-second period. For optimal results, bone imaging should be done 1 to 6 hours following administration.

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

DIRECTIONS FOR PREPARATION

Procedural Precautions

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

Procedure:

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

HOW SUPPLIED

Catalog Number—094 **TechneScan PYP Kit**

Kit Contains:

- 5—Stannous Pyrophosphate Reaction Vials (Lyophilized) for the preparation of Technetium Tc 99m Stannous Pyrophosphate.
- 5—Pressure-sensitive "Caution—Radioactive Material" labels.
- 5—Radioassay Information String Tags.

Reaction Vial Contains:

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

TechneScan™ PYP™ KIT

(STANNOUS PYROPHOSPHATE)

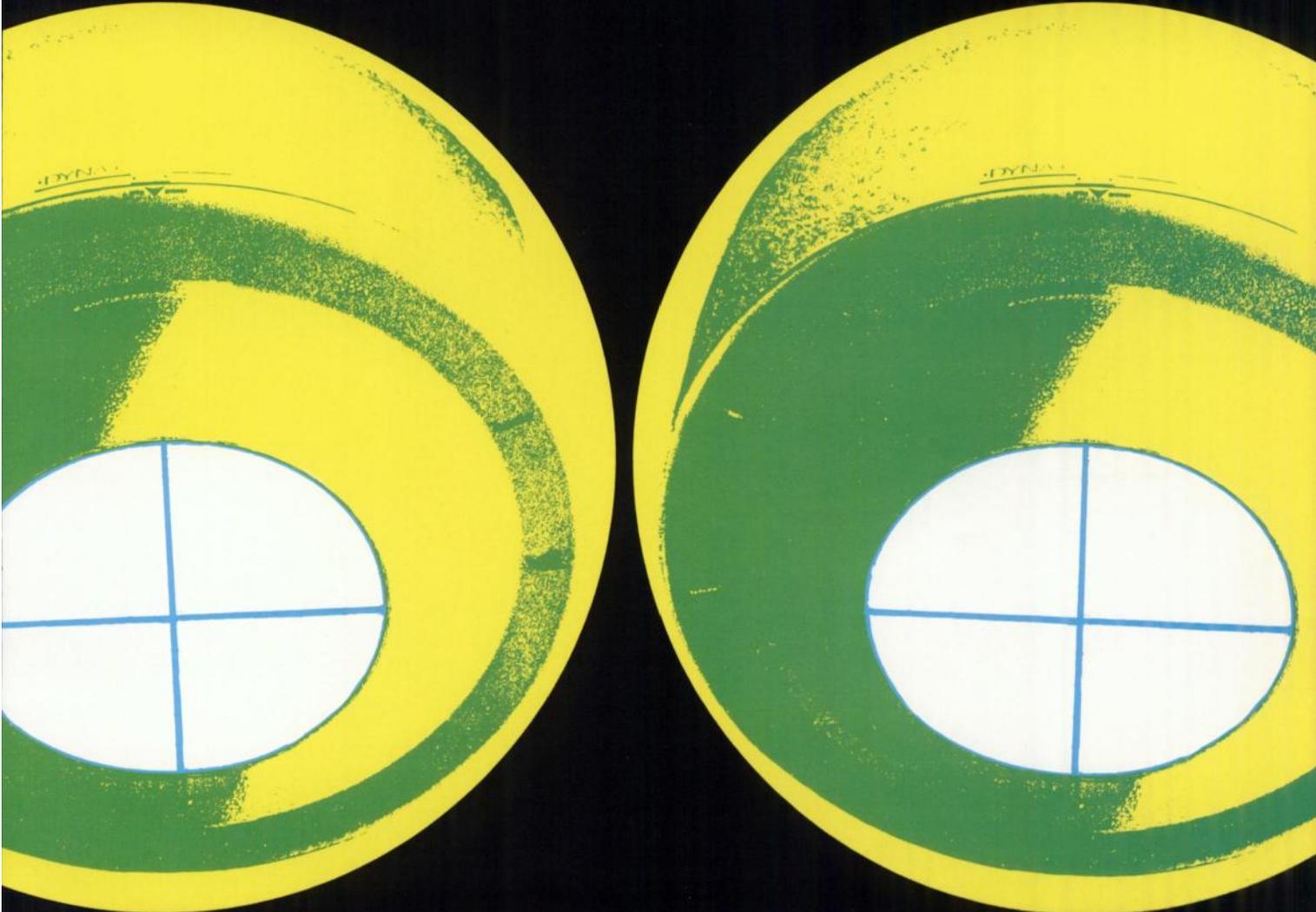


Mallinckrodt

NUCLEAR

Mallinckrodt, Inc.
675 Brown Road
Hazelwood, Missouri 63042

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 Omni-view™.

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.

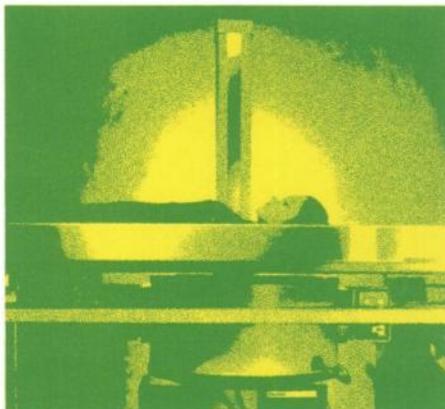
Picker Dyna Camera 3C, shown (*top, right*) with Omniview table for whole-body imaging, provides even better resolution than the widely used Dyna Camera 2C.

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.**



GammaCoat™

¹²⁵I 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 ¹²⁵I 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 ³H Cortisol RIA with dextran coated charcoal separation is also available.

Also available are:

GammaCoat Digoxin ¹²⁵I
GammaCoat Renin Activity ¹²⁵I
Vitamin B₁₂ ⁵⁷Co
Folic Acid ³H
Digoxin ³H
Digitoxin ³H

For full details contact:



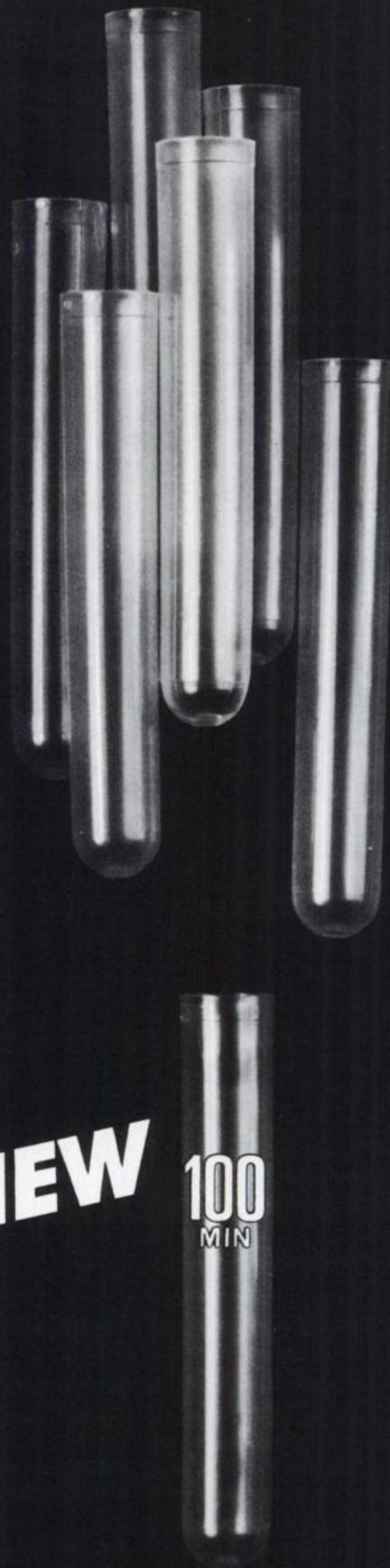
**Clinical
Assays, Inc.**

or call the nearest
Fisher Scientific
for fast service.

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

NEW

**100
MIN**



ORDER NOW

these books published by
THE SOCIETY OF NUCLEAR MEDICINE

Timely, useful, important—

SEMICONDUCTOR DETECTORS IN THE FUTURE OF NUCLEAR MEDICINE

edited by Paul B. Hoffer, Robert N. Beck,
and Alexander Gottschalk

Here is a book that brings together for the first time information on the advantages and uses of semiconductor detectors for nuclear medicine—information that has been scattered throughout the journals of physicists, electronic engineers, and physicians. The result is a convenient starting place for the interested physician who would like to use semiconductor detectors.



TOMOGRAPHIC IMAGING IN NUCLEAR MEDICINE

edited by Gerald S. Freedman

The relatively new field of tomography in nuclear medicine makes possible the retrieval and presentation of information from the third dimension as well as the usual two-dimensional portrayal. This book reviews recent advances using a variety of ingenious methods ranging from simple attachments to existing equipment all the way up to complex expensive computer-oriented, uni-purpose systems.



AND COMING

- **COMPUTER PROCESSING OF DYNAMIC IMAGES FROM AN ANGER SCINTILLATION CAMERA**, edited by Kenneth B. Larson and Jerome R. Cox, Jr.
- **NUCLEAR MEDICINE IN CLINICAL PEDIATRICS: A HANDBOOK**, edited by Hirsch Handmaker

Order now from: Society of Nuclear Medicine
475 Park Ave. South, New York, N.Y. 10016

Please send me:

- copies of Semiconductor Detectors in the Future of Nuclear Medicine
- copies of Tomographic Imaging in Nuclear Medicine
- copies of Computer Processing of Dynamic Images
- copies of Nuclear Medicine in Clinical Pediatrics

Please bill me

Send to _____

**The economic crunch is on. Now! Not tomorrow.
Rent a 750 Multi-Format Camera System. Now!
Use your monthly Polaroid film budget.
You'll save money. Get superior hard copy.
You might even be acquiring the 750 System.
For less than you think. Join the uncrunchables.
Join N.O.W. (Need Our William)**



THE N.O.W. CARD

Yes, I want to join the Uncrunchables, N.O.W.
Yes, N.O.W that I need you, Bill Brown, please contact me
and explain all about your System 750 Multi-Format Camera
RENTAL/PURCHASE PLAN.
Yes, you may find me eagerly awaiting your phone call
and/or letter at the address and phone number I have
enthusiastically inscribed below.

Name _____
Address _____
Institution _____
Phone _____ Extension _____

Dunn Instruments Inc
1280 Columbus Ave. San Francisco, Ca. 94133
(415) 776-7033

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 $\pm 2\%$ of the mean value. Sources are supplied for both conventional and wide field-of-view cameras. For maximum safety



**The Radiochemical Centre
Amersham**

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 , $^{99\text{m}}\text{Tc}$, $^{87\text{m}}\text{Sr}$ and $^{113\text{m}}\text{In}$.



The Radiochemical Centre Limited, Amersham, England.
In the Americas: Amersham/Searle Corp., Illinois 60005 Tel: 312-593-6003.
In W. Germany: Amersham Buchler GmbH & Co., KG, Braunschweig.

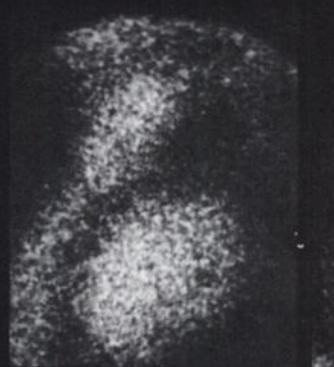
Help your cardiologist study heart kinetics non-invasively with Brattle-gated scintiphotos.



RAO, DIASTOLE



RAO, SYSTOLE



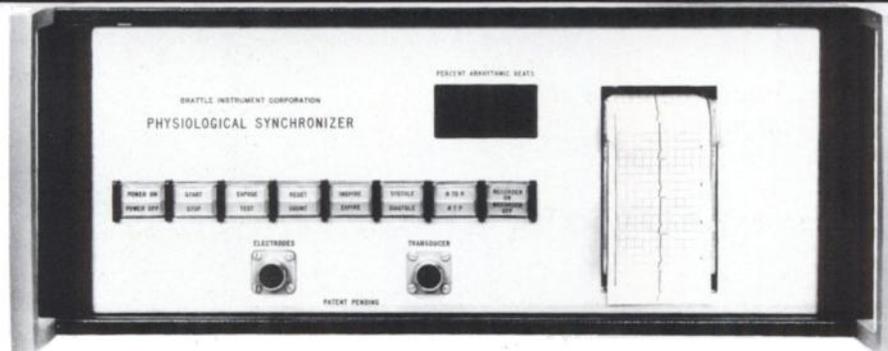
LAO, DIASTOLE



LAO, SYSTOLE

The RAO view shows akinesis of the lower antero-lateral wall and apex; and contraction of the inferior wall and high up the antero-lateral wall. The LAO view shows good contrac-

tion posteriorly and akinesis of the septal chamber. Write or call for a portfolio of Brattle-gated lung, liver and heart studies.



No knobs, no meters, no errors

The spartan panel above tells the second-best part of our story. If you want to photograph peak systole, press the SYSTOLE button. If, say, you want systole only at full expiration, press the EXPIRATION button as well. If only breathing is relevant, don't press the heart button.

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

Brattles lock onto patients — and stay locked on

It doesn't matter if the patient's heart rate and breathing depth change while he's under the colli-

mator because we stay right with him. Brattles contain an ECG to track heart, a plethysmograph to track respiration, and a tiny computer to deduce systole and diastole times from the heart signal. And because it's all built in, your operator need not be a physiologist.

We don't cover our tracks — we print them

The panel lights flash whenever the patient reaches the selected phases; and pushing the RECORDER-ON button gets you an ECG tracing marked with breathing and camera-on times. You can verify function before, during and after exposure.

A single pair of axillary electrodes captures both heart and breath

It's easy. And we supply disposable, pre-filled electrodes.

Some Brattles have been in clinical use for over two years — very good hospitals have them

And we have lots of sample clinical pictures which we'll gladly show you. If you want the names of some users, we'll supply them, as well as references on effectiveness, reliability and safety, and a bibliography on ten years' worth of medical uses of synchronization.

What's the next step? Write or call

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

Brattle Instrument Corporation

767/C Concord Avenue • Cambridge, Massachusetts 02138 • 617-661-0300

Seven facts about computerized image processing and storage systems that our worthy competitors hope you never ever hear.

Fact: Nuclear Data has installed more such systems than all other companies *combined*.

Fact: Our MED II has helped with more nuclear medical diagnoses than *any* similar system.

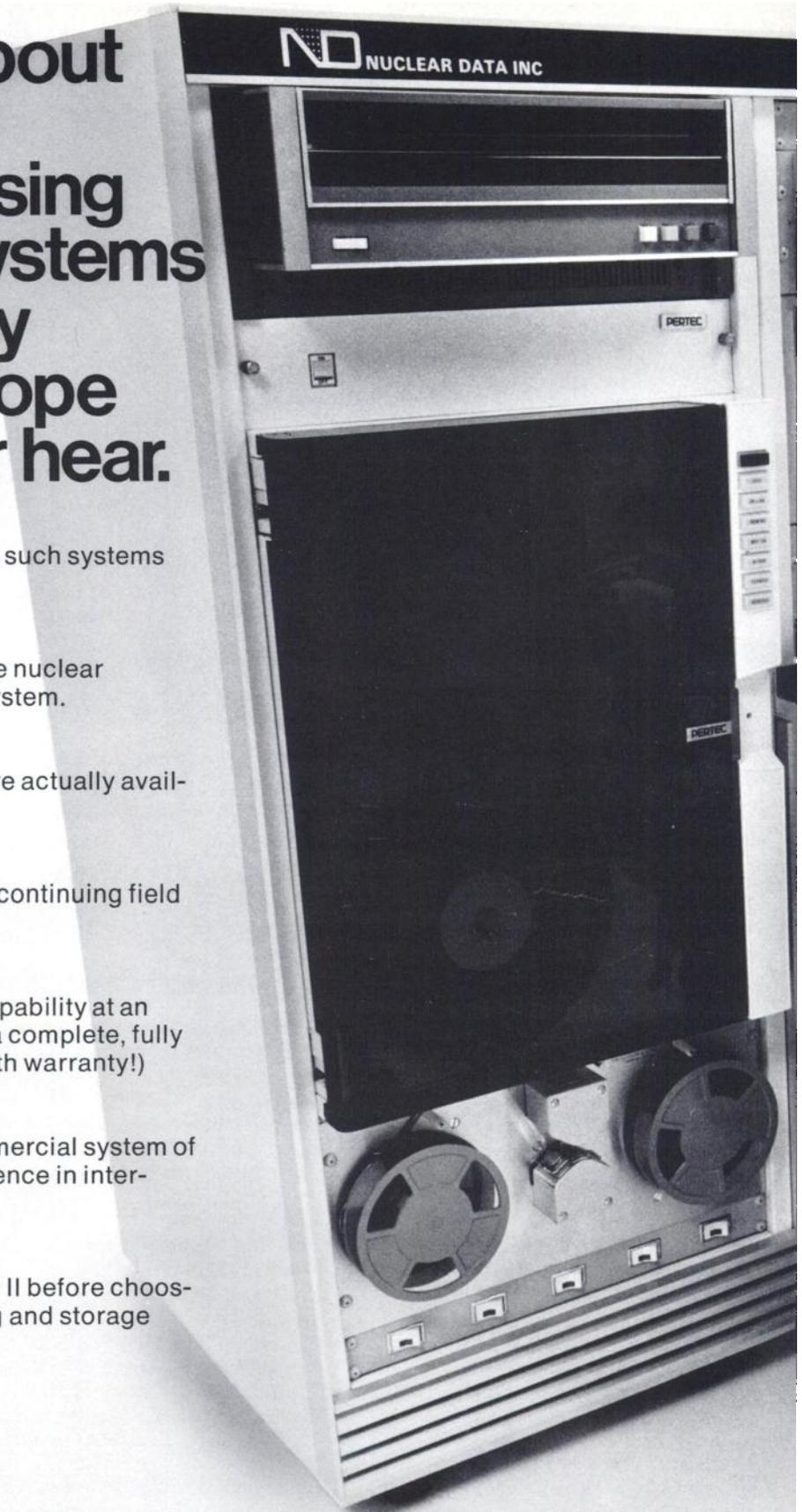
Fact: MED II has more clinical software actually available today. (See facing page.)

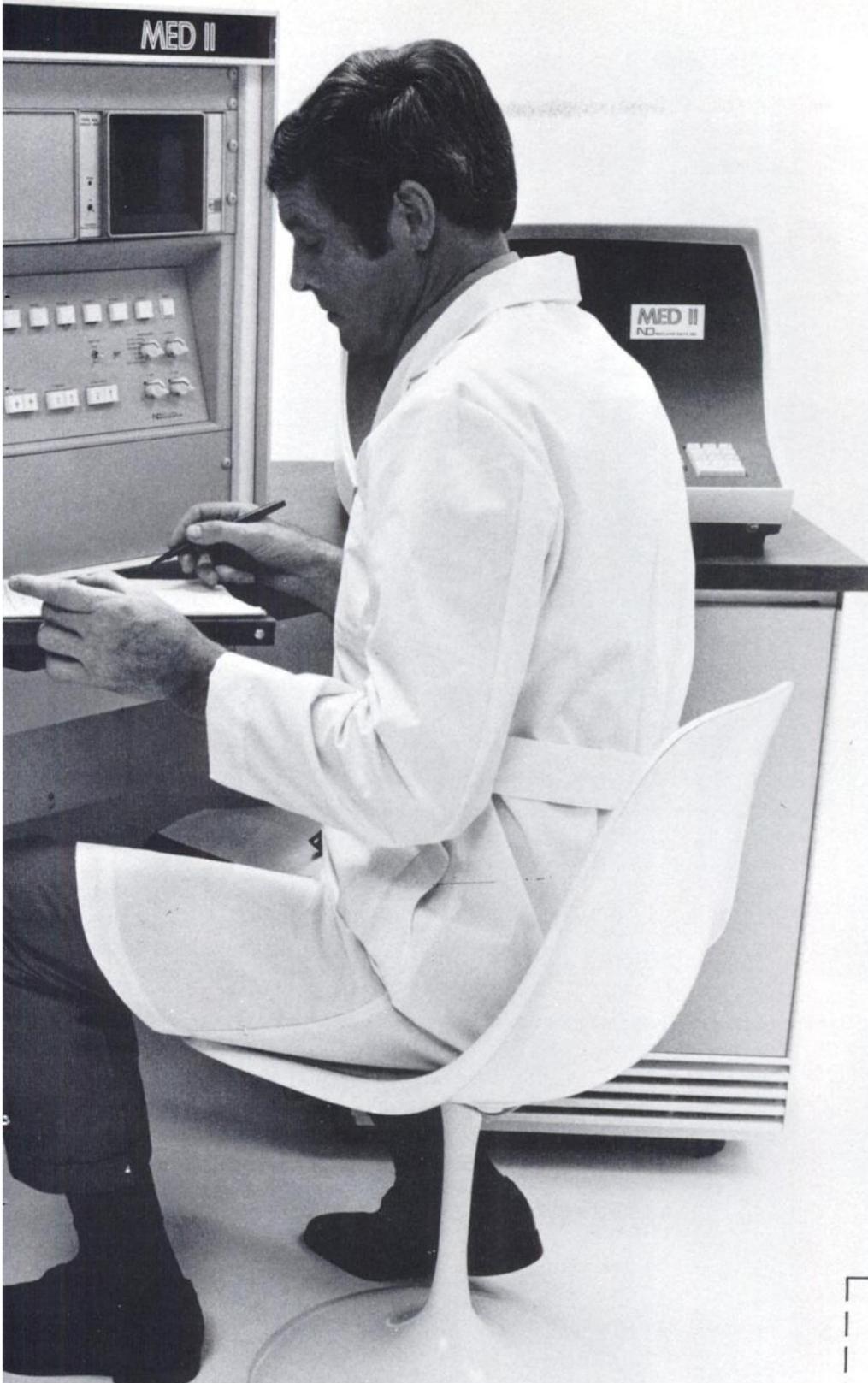
Fact: Nuclear Data supplies superior continuing field support and service.

Fact: The MED II offers unmatched capability at an unparalleled \$42,000. (And this is for a complete, fully operational system with a full 12-month warranty!)

Fact: Nuclear Data built the *first* commercial system of this kind and has had the most experience in interfacing computers with cameras.

Fact: You ought to check out the MED II before choosing a computerized image processing and storage system.





Available Software

In Vivo Tests (Static)

- Brain Imaging
- Lung Imaging
- Liver/Spleen Imaging
- Kidney Imaging
- Pancreas Imaging
- Placenta Localization
- Thyroid Imaging
- Pericardial Effusion

In Vivo Tests (Dynamic)

- Liver Function
- Kidney Function
- Cerebral Transit Time
- Regional Cerebral Blood Flow
- Carotid Blood Flow
- Xenon Ventilation/Perfusion
- Cardiac Ejection Fraction
- Cardiac Output
- Cardiac Shunt
- Cisternography
- Thyroid Function

In Vitro Tests

- T3
- T4
- Red Cell Survival
- Schilling

RIA Tests

- Digitoxin
- Digoxin
- Human Growth Hormone
- Anti Australian Antigen
- Human Placental Lactogen
- Insulin

Functional Software

- Patient and Study Data with Every Record.
- Tumor Registry
- Uniformity Correction
- Background Subtraction
- Contrast Enhancement
- Static Study Projection Display
- Dynamic Frame Mode Acquisition
- Dynamic List Mode Acquisition
- Dual Isotope Acquisition and Subtraction
- Dual Camera Acquisition
- Formatted Administrative Data with 3,000 Characters of Free Text.

Mathematical Functions for Data Manipulation

- Subtraction
- Addition
- Multiplication
- Division
- Integration
- Differentiation
- Modulation Transform Functions for Camera Evaluation
- Curve Smoothing (from 2 to 15 points)
- Curve Fitting
- Curve Averaging (from 2 to 15 points)

Sales and Service Facilities

United States and Canada

Atlanta, Georgia
Tel: 404/241-3220

Boston, Mass.
Tel: 617/899-4927

Cleveland, Ohio
Tel: 216/331-5145

Houston, Texas
Tel: 713/443-1258

Los Angeles, Calif.
Tel: 714/540-5032

New York, New York
Tel: 212/962-3666

San Francisco, Calif.
Tel: 415/483-9200

Schaumburg, Illinois
Tel: 312/885-4700

Washington, D.C.
Tel: 301/345-6766

Europe

Cork, Ireland
Tel: 25356, 25357

Frankfurt, Germany
Tel: 590540

Horsholm, Denmark
Tel: (01) 86 6275

London, England
Tel: 22733, 25357

Uppsala, Sweden
Tel: (018) 15-25-15

Other Sales and Service Representatives located throughout the world. Please write or call Schaumburg, Illinois for your local representative.

Nuclear Data Inc.
Golf and Meacham Roads
Schaumburg, Illinois 60172
312/885-4700

Please send information on the MED II.

NAME _____

TITLE _____

DEPT. _____

ORGANIZATION _____

ADDRESS _____

Zip



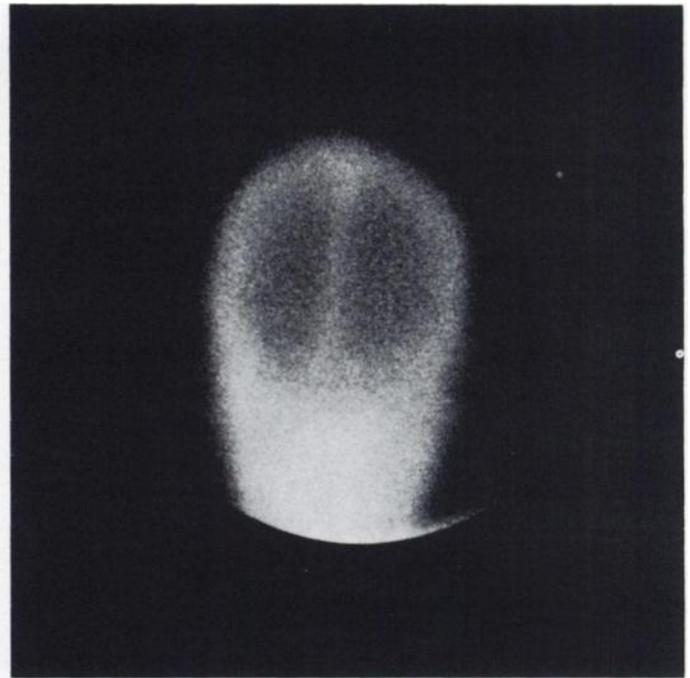
NUCLEAR DATA INC.

Golf and Meacham Roads, Schaumburg, Illinois 60172

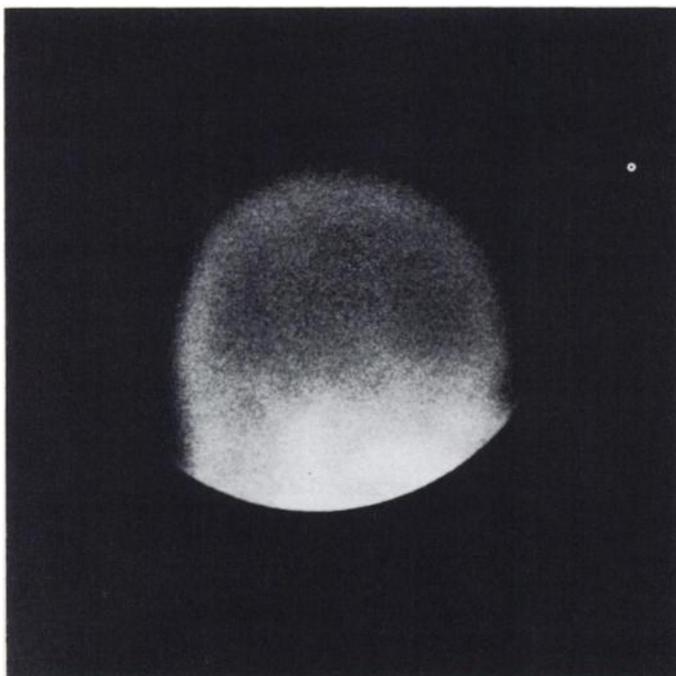
This static scan looks normal. The patient isn't.



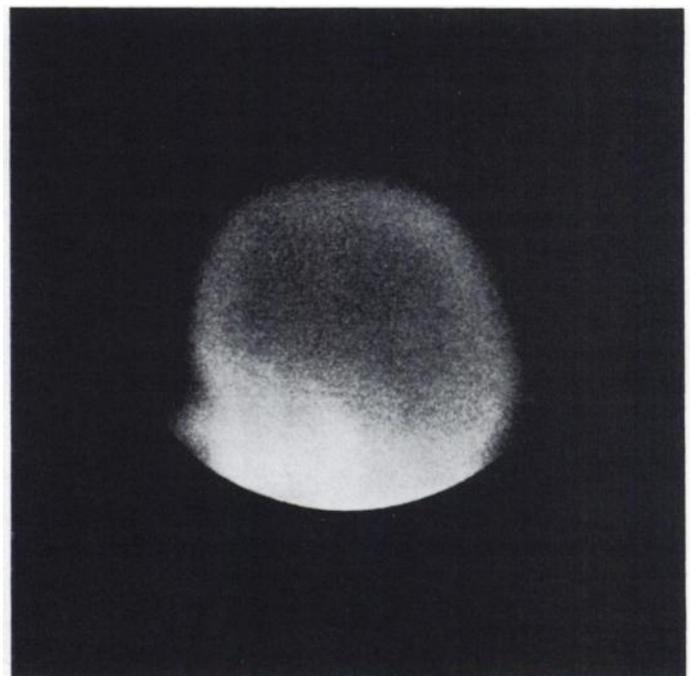
R ANT L



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.

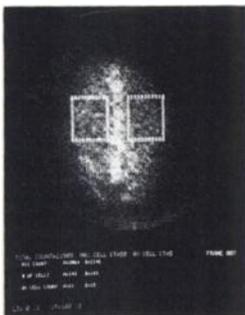
Lung ventilation/perfusion studies, kidney perfusion and tubular functional studies, and left-to-right heart shunt studies are some of the many other diagnostic procedures for which the Gamma-11 is now being used.

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 angiocardiology. 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 (Q_p/Q_s) directly.

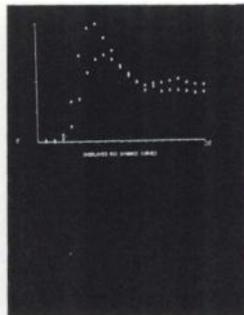
Besides quantitative evaluation of ROI curves, Gamma-11 performs such other functions as flood correction, thresholding and contrast enhancement, image smoothing and profile slices. All data acquisition and processing of gamma camera information is accommodated by a modular machine language operating 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



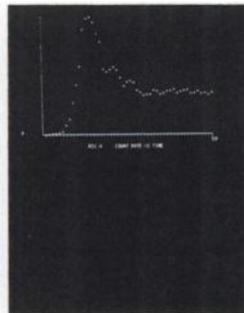
Composite of 1 frame/2 sec. flow study for ROI definition.



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

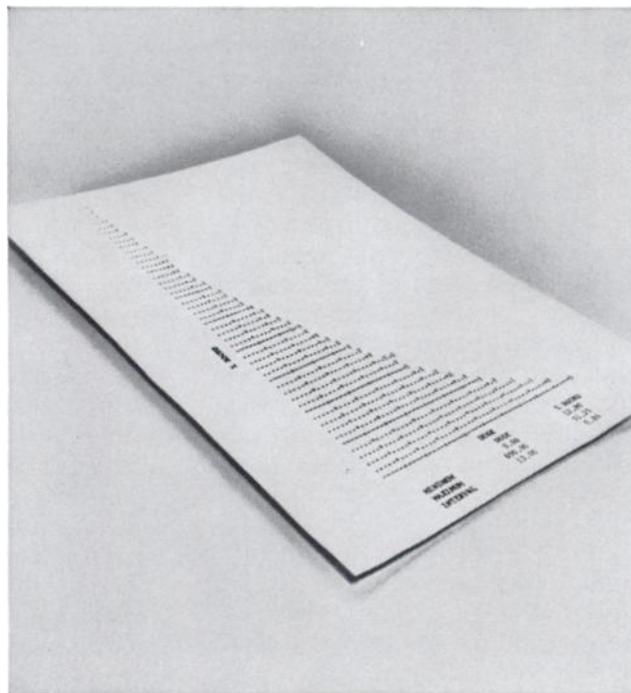


Right heart + lungs — left heart. ROI's marked over both lung field, SVC, right atrium and right ventricle.



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





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

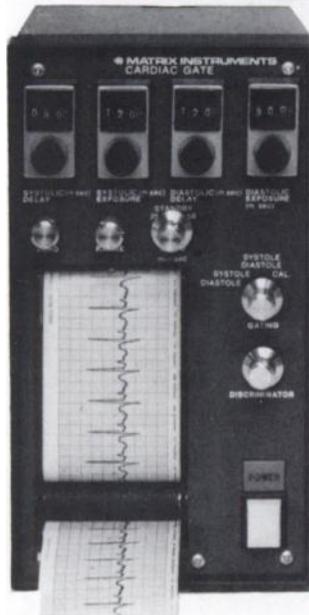
Searle Analytic Inc.
(Formerly Nuclear-Chicago)
Subsidiary of G. D. Searle & Co.
2000 Nuclear Drive
Des Plaines, Illinois 60018

Searle Sales and Service Offices in Major Cities World Wide

ALS-403

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

Mail coupon to receive actual size sample studies.

Please send Cardiac and Respiratory Gate literature and sample studies

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

Matrix Instruments, Inc., 2 Penn Plaza, New York, N.Y. 10001

Total system RIA where chemistry comes first... for total answers

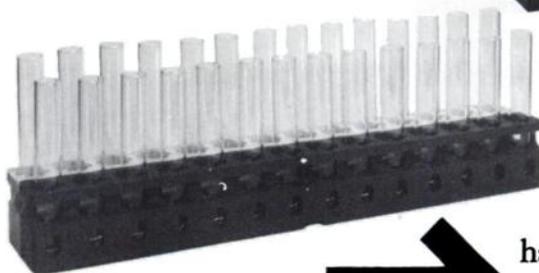


Micromedic Systems has successfully adapted the majority of available RIA reagents to instrumentation. Now, in another major step, we offer:

RIA reagent kits

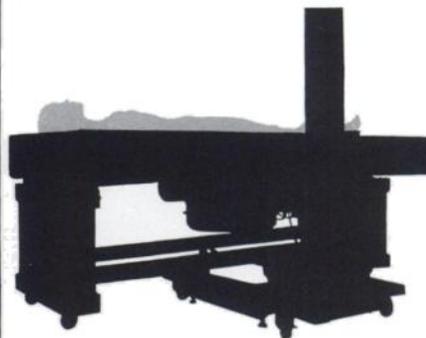
of exacting standards, developed by a leading university research center. All kits are ^{125}I -labelled, double antibody, utilizing a standard buffer from assay to assay. Protocols are matched to the system's performance and standards of the instruments below.

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.

Here's a better way to look into a problem.



Imagination has kept Searle Radiographics number one in gamma imaging, with developments such as Whole Body Scintiscan™. Scintiscan allows you to image the entire body for bone studies or single organ studies as you prefer. Number of scans required, termination point, and electronic aperture settings are all monitored electronically, insuring the uniformity of the complete scan.

On a scanning table monitored to travel within $\pm 1\%$ of the speed you select, the patient is only $\frac{5}{8}$ " from the highly sensitive **Pho/Gamma** detector. The resultant images may be viewed on standard X-ray or Polaroid films making comparisons of bone surveys with roentgenographic studies easier to visualize.

Operation of the Scintiscan system is easy also. If scan input does not agree with the patient positioning, a warning system relays the inconsistency to the technologist who may terminate the scan or reposition the patient.

Rigid standards of excellence made us number one in gamma imaging. Imagination keeps us there.

SEARLE

Searle Radiographics Inc.

Subsidiary of G. D. Searle & Co.
2000 Nuclear Drive
Des Plaines, Illinois 60018

CM-334

RADIOIMMUNOASSAY ...IS FOR EVERYBODY



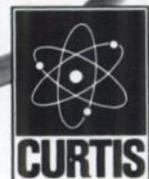
Curtis Nuclear Corporation's RIA diagnostic test kits are ideal for Pediatrics (HGH, Vitamin B12) to Geriatrics (Digoxin, Insulin, Vitamin B12). Micro sera sampling plus a highly specific polymerized protein antibody run at room temperature, reduces total test time without altering the precision, specificity, accuracy or reproducibility of the test.

Curtis instruments, pipettes and lyophilized serum standards further insure reliable test results.

Regardless of the family needs, Curtis has radioimmunoassay diagnostic test kits for the assessment of hematological and hormonal problems.

Curtis Nuclear Corporation

1948 East Forty-Sixth Street, Los Angeles, California 90058 Telephone (213) 232-3531
Three Westchester Plaza, Elmsford, New York 10523 Telephone (914) 592-4060



THE TYPES OF RADIOACTIVE REGIONAL VENTILATION STUDIES YOU PREFER ARE YOUR BUSINESS.

HELPING YOU PERFORM THEM BETTER AND EASIER IS OUR BUSINESS.

For more than three years, the Surprenant/Douglas Automated Ventilation Module (AVM-3) has been simplifying radioxenon ventilation studies of all kinds.

The AVM-3 allows you to perform Single Breath (tidal volume or vital capacity), Rebreath and Washout studies—singly or in the combination of your choice—using just one operator. All without patient co-operation. All with consistently reproducible results. (Single breath studies may be made at any lung volume.)

In addition, since the geometric factors for AVM-3 controlled ventilation studies can be made nearly identical to perfusion studies, easy and meaningful regional V/Q comparisons are permitted.

The AVM-3 system is linked directly to your scintillation camera by remote control and automatically initiates all scintiphoto exposures at precise predetermined intervals. As a result, the only functions of the operator are to select the desired study sequence, push the start button and then collect camera data.

The AVM-3 system, with protective lead-shielding, is enclosed in a single case mounted on an overbed table for use on patients in either sitting or supine positions.

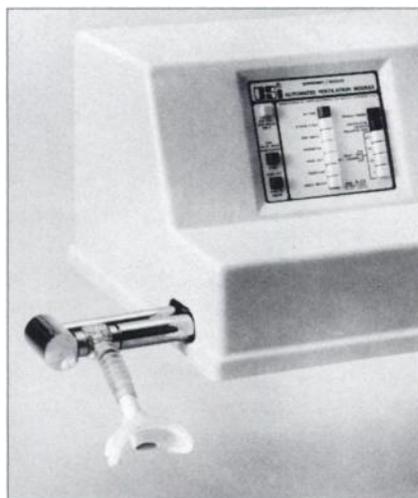
Also available is the RGD-700 Radiogas Dispenser. The RGD-700

crushes and stores curie ampules of Xenon-133 in its 35 ml. tank handle and allows you to withdraw single doses as needed. The savings which result from purchasing Xenon-133 in curie ampules as opposed to single doses at a volume of 20 studies per month, for example, are enough to pay for the RGD-700 after the first 10 procedures.

The super versatile AVM-3 and the money-saving RGD-700. Just two of the ways in which we're working to make your job a little easier.

For complete information just write Omnimedical, P.O. Box 1277, Paramount, California 90723.

Better yet, call us collect at (213) 633-6660.



OMNIMEDICAL

Medi + Physics Kidney Scintigraphin* puts mercury back in the thermometer.

Normal Study



400 k / 363 SEC
HIGH-RESOLUTION



200 k / 377 SEC
PINHOLE



200 k / 442 SEC

Courtesy of DRS. Paul Weber and L.V. Dos Remedios

The above study is an example of renal images that you can expect with Kidney Scintigraphin™.

Kidney Scintigraphin™ (2,3 dimer-captosuccinic acid) is a new investigational radiopharmaceutical developed by Medi + Physics. The biodistribution is similar to chlormerodrin.

For information on the clinical use and licensure of Medi + Physics Kidney

Scintigraphin™ call toll free (800) 227-0483 or in California (800) 772-2446.

West Coast: Main Office 5855 Christie Avenue, Emeryville California. Los Angeles (213) 245-5751/Midwest: Chicago (312) 671-5444/East Coast: South Plainfield, New Jersey (201) 757-0500/Canada: Ottawa, Ontario (613) 225-2444. Vancouver, British Columbia (604) 980-9412.

* An Investigational New Drug.

medi+physics

The easy way to prepare RIA samples

The LKB Ultralab® Sample Processor can be programmed to do the processing of your RIA samples at a fast rate, in batches of 100.

The LKB sample processor will transfer single or double samples to test tubes at the rate of 400 tubes an hour. And it will add up to 3 reagents at the rate of 800 an hour. The prepared sample is then given a thorough mixing by rapid rotation. The actual throughput is 100 samples in 15 minutes.

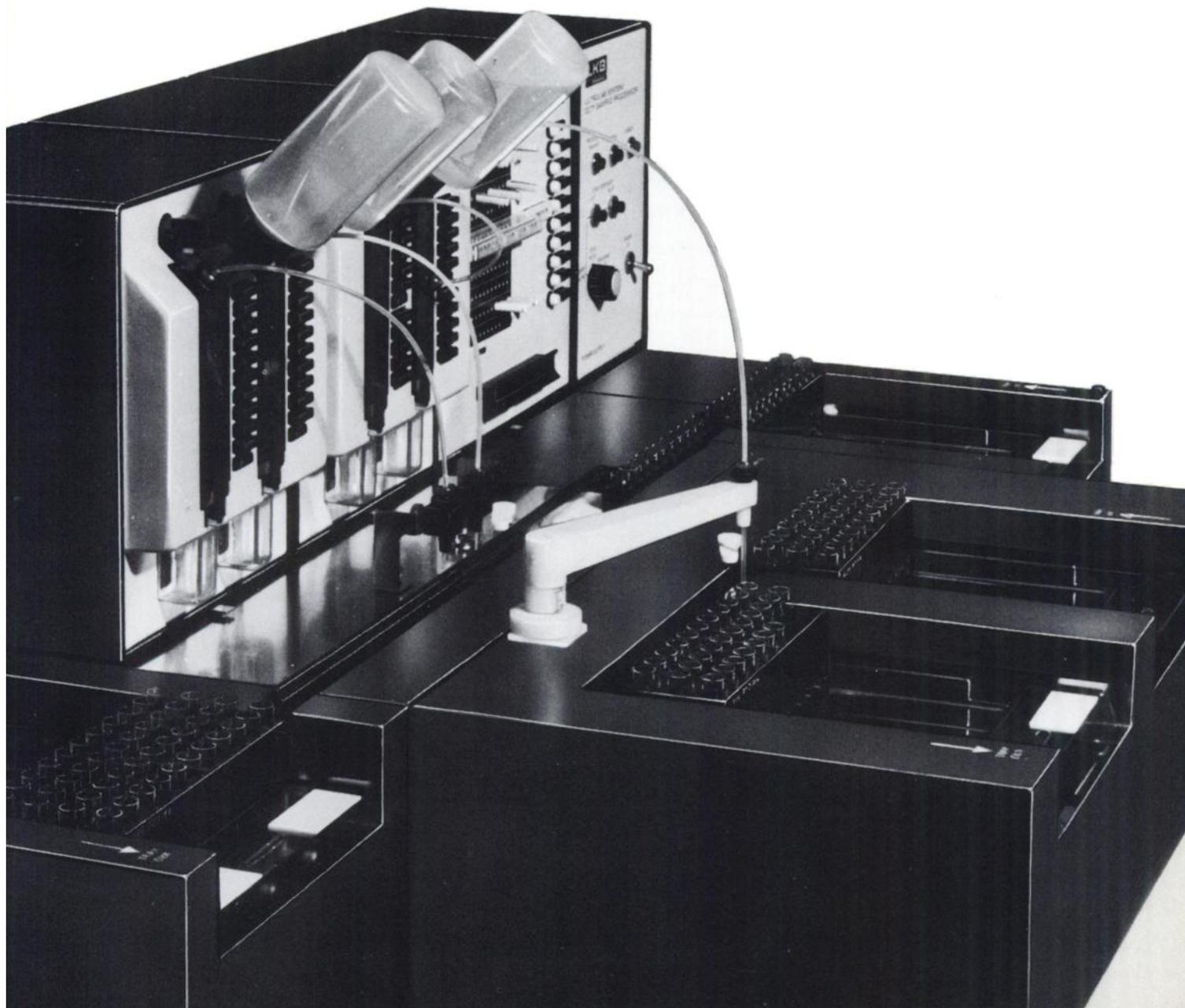
Suspensions of Sephadex and dextran-coated charcoal may be used to separate the bound antigens from the free antigens. As it is being dispensed, the suspension is agitated to prevent it from settling. And for the final measurements of radioactivity the samples can be transferred to the renowned LKB-Wallac automatic Gamma and Liquid Scintillation counters.

Remember, LKB can provide the complete system for RIA—from sample preparation right through to a digital printout of results. And specific samples such as standards can be positively identified in the printout.

LKB

LKB Instruments Inc.

12221 Parklawn Drive, Rockville MD. 20852
11744 Wilshire Blvd. Los Angeles Calif. 90025
6600 West Irving Park Road, Chicago Ill. 60634
260 North Broadway, Hicksville N.Y. 11801



POSITIONS OPEN

RADIOPHARMACIST FOR CLINICAL and research work at university-affiliated V.A. Hospital. Newly funded GS 12 position available July 1. Contact Dr. M. F. Reed, Nuclear Medicine, University Hospital, Lexington, Ky 40506. Phone (606) 258-4018.

INDEPENDENT OUT-PATIENT CLINIC seeks board certified nuclear medicine physician to establish northern California metropolitan laboratory. Please send curriculum vitae to P.O. Box 701, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

NUCLEAR MEDICINE TECHNOLOGIST, Grade I, required July 1, 1974, for new department in Trail Regional Hospital. Must have R.T. or equivalent. Salary commensurate with H.S.A. wage schedule. Apply to: R. A. Searle, R.T. (N.M.), Chief Technologist, Department of Nuclear Medicine, Trail Regional Hospital, Trail, B. C.

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

NUCLEAR MEDICINE TECHNOLOGIST, urgently needed, interested in supervising RIA program in newly established, well-equipped department, prefer ASCP registered or eligible. An opportunity to live in Southern California away from the smog. Contact: Personnel Director, Radiology Nuclear Medical Group, Inc., 1708 - 27th Street, Bakersfield, California.

POSITIONS WANTED

PHYSICIST, M.S., WORKED TWO years in health physics area and three years in radioisotope research lab. Seeking position in nuclear medicine or radiation

therapy related area. Box 702, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

NUCLEAR PHYSICIAN — CERTIFIED ABNM physician with seven years experience in clinical, teaching, research and administration. Seeks full-time opportunity. Internal medicine board eligible. Reply Box 708, Society of Nuclear Medicine, 475 Park Ave. South, New York, N.Y. 10016.

FOR SALE

FOR SALE—PACKARD 100-SAMPLE, single-channel, automatic gamma spectrometer with lister printer, \$2,000. Three-channel 200-sample refrigerated liquid scintillation spectrometer with lister printer, \$3,000. Both instruments are in use and in very good working condition. B.R. Laboratories, 15831 Joan Street, Oak Park, Michigan 48237. Tel: (313)546-0238.

RESIDENCY IN NUCLEAR MEDICINE

University of California, School of Medicine

Two positions available July 1975. Selection in September 1974. Established residency program encompassing classroom, clinical, and research experience.

For information: Gerald L. DeNardo, M.D., Professor of Radiology and Medicine, Director, Nuclear Medicine Department, University of California School of Medicine, Davis, California 95616. Phone: 916-752-3007.

NUCLEAR MEDICINE TECHNICIAN

Excellent opportunity for experienced technician in Clinical Nuclear Medicine Service of university-affiliated hospital.

Generous benefits including retirement program. GS-10 (\$13,379 p.a.) position now available in expanding program. For information contact:

PERSONNEL OFFICER
VA Hospital
Syracuse, N.Y. 13210
(315) 476-7461 ext 381

An Equal Opportunity Employer

TOPICS IN NUCLEAR MEDICINE

The Sixth Annual Seminar in Nuclear Medicine will be held at Colby College in Waterville, Maine from August 19-23, 1974. Twenty hours of lectures, panel discussions and illustrative cases will be presented by Dr. H. N. Wagner, Jr., W. B. Nelp, T. G. Mitchell, S. M. Larson, H. W. Strauss and I. Goodof. The course is approved for Category I credit by the American Medical Association.

For further information contact Dr. Robert Kany, Director of Special Programs, Colby College, Waterville, Maine 04901.

NUCLEAR MEDICINE TECHNOLOGIST

Registered technologist required for 450-bed fully accredited general hospital.

Salary commensurate with experience and qualifications. Excellent benefit plans in effect.

Interested applicants should apply to:

EMPLOYMENT SUPERVISOR
Belleville General Hospital
Belleville, Ontario

RADIO PHARMACIST

This is a newly created position responsible for a range of activities pertinent to the use of radio pharmaceuticals used in nuclear medicine. A registered pharmacist with a Masters Degree in Radio Pharmacy or Bachelors Degree with a minimum of 2 years experience in radio isotopes is required. We are a 880-bed teaching hospital affiliated with Yale University School of Medicine. Salary based on experience and preparation with a complete benefit package.

*Submit resume in confidence
including salary history to:*

MR. K. L. MARLAND

Professional Personnel Manager

Yale-New Haven Hospital

789 Howard Avenue New Haven, Conn. 06504

An Equal Opportunity Employer M/F

Since 1951

THE WORLD'S MOST
WIDELY USED
RADIOACTIVITY DECONTAMINANT

Radiacwash

in:

- government laboratories,
- hospitals,
- universities

and wherever radiocontamination is encountered. Phosphate-free, non-alkaline, non-corrosive, biodegradable and germicidal.

Economical and effective without peer.

ATOMLAB DIVISION

Atomic Products Corp. CENTER MORICHES, N. Y. 11934

INTRODUCTORY ONE WEEK PHYSICIAN COURSE IN NUCLEAR MEDICINE Cleveland, Ohio

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

1974—September 9–13,

October 7–11, December 2–6

ONE YEAR TECHNOLOGIST COURSE IN NUCLEAR MEDICINE Cleveland, Ohio

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

1974—September 30—December 20

1975—Jan. 2—Mar. 28, Mar. 31—June 20,
June 23—Sept. 12, Sept. 29—Dec. 19

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 1/8 page, \$90 for 1/4 page, \$165 for 1/2 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:

Journal of Nuclear Medicine
475 Park Avenue South
New York, N.Y. 10016

You owe yourself the pleasure of using Mallinckrodt/Nuclear's RES-O-MAT® T3 and T4 diagnostic kits; the effortless, uncomplicated way to measure the degree of protein binding site saturation or total T4.

One trial with either kit is all you need to discover how well they fit into your routine. RES-O-MAT T3 and T4 tests cut down on the number of steps, drastically reduce technologist's time, and still maintain the high degree of reliability and reproducibility you require. The RES-O-MAT test system, incorporating the RES-O-MAT Strip, uncomplicates the whole business of T3 and T4 testing. No evaporating, no decanting, no ice bath, no washing, no centrifuging, no handling of radioactivity. You run the tests, the test don't run you.



Spoil yourself
a little more
with an
ACCUWELL™ COMPUTER

The unique instrument that counts and computes all three of the major thyroid function test values with greater speed and accuracy. All you do is push buttons. No ratios to figure. No curves to draw. And the ACCUWELL COMPUTER has well-counting capacity for use in other routine procedures.

Now would be a good time to spoil yourself a little. For complete details, contact your Mallinckrodt/Nuclear representative or write:

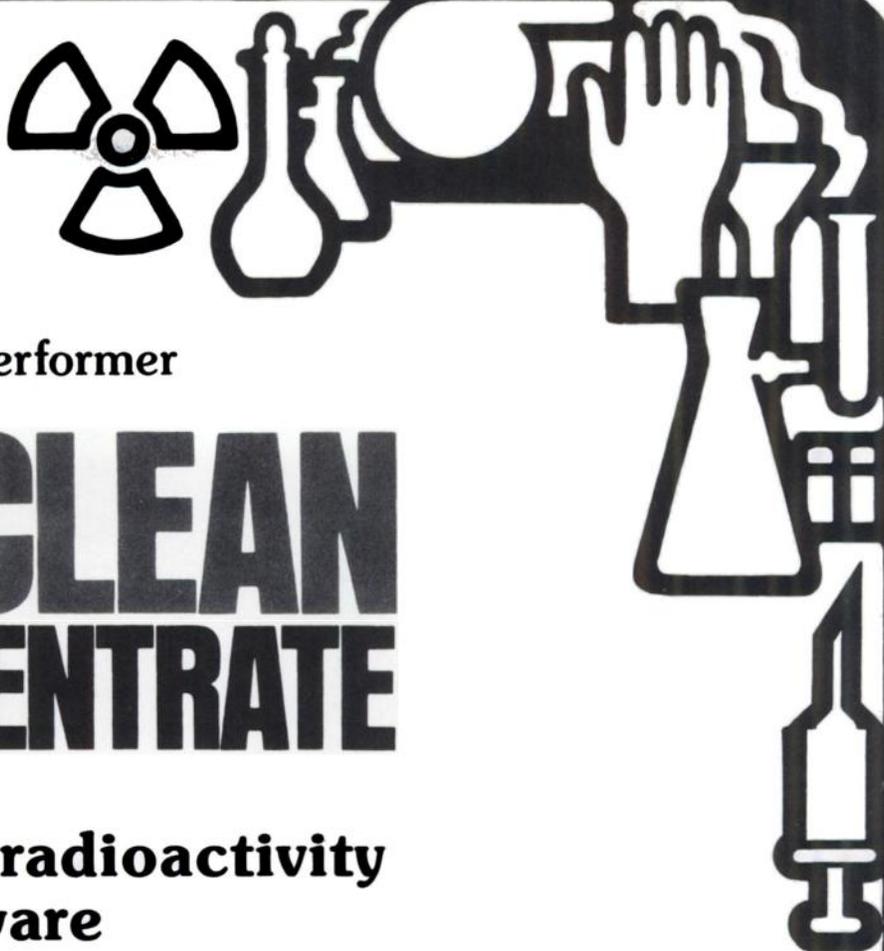


Mallinckrodt Chemical Works
675 Brown Rd.
Hazelwood, Missouri 63042

Spoil yourself a little...

with RES-O-MAT® T3 and T4 Kits.





The Proven Performer

ISOCLEAN CONCENTRATE

**Removes radioactivity
from labware
and isotope
laboratory surfaces**

A liquid radio-decontamination agent of highest efficiency, specifically formulated for the safe removal of nuclidic radioactivity from all types of laboratory ware and surfaces.

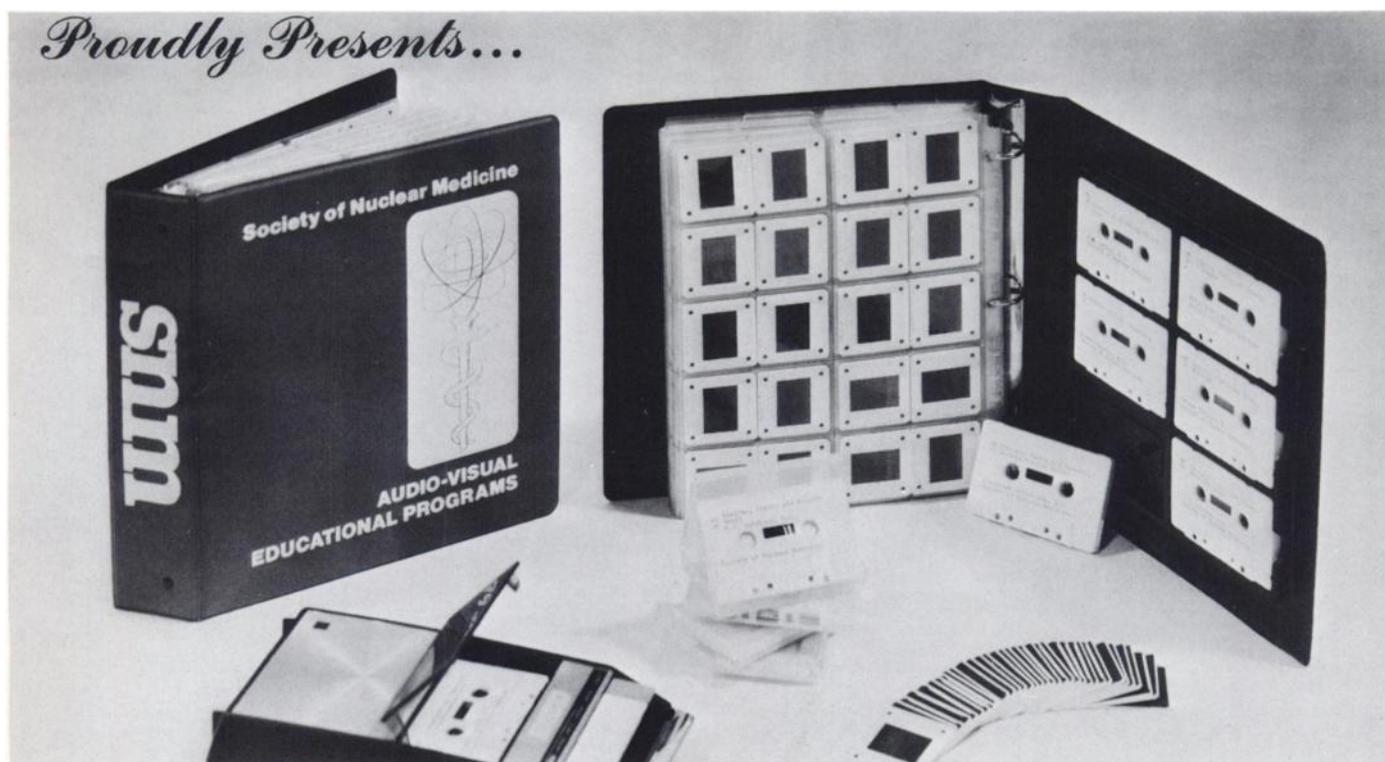
IsoClean Concentrate proves itself in use thousands of times daily as the most effective solution for cleansing hot-lab apparatus in clinical and research laboratories throughout the world.

Request informational brochure.

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

Order from any office of:
AMERSHAM-SEARLE
NUCLEAR ASSOCIATES
PICKER CORPORATION
and other
ISOLAB distributors
or call collect
216/825-4528

THE SOCIETY OF NUCLEAR MEDICINE



AUDIO-VISUAL EDUCATIONAL PROGRAMS

Now, a complete Audio-Visual Library of Educational Programs is available. Invaluable for reference or teaching, this series of 40 programs covers all disciplines of Nuclear Medicine including a) Physics and Instrumentation, b) Radionuclide Imaging, c) In Vitro Studies, and d) Therapy. Also a comprehensive series of programs covering Radionuclide Techniques in Cardiovascular Diagnosis, Refresher Courses and Technologist Training Courses are available. Mail the coupon below to receive a complete catalog of SNM Audio-Visual Educational Programs.

- Plastic mounted 35mm slides
- Slides sequentially numbered
- Authoritative faculty
- Signal slide change indicator
- Standard audio cassette
- Unconditional guarantee

SOCIETY OF NUCLEAR MEDICINE
475 Park Ave. South
New York, New York 10016

Return To: Society of Nuclear Medicine
475 Park Ave. South, New York, N.Y. 10016

Please send me a complete catalog of all Audio-Visual Educational Programs.

Name: _____ Title: _____

Dept.: _____

Affiliation: _____

Street Address: _____

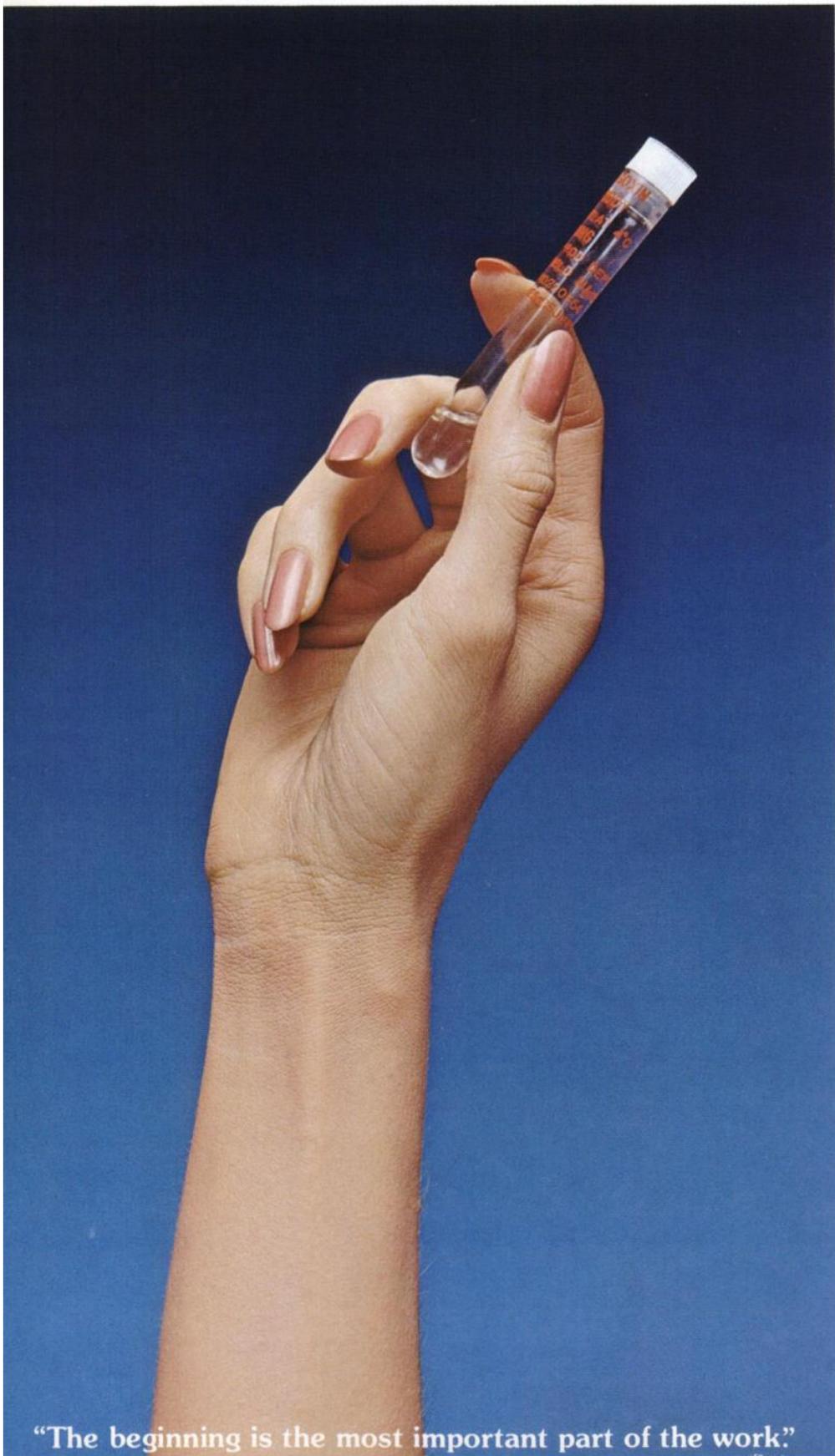
City: _____ State: _____ Zip: _____

1974

Classic Simplicity in
RIA Digoxin from Corning



It's a snap to start!



"The beginning is the most important part of the work."

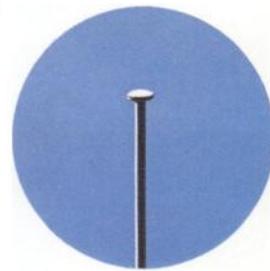
A classic of simplicity in concept and execution. RIA without fine print. IMMO PHASE™ Digoxin from Corning.

It's done with glass.

This is the solid-phase RIA for digoxin that you start with just a snap of the cap.

Yes, you can do it with one hand. How come? Because we've done most of the preparation for

you. The key is a minute glass bead so small you could put more than two and one-half million of them on the head of a common pin!



More about the bead.

Each glass bead is both chemically and topographically suited to solid-phase RIA. Each is porous, and has an unusually high surface area. Using these characteristics, we covalently bond high-quality antibodies to the glass surface. The antibody is distributed throughout the bead in a fashion similar to water filling the pores of a sponge. What you get an *antibody-glass* composite that is extremely stable. In fact, it's so stable that our digoxin antibody has minimum shelf life of 120 days. Additionally, the glass has a useful, high relative density. It becomes an integral separator. No additional reagents are required to effect separation of bound from free antigens.

All this makes it possible for Corning to dilute the immobilized antibody in buffer, pre-measure it into unit reaction tubes and ship to your laboratory ready to use! It's truly a snap-cap start!



Start with the ready-to-use antibody. Snap the cap. Add 0.20 ml of serum sample.

Everything is ready.

Each IMMO PHASE™ test system also includes standards, reference controls and tracer materials. Prepared standards are provided for each point on the standard curve, and reference controls have assayed values for both

normal and elevated patient ranges.

They are plasma-based and lyophilized for extended shelf life. You reconstitute *only once*—using distilled water. The tracer comes to you ready to use.

What it all adds up to is this: With the Corning package you have all the reagents you need to run digoxins. We even give you fold-up trays to use as work stations. Everything can be easily disposed of after you've completed your assays.

Seven steps and 30 minutes later.

The procedure is simple and involves a mere seven steps. That's fewer than traditional RIA methods. And fewer steps mean fewer chances for error! Time required to get the results into your hands is kept to a minimum. The stat RIA digoxin is a *reality*. And, the results you get are reproducible.

Corning is ready now.

We're ready first with the results from recently completed field trials. They indicate that both within-day and day-to-day precision in terms of coefficient of variation is less than 10%. We will be glad to share details with you.

And, of course, we are ready with IMMO PHASE digoxin test systems. Both beta (³H) and gamma (¹²⁵I) are already on the shelf. Other tests will be forthcoming. We want you to put us to the test in RIA. The coupon on the next page gives you seven options. Check all the appropriate boxes. That's the quickest route to finding out just how classically simple RIA can be.

Photomicrographs of IMMO PHASE™ particle surface



“Men trust their ears less than their eyes.”
(Herodotus)



Add 0.050 ml of tracer.

Vortex for 2-3 seconds.

Incubate for 20 minutes, at room temperature.

Centrifuge at 2500 rpm for five minutes at room temperature.

With gamma (¹²⁵I) digoxin, decant the supernatant to waste, and count the tube. With beta (³H) digoxin, decant the supernatant into scintillation fluid and count.

Plot and calculate. A mere 30 minutes of assay time and that's it!



**Corning Solid-Phase Separation System Materials for RIA

Corning Glass Works, Biological Products Dept.		JN
Medfield, Massachusetts 02052		
<input type="checkbox"/> Send me a Gamma (^{125}I) kit today and bill me* Item #474002 (112 tubes) \$140.00		
<input type="checkbox"/> Send me a Beta (^3H) kit today and bill me. Item #474001 (112 tubes) \$115.00		
30-day evaluation. I'll accept your no-risk offer to try an IMMO PHASE digoxin test system. Attached is my purchase order qualified by your 30-day evaluation offer terms. If not fully satisfied I'll return the evaluation form supplied with the kit within 30 days. If I do so I understand no invoice will be sent.		
<input type="checkbox"/> For evaluation send Gamma (^{125}I).*		
<input type="checkbox"/> For evaluation send Beta (^3H).		
<input type="checkbox"/> Consultation. I'd like a chance to talk with a field consultant. Have one call me for an appointment.		
<input type="checkbox"/> Literature. I need more facts. Send me detailed literature.		
<input type="checkbox"/> Yes, I'd like details from your clinical field tests.		
Name _____		Title _____
Affiliation _____		
Address _____		
City _____		State _____ Zip _____
Tel. area code _____ number _____		ext. _____

*Please send us a copy of your license to receive (^{125}I) materials. Recent AEC regulation changes make it mandatory for us to have this information on file prior to shipment.

**“Knowledge must come through action;
 you can have no test which is not fanciful, save by trial.”**

(Sophocles)

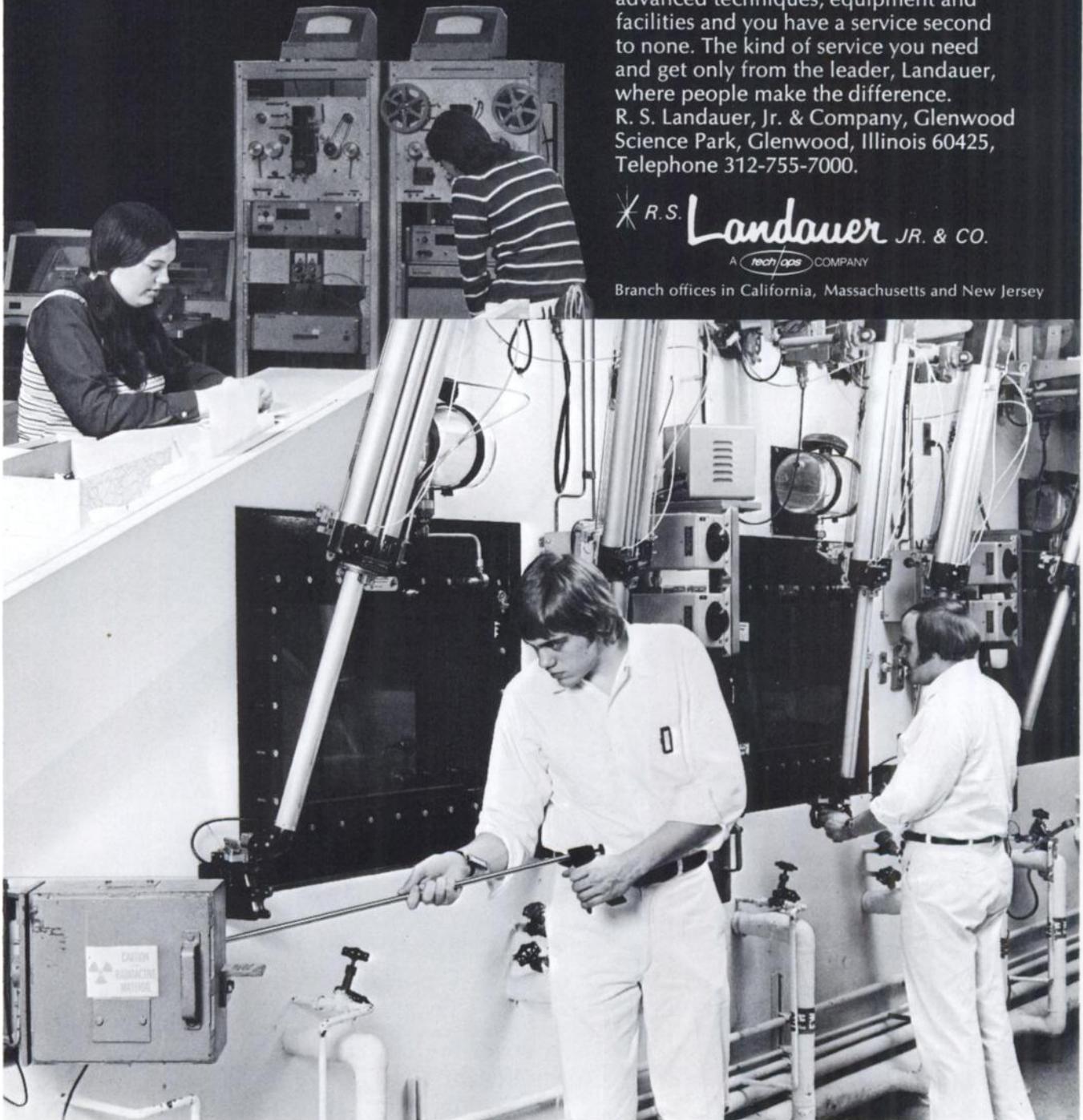
People make our personnel dosimetry better

Truly concerned people make the difference. Unusual people, the people at Landauer, take a personal interest in protecting your people who wear our dosimeters. This attitude — thinking of badges not as badges but as people — is a part of what makes Landauer the world's leader in dependable dosimetry services. Add to that the latest in Gardray[®] advanced techniques, equipment and facilities and you have a service second to none. The kind of service you need and get only from the leader, Landauer, where people make the difference.

R. S. Landauer, Jr. & Company, Glenwood Science Park, Glenwood, Illinois 60425, Telephone 312-755-7000.

 R. S. Landauer JR. & CO.
A *tech/ops* COMPANY

Branch offices in California, Massachusetts and New Jersey



#1...Multi-Imager System

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

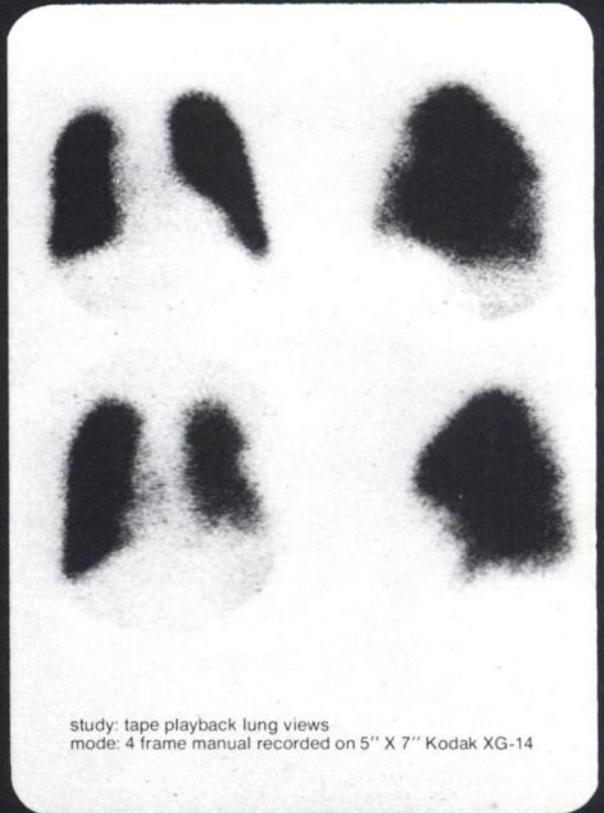
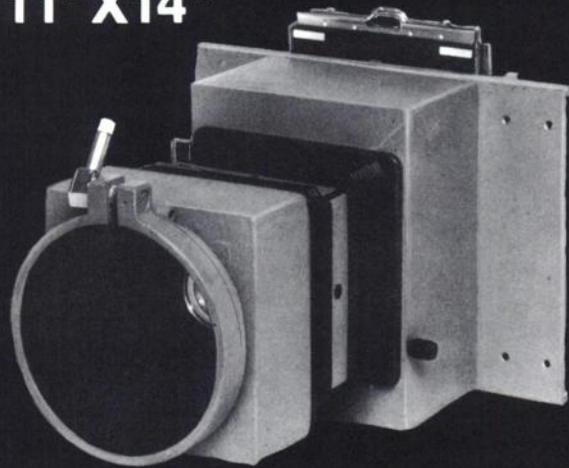


Three film size formats for optimum imaging versatility:

4" X 5"

5" X 7"

11" X 14"



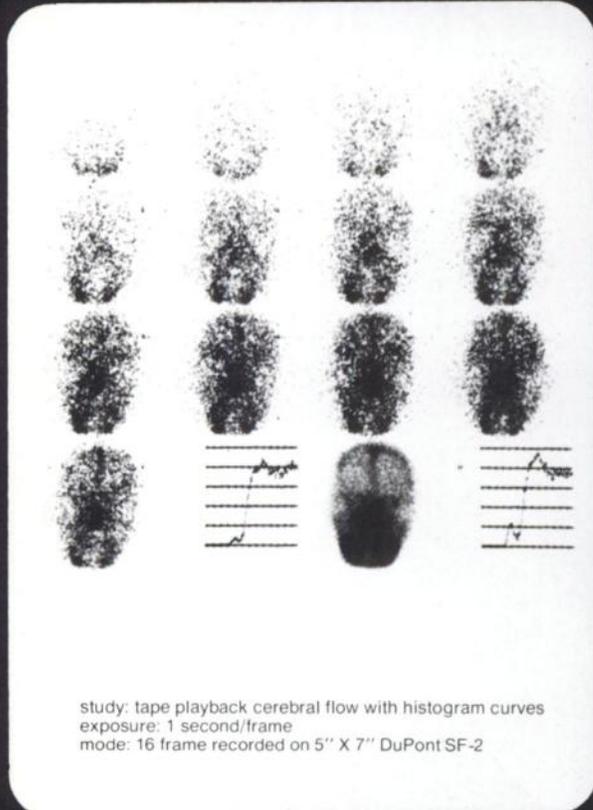
study: tape playback lung views
mode: 4 frame manual recorded on 5" X 7" Kodak XG-14



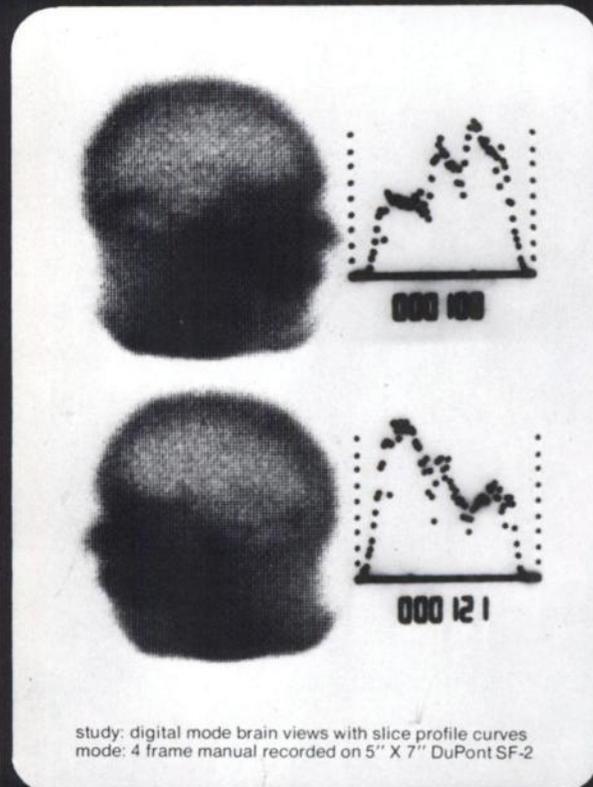
study: Tc 99 m pertechnetate renal flow
exposure: 0.8 seconds/frame
mode: 16 frame dynamic recorded on 11" X 14" X-ray film

MATRIX INSTRUMENTS

Mail coupon to receive actual size sample studies.



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



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

The Multi-Imager System offers

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

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



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

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

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

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

MATRIX INSTRUMENTS

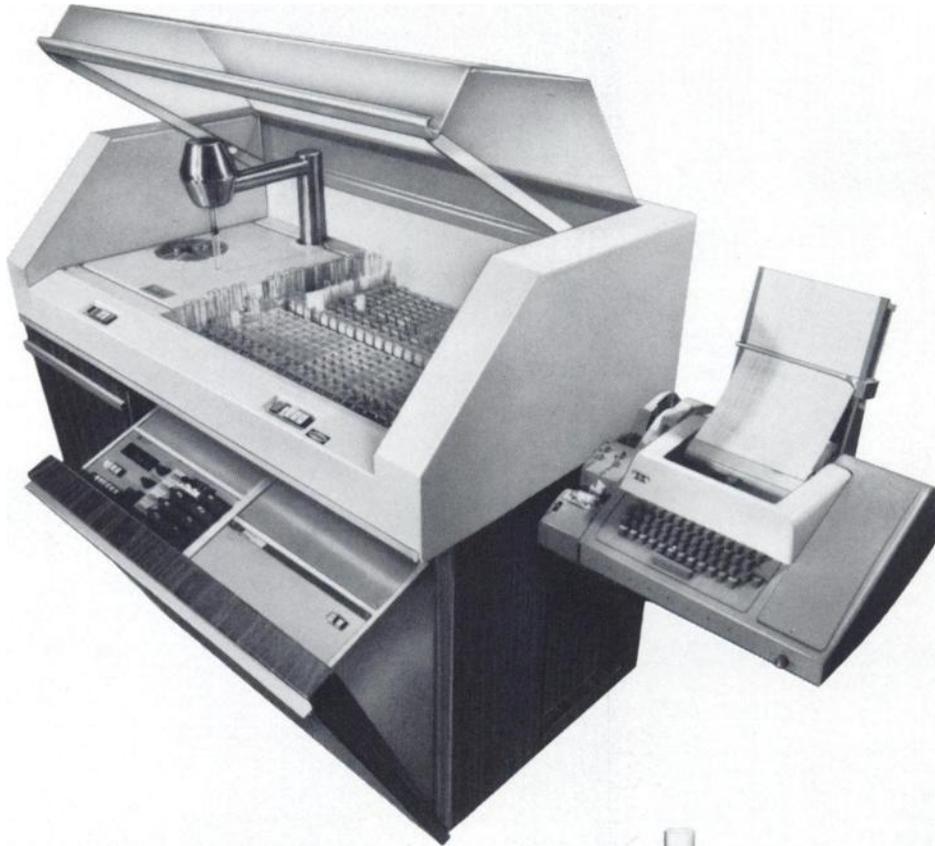
2 Penn Plaza
 New York, New York 10001
 212-946-5227

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

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

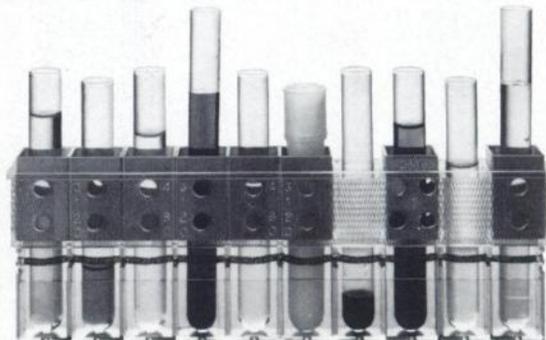
GammaSet 500

More than just a sample changer A programmable multi-user system



The Raytheon/ICN GammaSet 500 adds a major new dimension to automatic gamma counters: The unique Programmable Sample Cassette. Each 10-sample cassette can be easily programmed for automatic selection of counting parameters and user identification. The cassette can be coded for preset time, preset count, background subtract, and isotope selection on the 4-mode, dual scaler. The cassette concept also makes system loading and unloading considerably faster.

And there are other key reasons why the GammaSet 500 is more than just a sample changer: *Contamination-proof "Set and Forget" Operation.* Sample counting/changing operation — including shut-off — is completely automatic and under full protection of the transparent cover. The foldaway electronics drawer, when closed, keeps controls from being changed accidentally. Data is recorded by printing lister, teletypewriter or punched paper tape.



Multi-User Capability. Rapid loading, 500 sample capacity accommodates many different users with various test requirements. Cassettes can be loaded in random order and interrupted at any time for manual counting.

In virtually any gamma counting application the GammaSet 500 will give new operating convenience, versatility and economy. For full details, write Raytheon Company, Medical Electronics, P.O. Box 397, Fourth Ave. Burlington, Mass. 01803 (617) 272-7270

RAYTHEON

A better way to clean up the leftovers.



Lift them off with Count-Off™ radioactivity decontaminant. Get rid of radioactive residues, such as carbon-14, tritium, phosphorus-32, iron-59, and iodine-131. Remove ordinary nuisances such as greases, fatty and amino acids, protein complexes, Canada balsam, dried blood and serum, and polymer films.

Count-Off is an economical and extremely effective decontaminant—more so than chromic acid. Normal dilution of the liquid concentrate is 2%. Also available as an aerosol spray for cleaning rough surfaces and hard-to-reach spots, and as a foam hand cleaner.

Count-Off is safe to the skin, will not produce toxic gases from substrates containing radioactive materials such as carbon-14 and iodine-131.

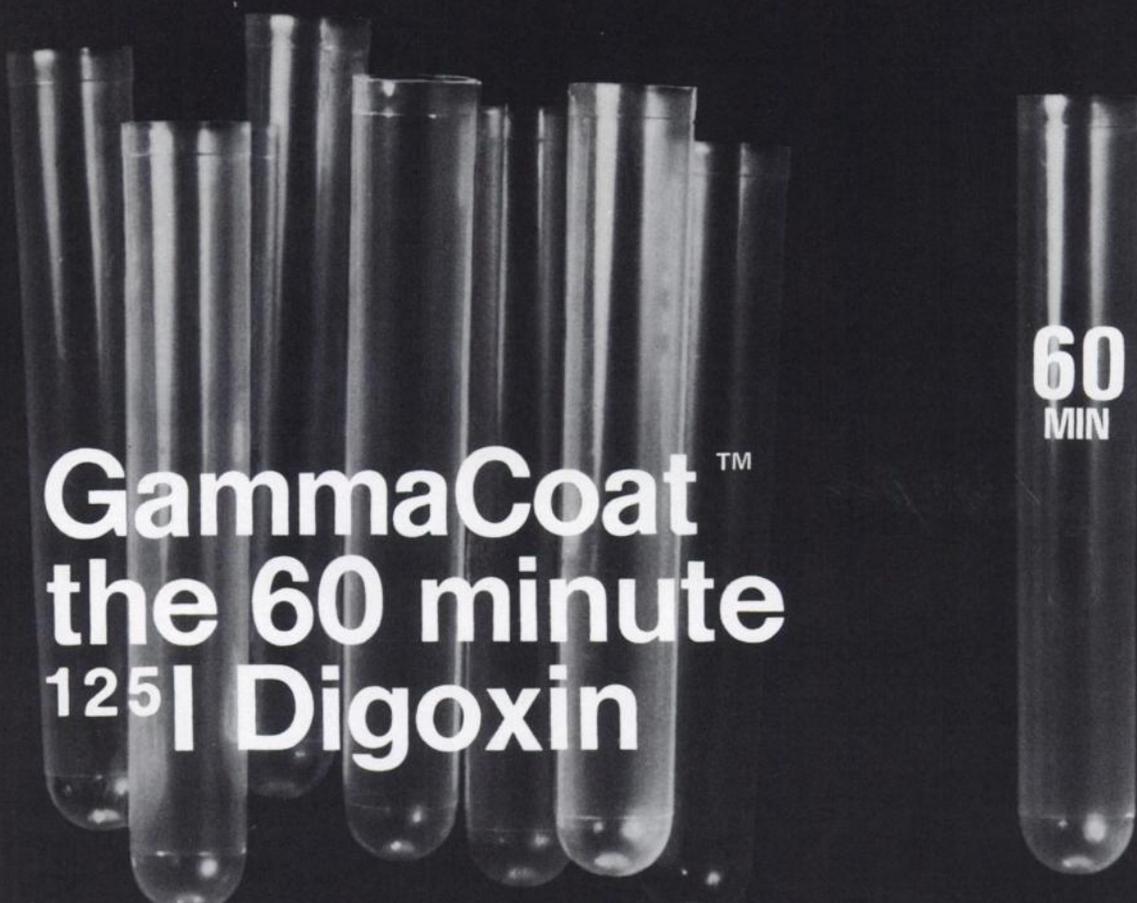
NEN New England Nuclear

575 Albany Street, Boston, Mass. 02118
Customer Service 617-482-9595

Canada: NEN Canada Ltd., Dorval, Quebec,
Tel: (514) 636-4971, Telex: 05-821808
Europe: NEN Chemicals GmbH, D6072 Dreieichenhain,
Siemensstrasse 1, Germany. Tel: Langen (06103) 85035

Please send me:
 Liquid Concentrate NEF-942 4 liters (price \$26) 4x4 liters (price \$78)
 Aerosol Spray NEF-942A 6x18 oz. (price \$37)
 Foam Hand Cleaner NEF-942B 6x18 oz. (price \$37)

Name _____
 Affiliation _____
 Address _____
 Zip _____
 New England Nuclear Corp.,
 575 Albany Street,
 Boston, Mass. 02118.



GammaCoatTM the 60 minute ¹²⁵I Digoxin

60
MIN

Introducing the next generation of digoxin radioimmunoassay determinations — GammaCoat by Clinical Assays. This important development lowers your overall costs significantly . . . reduces total assay time 50% . . . and offers extremely high accuracy coupled with excellent reproducibility.

A test tube coated with digoxin specific antibody and a ¹²⁵I digoxigenin derivative tracer shortens the entire RIA procedure to five simple steps.

- 1 Add buffer.
- 2 Add serum. Incubate 15 minutes.
- 3 Add tracer. Incubate 45 minutes.
- 4 Aspirate and wash twice.
- 5 Count.

NEW!

For full details contact:



**Clinical
Assays, Inc.**

or call the nearest
Fisher



Scientific
for fast service.

CLINICAL ASSAYS, INC. • 237 BINNEY STREET Dept. J • CAMBRIDGE, MASSACHUSETTS 02142 • (617) 492-2526

**easy viewing
easy handling
easy filing**



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

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

75A

¹²³Iodine, ¹¹Carbon, ¹³Nitrogen...

Can your calibrator handle these radiopharmaceuticals now that they are available?

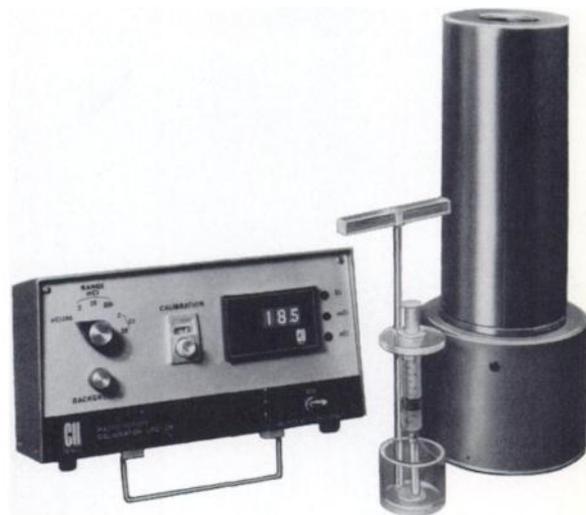
If it's a Capintec, it can!



CRC-4®



CRC-10®



CRC-2N®



CAPINTEC, INC.

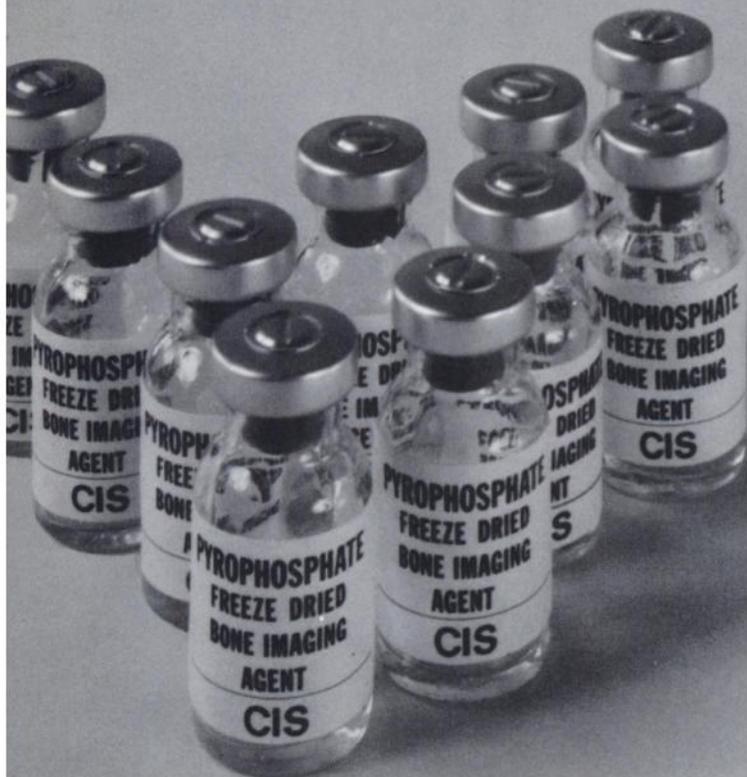
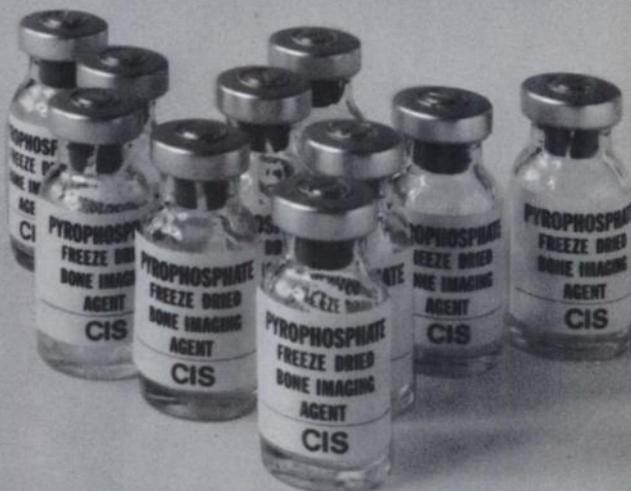
63 E. Sanford Blvd., Mt. Vernon, N.Y. 10550
914-664-6600 • Telex: 131445 (CAPINTEC MTV)

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. Panneciery 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.



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



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?

Mallinckrodt

NUCLEAR

(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.

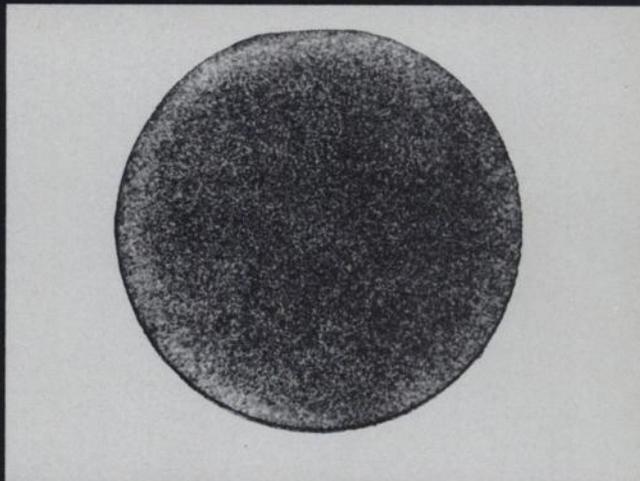
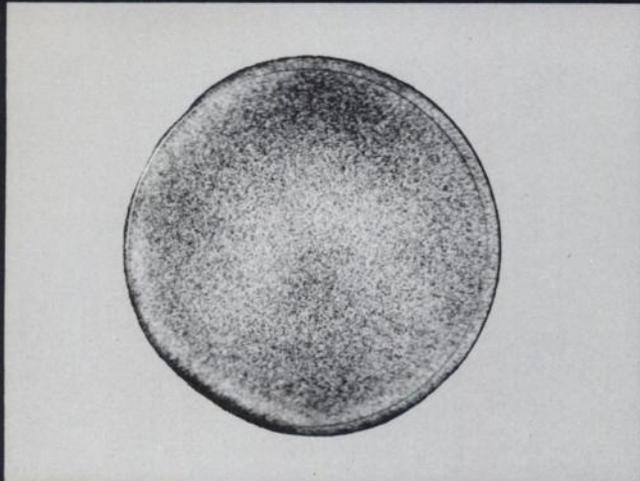
(2) Gladding, T. C.: Effective thyroxine ratio (ETR)—A new test for thyroid function. *J. Tenn. Med. Assn.* 65:442-444, May 1972.

(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.

RADIOPHARMACEUTICALS
Mallinckrodt Chemical Works
675 Brown Rd.
Hazelwood, Missouri 63042



How about a physical checkup for your camera?



It's a simple matter with our flood source, and you'll know immediately if unbalanced photo-multipliers are interfering with diagnoses.

The flood source (1mCi, ^{57}Co) is a solid, light, flat disk 13.5" in diameter, precision made to provide uniform radiation over the entire surface ($\pm 5\%$ or better). No liquids to mix, spill, or dispose of, and the camera collimator can remain in place. The checkup is so simple it can (and should) be performed daily.

New England Nuclear has years of experience and numerous products in the field of nuclear instrumentation calibration. Let us send you further information.

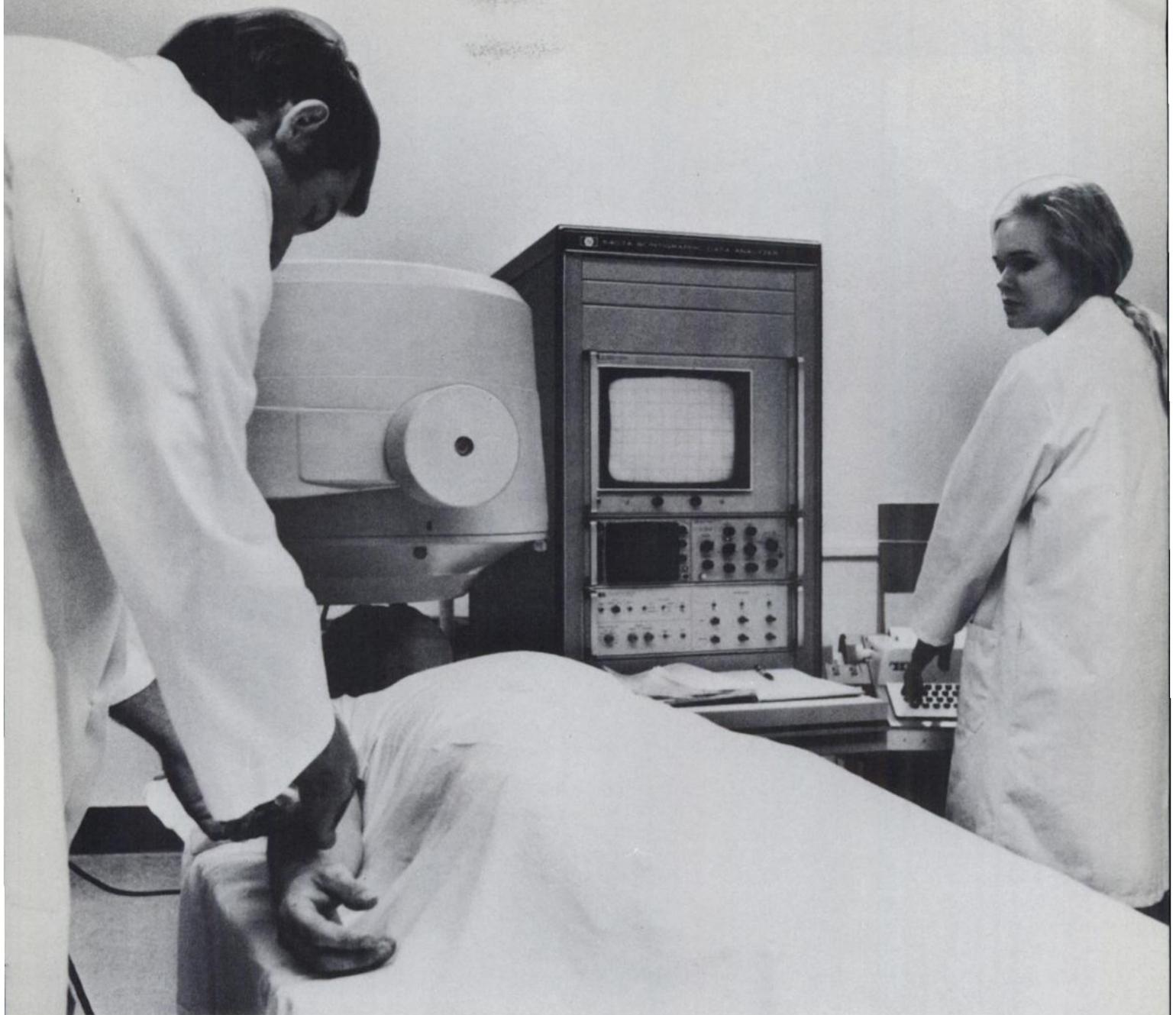


New England Nuclear Radiopharmaceutical Division

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

Canada: NEN Canada Ltd., Dorval, Quebec, H9P-1B3,
Tel: (514) 636-4971, Telex: 05-821808
Europe: NEN Chemicals GmbH, D6072 Dreieichenhain,
Siemensstrasse 1, W. Germany. Tel: Langen (06103) 85035

The HP Scintigraphic Data Analyzer



More flexible data handling *now...* faster data acquisition for years to come

HP's Scintigraphic Data Analyzer offers you the most flexible data manipulation available in nuclear medicine.

Its unique *list mode* preserves all data from the study. You can choose the frame rate you need to manipulate data the way you want—up to 100 frames/second—after the study is over.

In *histogram mode* the system accepts data up to 300,000 events/second at preset frame rates up to 20/second—ideal for static and slower dynamic studies.

That's performance enough for the fastest studies now being investigated

and for the new generation of gamma cameras now appearing.

Yet for all its sophistication, the HP 5407 Scintigraphic Data Analyzer is easy to understand and operate. Its simple keyboard lets you or your technician tell the system exactly what to do. By using the light pen you can assign up to 16 overlapping regions of interest, with ample facilities to insert and display verbal information on the display scope.

The HP 5407 is already providing clinically-significant patient information in more than 20 leading hospitals in the U.S. and Europe. System performance

is only one reason why. As a world leader in medical computer systems, HP has the equipment, experience and qualified personnel to assure dedicated training and service assistance to meet your needs today and in the future. Send for "HP's Total System Approach to Nuclear Medicine." HP brochure No. 3597.

HEWLETT  PACKARD

Sales and service from 172 offices in 65 countries
Waltham, Massachusetts 02154

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™)



A



B



C



PROCTER & GAMBLE

OSTEOSCAN[®]

(5.9 MG DISODIUM ETIDRONATE
0.16 MG STANNOUS CHLORIDE)

SKELETAL IMAGING AGENT

See following page for brief summary of package insert.

PROCTER & GAMBLE

OSTEOSCAN

(5.9 MG DISODIUM ETIDRONATE
0.16 MG STANNOUS CHLORIDE)
SKELETAL IMAGING AGENT



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

DESCRIPTION

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

ACTIONS (CLINICAL PHARMACOLOGY)

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

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

INDICATIONS

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

CONTRAINDICATIONS

None.

WARNINGS

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

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

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

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

PRECAUTIONS

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

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

ADVERSE REACTIONS

None.

DOSAGE AND ADMINISTRATION

The recommended adult dose of ^{99m}Tc -labeled OSTEOSCAN is 1 ml with a total activity range of 10-15 mCi. ^{99m}Tc -labeled OSTEOSCAN should be given intravenously by slow injection over a period of 30 seconds within 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.

INDEX TO ADVERTISERS

Abbott Laboratories North Chicago, Ill.	21A, 22A
Atomic Development Corp. Plainview, N.Y.	20A
Atomic Products Corp. Center Moriches, N.Y.	61A
Baird-Atomic Bedford, Mass.	86A, 1BC
Brattle Instrument Corp. Cambridge, Mass.	47A
Capintec, Inc. Mt. Vernon, N.Y.	76A
CIS Radiopharmaceuticals, Inc. Bedford, Mass.	77A
Cleon Corp. Natick, Mass.	6A, 7A
Clinical Assays, Inc. Cambridge, Mass.	43A, 74A
Corning Glass Works Corning, N.Y.	65A, 66A, 67A, 68A
Curtis Nuclear Corp. Los Angeles, Calif.	57A
Digital Equipment Corp. Maynard, Mass.	50A, 51A
Dunn Instruments San Francisco, Calif.	45A
General Electric Medical Systems Milwaukee, Wis.	26A, 27A
Hewlett-Packard Co. Waltham, Mass.	81A
Hewlett-Packard Loveland, Colo.	35A
Hoechst Radiopharmaceuticals Frankfurt, Germany	9A
Isolab, Inc. Akron, Ohio	63A
R. S. Landauer, Jr. & Co. Glenwood, Ill.	69A
LKB Instruments, Inc. Rockville, Md.	59A
3M Company St. Paul, Minn.	24A, 25A
Mallinckrodt/Nuclear St. Louis, Mo.	10A, 11A, 36A, 37A, 38A, 62A, 79A
Matrix Instruments New York, N.Y.	53A, 70A, 71A
Medi-Physics, Inc. Emeryville, Calif.	1FC, 1A, 64S
Micromedic Systems, Inc. Philadelphia, Pa.	54A, 55A
New England Nuclear Boston, Mass.	4A, 13A, 17A, 73A, 80A
Nuclear Data, Inc. Palatine, Ill.	48A, 49A
Ohio-Nuclear, Inc. Solon, Ohio	12A, 78A
Omnimedical Services, Inc. Paramount, Calif.	58A
Picker Corp. Mentor, Ohio	39A, 40A, 41A, 42A
Procter & Gamble Cincinnati, Ohio	82A, 83A, 84A
Radiochemical Centre Amersham, England	46A
Radx Corp. Houston, Texas	28A, 75A
Raytheon Co. Waltham, Mass.	2A, 72A
RCA Electronic Components Harrison, N.J.	23A
Roche Diagnostics Nutley, N.J.	18A, 19A, 29A, 30A, 31A, 32A, 33A, 34A
Searle Analytic, Inc. Des Plaines, Ill.	52A
Searle Radiographics, Inc. Des Plaines, Ill.	56A, BC
SNM Placement New York, N.Y.	60A, 61A
E. R. Squibb & Sons, Inc. Princeton, N.J.	14A, 15A, 16A
Teledyne Isotopes Westwood, N.J.	85A

Some Plain Talk About Radiation Monitoring

- You may be spending three times as much money as you should be spending to monitor your low-risk personnel. Since TLD has a low fade rate it is now possible to do quarterly monitoring instead of monthly monitoring.

- Automation has brought the cost of our TLD badge service down to 50¢ per badge.

- TLD has several other important advantages.

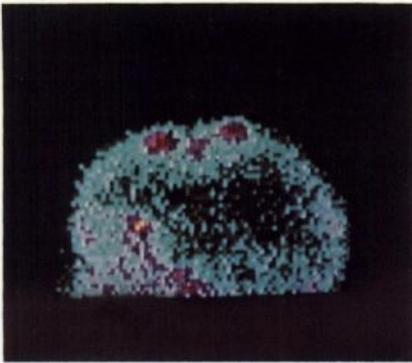
- Fast, reliable results
- More accurate results
- More rugged dosimeters

TLD can now cut personnel monitoring costs by a whopping two-thirds. Do it!

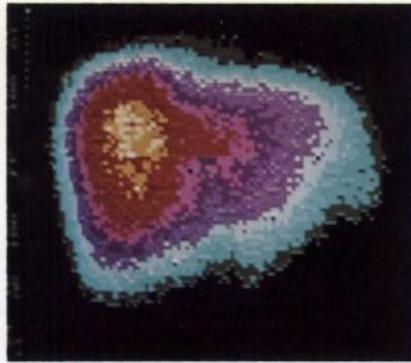
More and more nuclear power plants, national laboratories, hospitals and other nuclear establishments are changing from film to TLD — now you should too.

 **TELEDYNE
ISOTOPES**

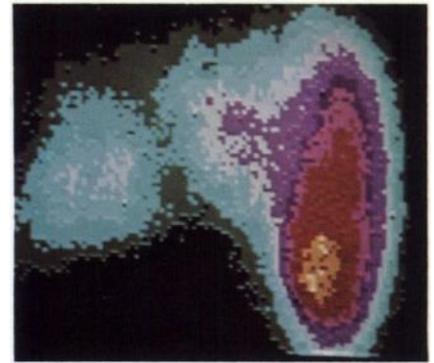
50 VAN BUREN AVE., WESTWOOD, N.J. 07675
TELEPHONE: 201-664-7070 TELEEX: 134-474



Abnormal Lt. Lat. brain-bone scan



Normal ant. liver scan

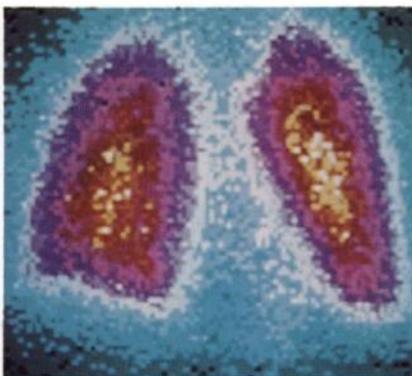


Ant. cirrhotic liver scan



Normal kidney scan

system 70 the camera



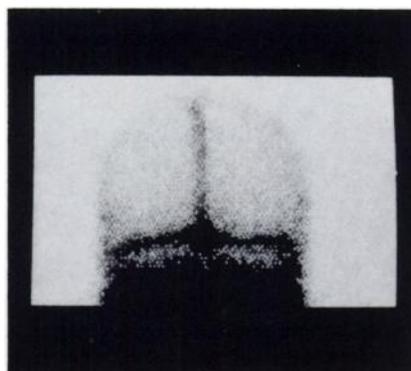
Normal ant. lung scan

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

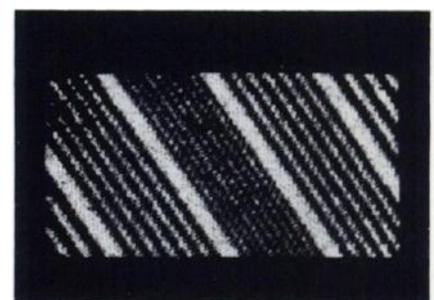
In the past, the difficulty of rapid data analyses of quantitative dynamic function studies has inhibited their growth. However, nuclear medicine is developing, and quantitative brain, kidney, and heart dynamics are becoming a valued part of the nuclear diagnostic work-up. Hence, the need for a camera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



Normal Rt. Lat. brain scan



Normal post. brain scan



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



for all reasons

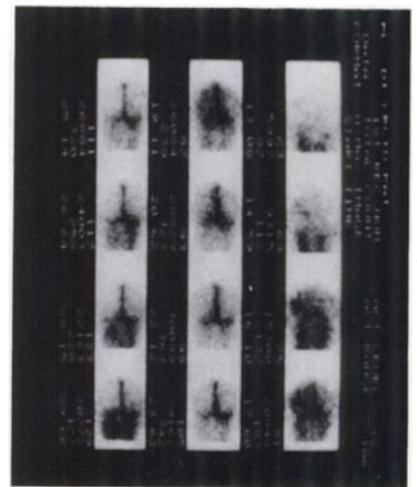
deliver these fast analyses and grow with your department, whichever direction it takes.

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

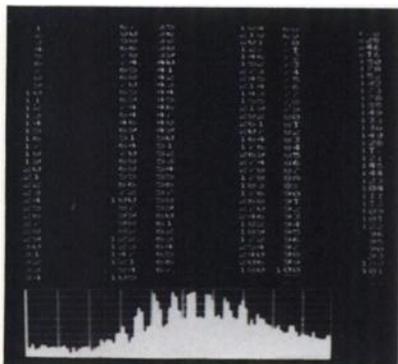
SYSTEM SEVENTY is, indeed, the camera which supplies both capabilities and is "the camera for all reasons."



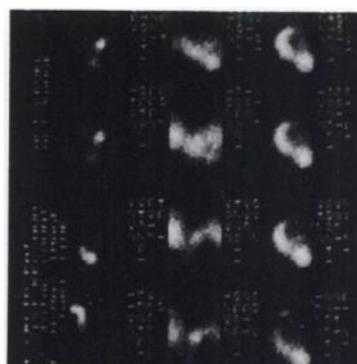
Nuclear Division, 125 Middlesex Turnpike,
Bedford, Mass. 01730, 617/276-6000,
Telex: 923491, Cable BAIRDCOFRD



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

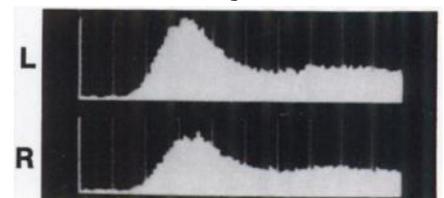


Normal Lt. ventricular curve
ejection fraction .60



Normal cardiac blood flow

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



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

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

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

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

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

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

Clinically Oriented

- Choice of either 5 x 7 or 8 x 10 X-ray film sizes as well as the competitively available 11 x 14 film size.
- Built in whole body imaging with choice of each view presented in dual intensity on the film to facilitate diagnosis or the more economical two views with single intensity.
- Highest cine sequential time per frame resolution of up to 80 frames/study.

- Organ-specific push buttons automate, standardize and speed the proper exposure settings for routinely performed studies.

Simplified Operation

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

Economical Operation

- A variety of film sizes guarantees the lowest operational cost of any imager offered.
- System designed lightweight, low cost cassettes with future daylight unloading capability.

- Built in view-box saves space as well as steps.

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

SEARLE

Searle Radiographics Inc.

Subsidiary of G. D. Searle & Co.
2000 Nuclear Drive
Des Plaines, Illinois 60018

