If you know get to know

Triosorb®-I25 T-3 Diagnostic Kit*

The in vitro test unmatched for reproducibility, convenience and accuracy.

Reproducible. Over 15 million tests conducted over the past eight years have made Triosorb® the standard of T-3 tests.

Convenient. The disposable Triosorb® Kit is ready for immediate use at room temperature making it one of the simplest, most convenient thyroid function tests available.

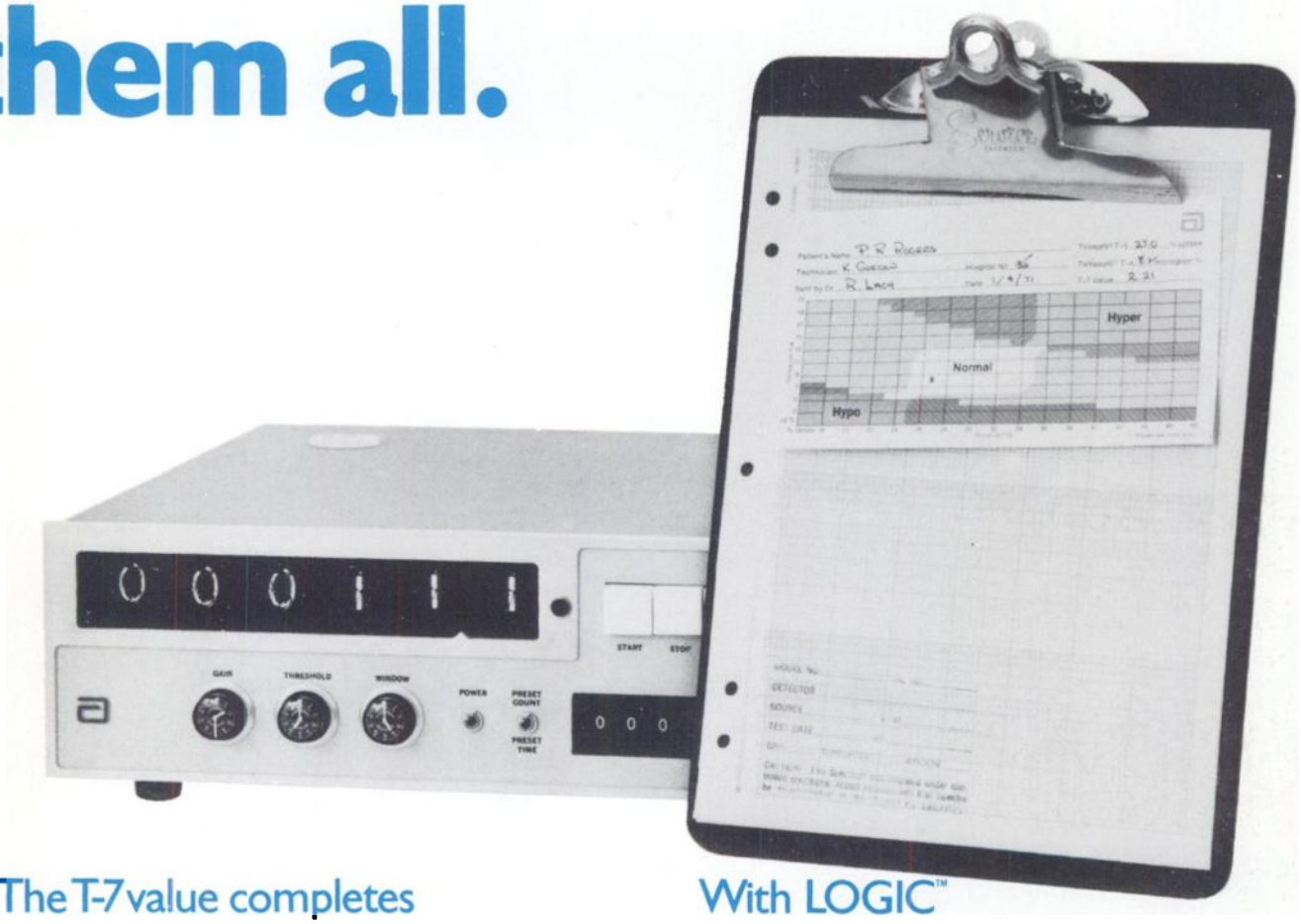
Accurate. Approximately 15 drugs and conditions produce misleading Triosorb®-T-3 test results, compared with over 200 factors which affect PBI.

* Also available as Triosorb®-131.

Tetrasorb®-I25 T-4 Diagnostic Kit

An improved, simplified method for measuring total *serum* thyroxine with diagnostic accuracy equal to or better than any currently used measures of thyroid function. Unlike other tests, exogenous iodines don't affect Tetrasorb® results.

one of these, them all.



The T-7 value completes the thyroid profile.

It's the Abbott method for determining the in vitro free thyroxine index.

T-7 is not a test but a numerical value derived from the multiplication of T-3 and T-4 test values. Because it is a product of two other numbers, the *T-7 value* will *move* only when both the T-3 and T-4 values move in the *same direction.* There are *only* two physiological conditions which cause this to occur, *hypothyroidism* and *hyperthyroidism.* With the exception of those patients receiving liothyronine or d-thyroxine therapy, all other factors which affect thyroid function tests will cause the T-3 and T-4 values to move in opposite directions, and the T-7 value to remain in the normal range.

When you provide the Abbott T-3, T-4 and T-7 values you furnish a complete thyroid profile with unparalleled clinical accuracy.

With LOGIC™ your final step is as easy as 1,2,3.

1. Establish a baseline.
   Pre-set count for 10,000; read the required time from the NIXIE tubes.
2. Take a post-wash reading.
   Pre-set *timer* for the baseline established in step 1.
3. ***Read the percentage uptake*** directly from the NIXIE tubes.
   LOGIC™ provides direct ratio readout in percentage.

   No conversions or calculations needed.
   Minimal chance for error.

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World's Leading Supplier of Radio-Pharmaceuticals
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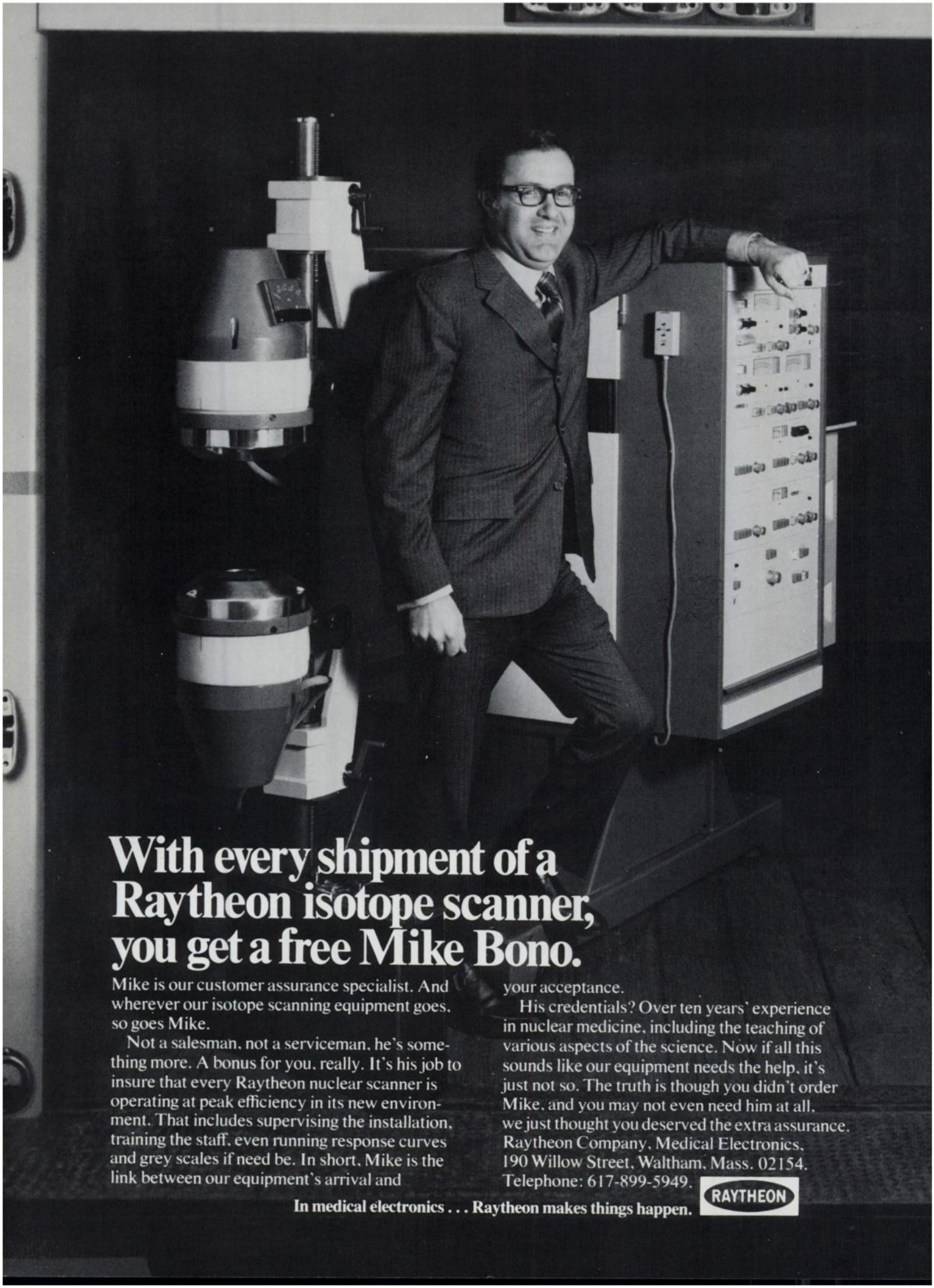

With every shipment of a Raytheon isotope scanner, you get a free Mike Bono.

Mike is our customer assurance specialist. And wherever our isotope scanning equipment goes, so goes Mike.

Not a salesman, not a serviceman, he's something more. A bonus for you, really. It's his job to insure that every Raytheon nuclear scanner is operating at peak efficiency in its new environment. That includes supervising the installation, training the staff, even running response curves and grey scales if need be. In short, Mike is the link between our equipment's arrival and your acceptance.

His credentials? Over ten years' experience in nuclear medicine, including the teaching of various aspects of the science. Now if all this sounds like our equipment needs the help, it's just not so. The truth is though you didn't order Mike, and you may not even need him at all, we just thought you deserved the extra assurance.

Raytheon Company, Medical Electronics,
190 Willow Street, Waltham, Mass. 02154.
Telephone: 617-899-5949.

In medical electronics . . . Raytheon makes things happen.

RAYTHEON

Ask him why he specifies the NEN Technetium-99m generator. He'll tell you that he's tried the others and has chosen NEN because he's found he "doesn't have to worry about generators anymore. The best generator is the one nobody notices."

Because it gets there on time – pre-tested at NEN for sterility, non-pyrogenicity, Molybdenum-99, aluminum, and alumina and other particulates.

Ready to use with no pre- or post-assembly problems . . . just charge and elute! And the other extras too. Fractional elution and assay kits and MOLY-CODDLE™ radiation reducer.

In other words we worried about everything we could think of – so the man who buys one won't have to. It's the generator nobody notices.

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Atomlight Place, North Billerica, Mass. 01862
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ask the man who buys one

GENERAL DIAGNOSTICS
Division
Warner-Lambert Pharmaceutical Company

a new breakthrough

fasT3™

Reagent system for laboratory determination of T3 (TBG) uptake as a measurement of thyroid function

EASY?

1 just add sample and water

2 shake and allow to stand (10 minutes)

3 centrifuge and count

SURE!

FOR YOUR CONVENIENCE

GENERAL DIAGNOSTICS

☐ 12 TEST VIALS PLUS 1 STANDARD 20.00
☐ 70 TEST VIALS PLUS 2 STANDARDS 85.00
(PRICES SUBJECT TO SERVICE CHARGE)
☐ STANDING ORDER BEGINNING _____ Date
(TO BE REPEATED MONTHLY)
☐ HAVE SALESMAN CALL

PURCHASE ORDER NUMBER_____

NAME _____ TITLE _____

DEPARTMENT _____

INSTITUTION _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

I am familiar with the AEC/State regulations governing my use, storage and disposal of radioactivity.

Signed _____ Date _____

Now available from General Diagnostics
201 Tabor Rd., Morris Plains, N.J. 07950
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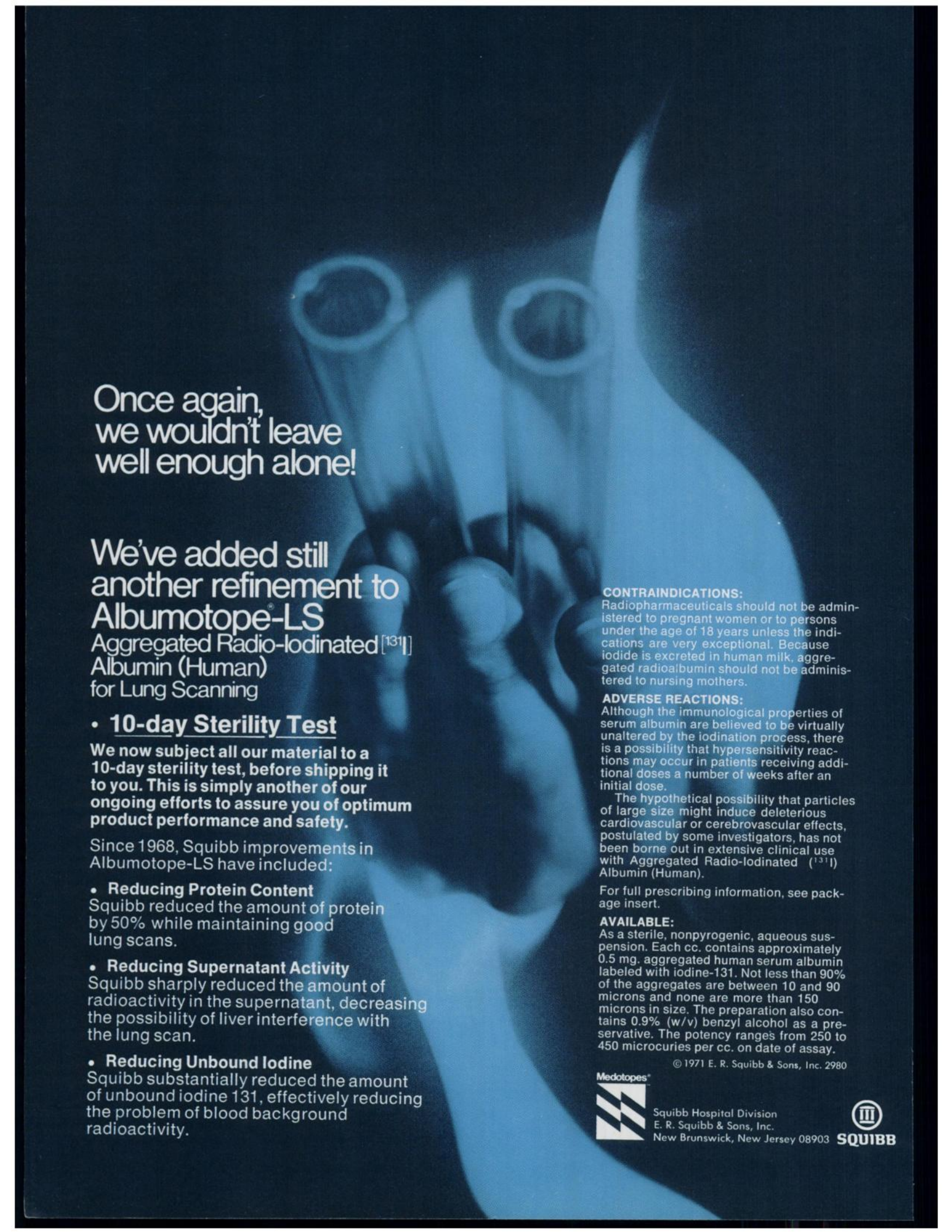

Once again, we wouldn't leave well enough alone!

We've added still another refinement to Albumotope®-LS

Aggregated Radio-Iodinated [^{131}I] Albumin (Human) for Lung Scanning

- **10-day Sterility Test**

We now subject all our material to a 10-day sterility test, before shipping it to you. This is simply another of our ongoing efforts to assure you of optimum product performance and safety.

Since 1968, Squibb improvements in Albumotope-LS have included:

- **Reducing Protein Content**
Squibb reduced the amount of protein by 50% while maintaining good lung scans.

- **Reducing Supernatant Activity**
Squibb sharply reduced the amount of radioactivity in the supernatant, decreasing the possibility of liver interference with the lung scan.

- **Reducing Unbound Iodine**
Squibb substantially reduced the amount of unbound iodine 131, effectively reducing the problem of blood background radioactivity.

CONTRAINDICATIONS:
Radiopharmaceuticals should not be administered to pregnant women or to persons under the age of 18 years unless the indications are very exceptional. Because iodide is excreted in human milk, aggregated radioalbumin should not be administered to nursing mothers.

ADVERSE REACTIONS:
Although the immunological properties of serum albumin are believed to be virtually unaltered by the iodination process, there is a possibility that hypersensitivity reactions may occur in patients receiving additional doses a number of weeks after an initial dose.

The hypothetical possibility that particles of large size might induce deleterious cardiovascular or cerebrovascular effects, postulated by some investigators, has not been borne out in extensive clinical use with Aggregated Radio-Iodinated (^{131}I) Albumin (Human).

For full prescribing information, see package insert.

AVAILABLE:
As a sterile, nonpyrogenic, aqueous suspension. Each cc. contains approximately 0.5 mg. aggregated human serum albumin labeled with iodine-131. Not less than 90% of the aggregates are between 10 and 90 microns and none are more than 150 microns in size. The preparation also contains 0.9% (w/v) benzyl alcohol as a preservative. The potency ranges from 250 to 450 microcuries per cc. on date of assay.

Medotopes®

Squibb Hospital Division
E. R. Squibb & Sons, Inc.
New Brunswick, New Jersey 08903

SQUIBB

Introducing the Pakorol-CTX

First practical way to process oscilliscope scanning film.

Now you can record oscilliscope scanning studies on high quality, low cost, conventional photographic film without banishing a staff member to the darkroom—or letting prohibitive costs limit your exposures. Because now you can process your film on the Pakorol-CTX—practical tabletop processor for conventional photographic film in sheets and rolls.

The CTX handles virtually all B/W film up to 5-inches wide, including ortho-chromatic, high speed and low speed varieties. Delivers film processed and dried in minutes—at a cost of just pennies per frame.

It's easy to get sharp, clear results with the CTX. Anyone on your staff can operate it. Just set the controls and feed the film into the processor. Automatic replenishment, temperature control and precise processing time assure consistent quality results that are impossible to maintain with hand processing. Get the facts on the practical Pakorol-CTX. Find out how you can share it with other departments in your hospital or clinic. Contact your Pako Distributor or write to us.

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X-RAY PRODUCTS

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Please send me more information about the Pakorol CTX practical processor for oscilliscope scanning film.

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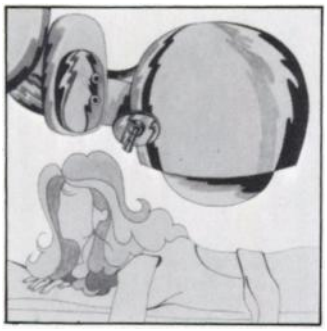
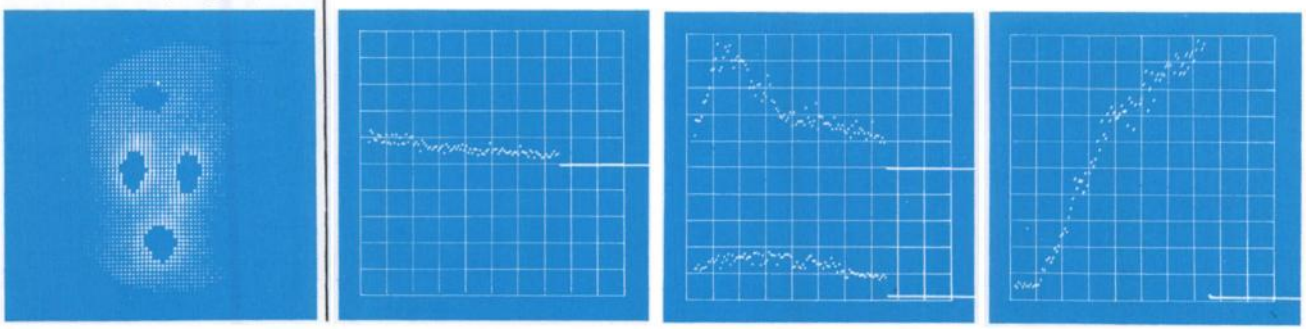
PS Processing System for Medical and Industrial X-Ray, Photographic, Motion Picture, and Graphic Arts Industries.



from one single examination cinescintigraphy* shows you a complete dynamic uptake process

Below is a renogram picture on which 4 regions of interest have been selected by light pen.

Replay of the digital magnetic tape gives, on the oscilloscope screen, the **dynamic** uptake curves for each region: activity versus time. Successive elementary images, corresponding to each point of the curves, could also be displayed.



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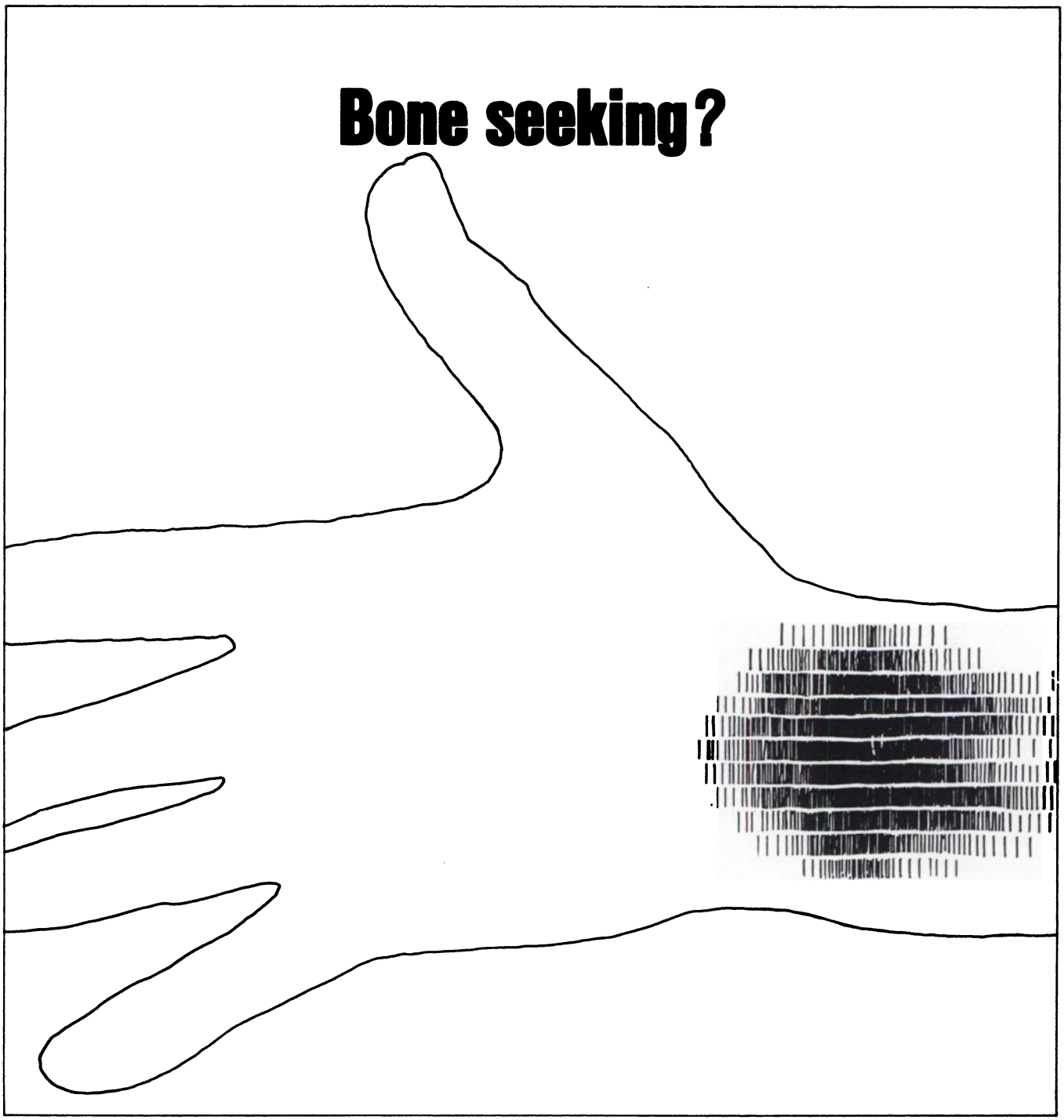
INTERTECHNIQUE

Bone seeking?



First seek Strontium 87m

Stercow 87m yields the strontium isotope for bone scanning which combines a low radiation dose with high count rates. Strontium 87m provides you with diagnostic information in a few hours.

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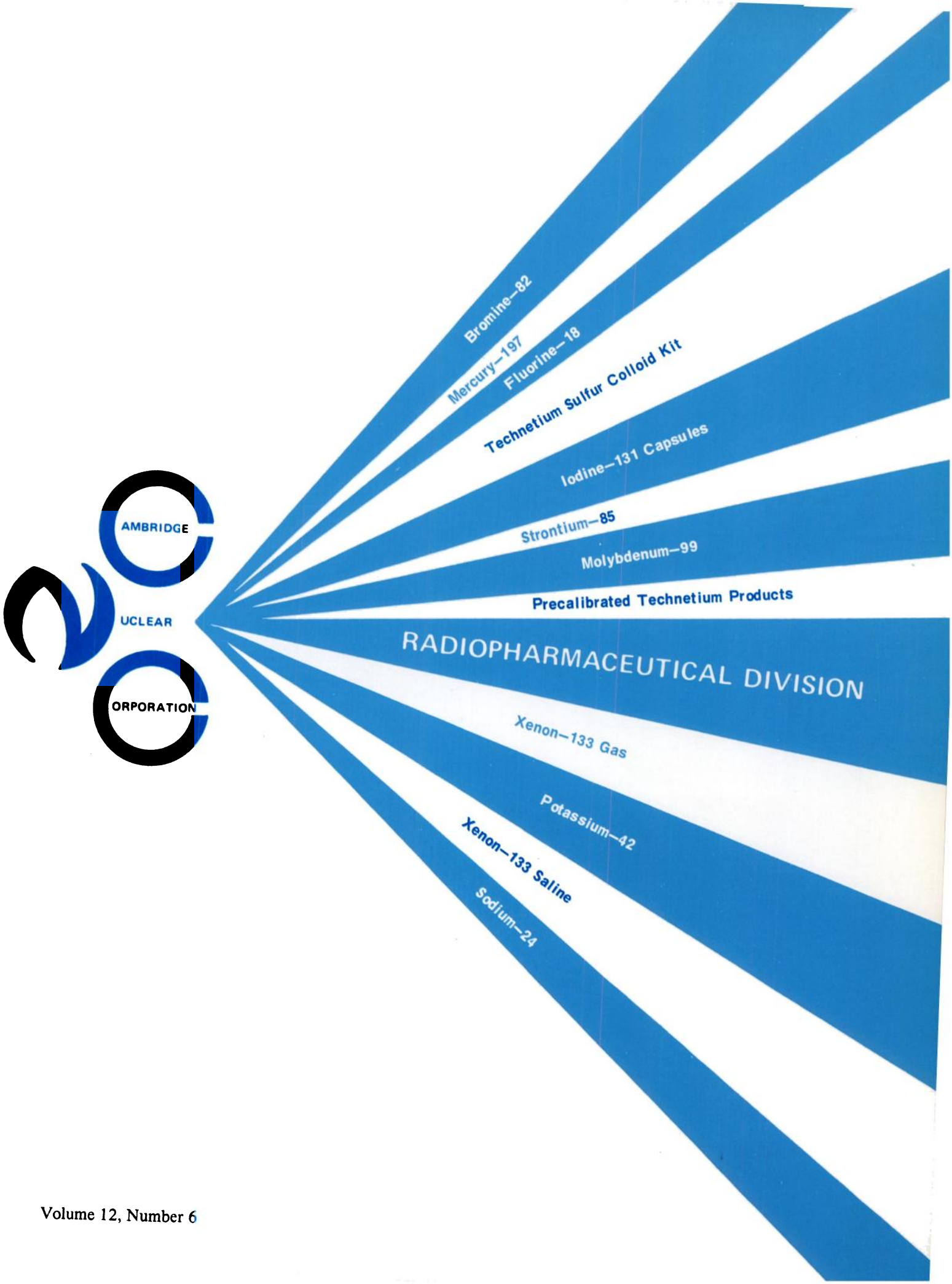
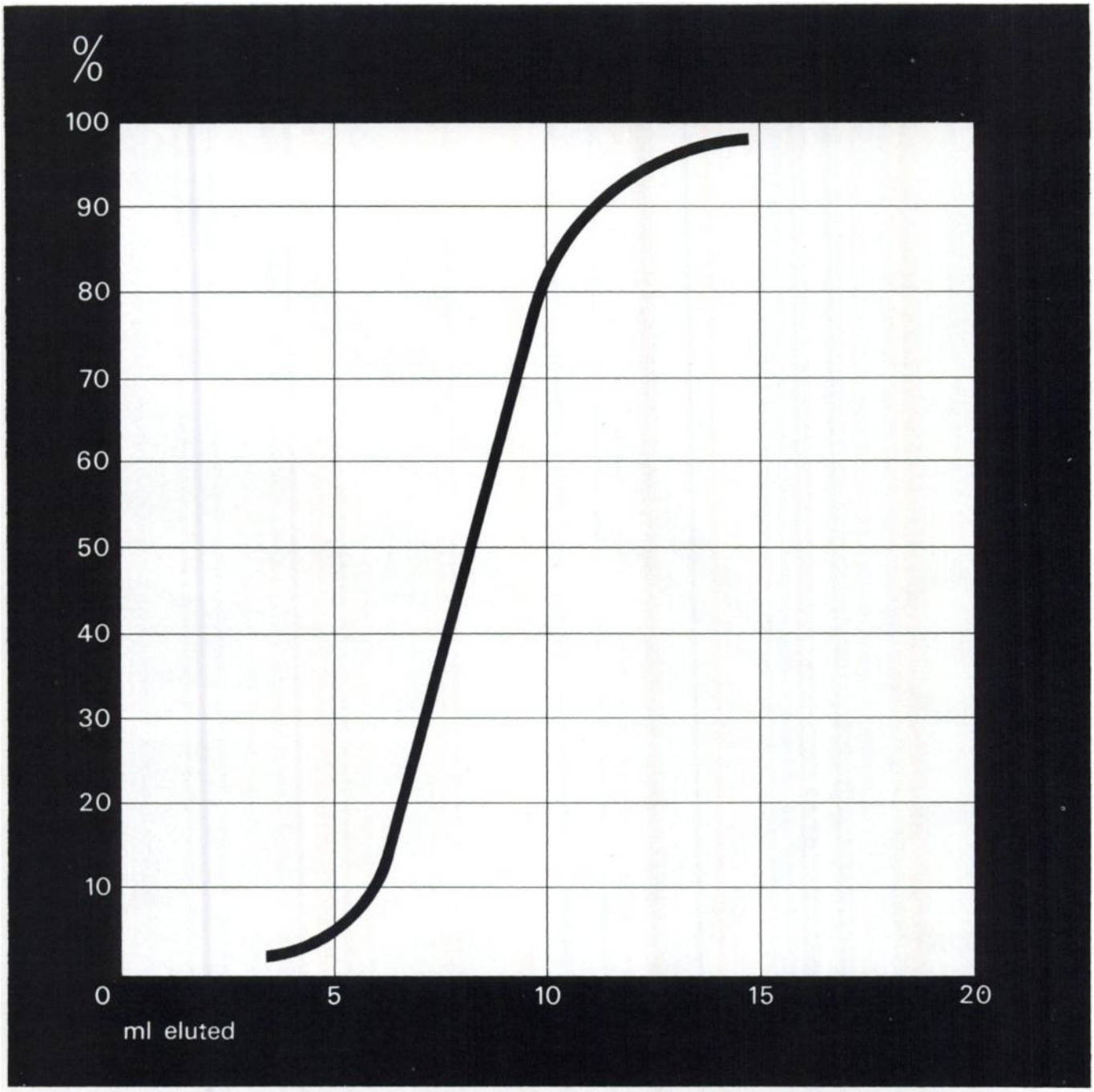


Volume 12, Number 6



Stercow 99m elution curves are the greatest!

Stercow 99m provides the highest Tc99m activities with the highest concentration. That is why our curves are so great. That is why the elution volumes are small. You can have curves as good as ours - with Stercow 99m.

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And now, DIGITAL meets the gamma camera.

Small computers from DIGITAL can now be linked to the gamma camera to provide dynamic data acquisition and statistical image enhancement.

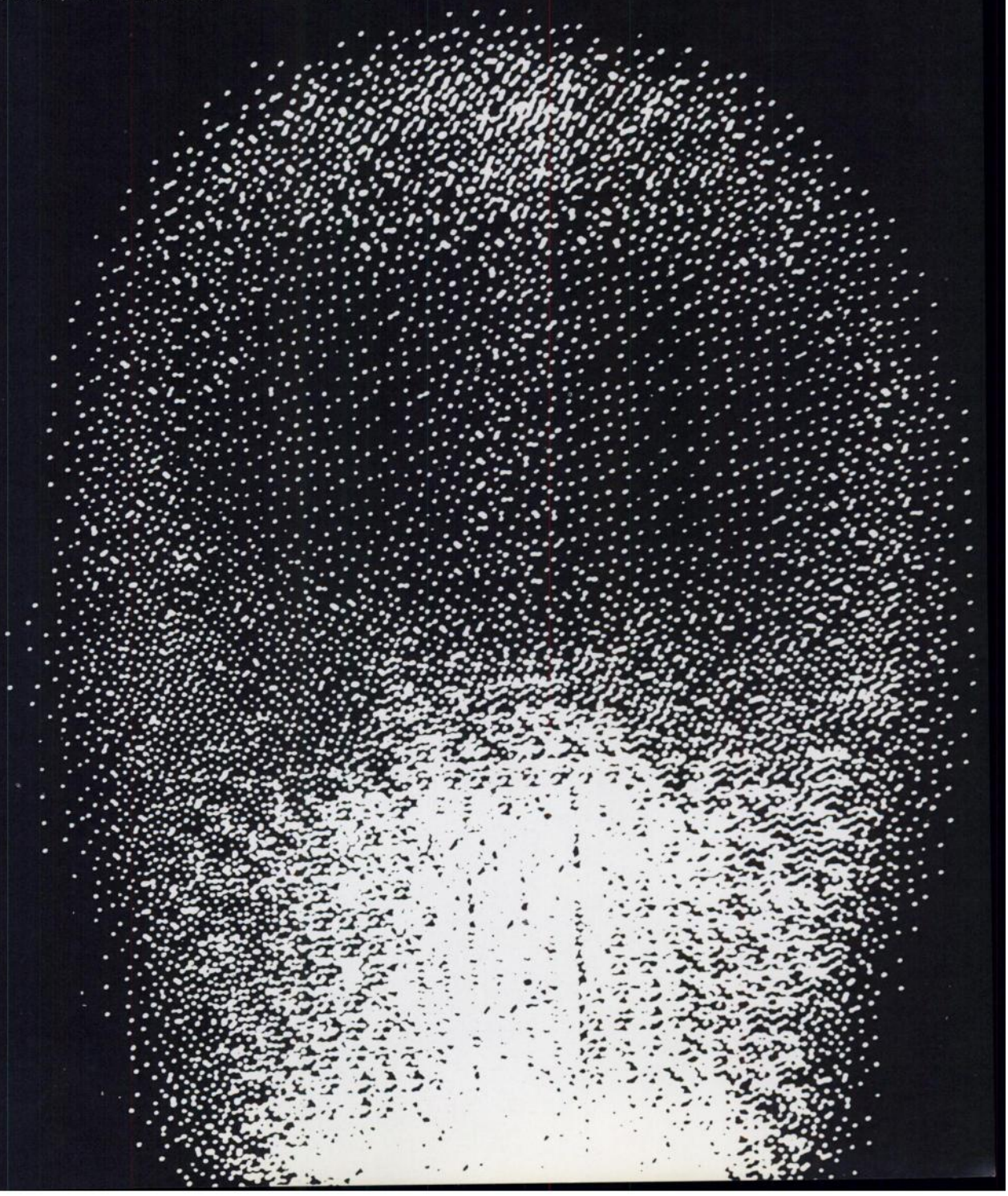
The PDP-12 Laboratory Instrument Computer (LINC) and the LAB 8/e are specially tailored for the laboratory environment to acquire and process signals from your instrument. The radiologist uses the full power of a general-purpose laboratory computer to reduce and manipulate data displayed in graphic form on a CRT. Experimental results can be reported and filed in virtually any convenient form.

In the related fields of nuclear medicine and radiotherapy, computers from DIGITAL are helping to provide physicians with better tools for research and clinical evaluation. A large portion of the 12,000-plus computers we have installed around the world are in hospitals and medical research institutions.

Find out more about the advantages of connecting your gamma camera to a computer from DIGITAL. Write for more information. Now.

Digital Equipment Corporation, PDP-12 Division, Main Street, Maynard, Mass. 01754, (617) 897-5111.

digital



Sigma 2. The only spectrometer that automatically computes statistical error.

Sigma 2, Model 200, automatically provides direct readout of net counts per minute... plus statistical error within a 95% confidence level.

The Model 200 is simple to operate, with upper and lower levels calibrated directly in KEV. Just pre-set any of six data accumulation periods from 0.1 to 20 minutes and background subtract in counts per minute. No manual calculations of counts per minute are required... accuracy of measurement is assured. An audible tone signals completion of the measurement.

Raytheon also offers the Model 210, which is similar to conventional spectrometers with one important difference: automatic calculation of 95% confidence error. Its six-decade scaler and 5-decade timer allow a direct percent ratio of sample to a standard.

Both the Model 200 and 210 mate with Raytheon's unique 3-way well counter that accommodates test tubes, syringes, and 1000 ML breakers.

For a free copy of the brochure describing Sigma 2 spectrometers and well counter, return the coupon to Raytheon Company, Medical Electronics, 190 Willow St., Waltham, Mass. 02154. Tel. (617) 899-5949.

Raytheon Company, Medical Electronics
190 Willow Street, Waltham, Mass. 02154

☐ Please have a representative call.
☐ Please send your new brochure describing Sigma 2 clinical spectrometers and well counter.

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Affiliation_____

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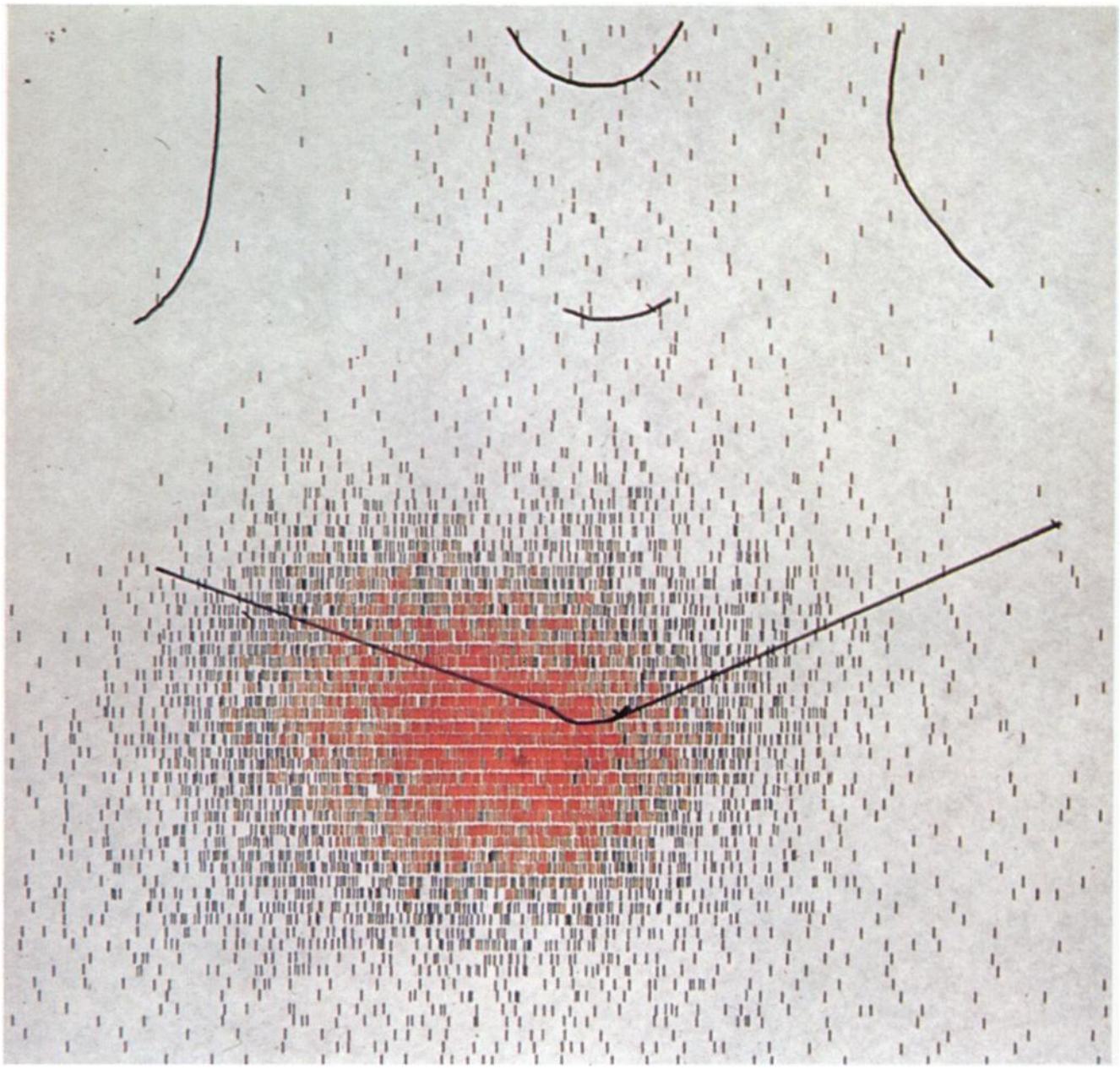
In medical electronics . . . Raytheon makes things happen.



This scan was impossible without Ga67

Of course Ga67 is not the single criterion but it represents a valuable contribution to the diagnosis of bronchial carcinoma, thyroid tumours and systemic (R.H.S.) diseases. By its tumour cell affinity Ga67 produces a high tumour to non tumour ratio. It gives optimal scanning with gamma energies of 92, 185 and 296 keV. Supply is no problem - it is available weekly from Duphar.

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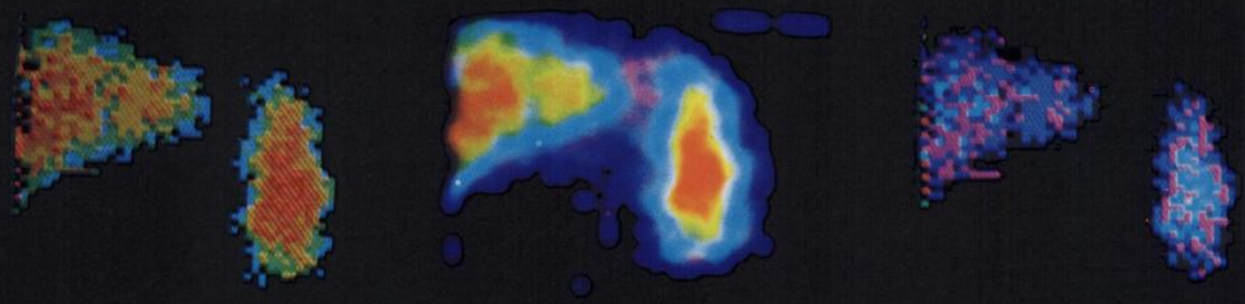
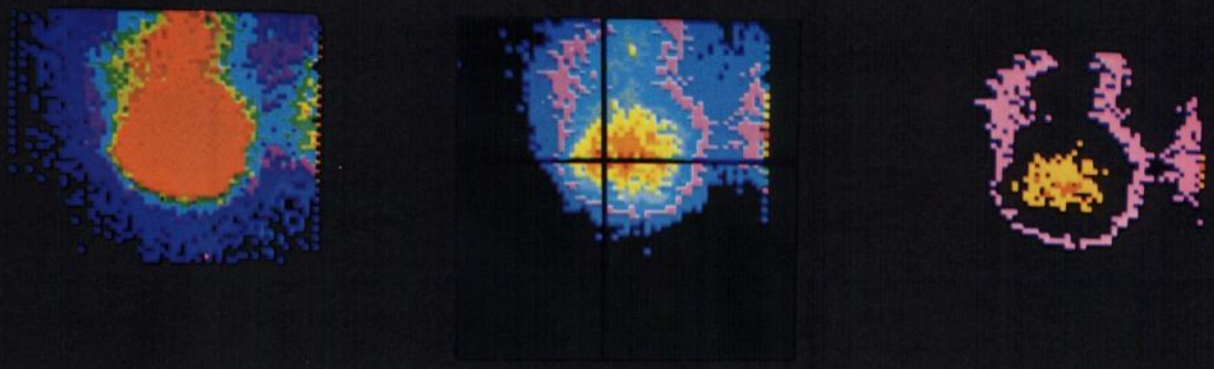
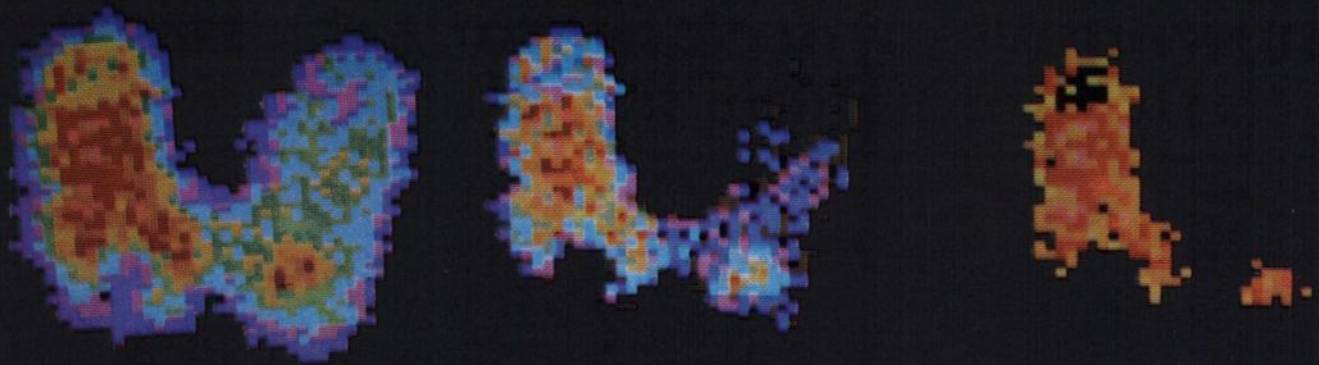
if you thought of



SPLENOMEGALY (^{198}Au)



LIVER ABSCESS (^{113m}In)



THYROID PHANTOM (^{125}I)

Courtesy : Beilinson Hospital
Petah Tikwa, Israel.

buying a scanner... don't!

First showing June 28, 1971, Society of Nuclear Medicine, Los Angeles.

until you have seen the advantages of the new ELSCINT VIDEOSCANNER

featuring an entirely new display and processing method

ELSCINT

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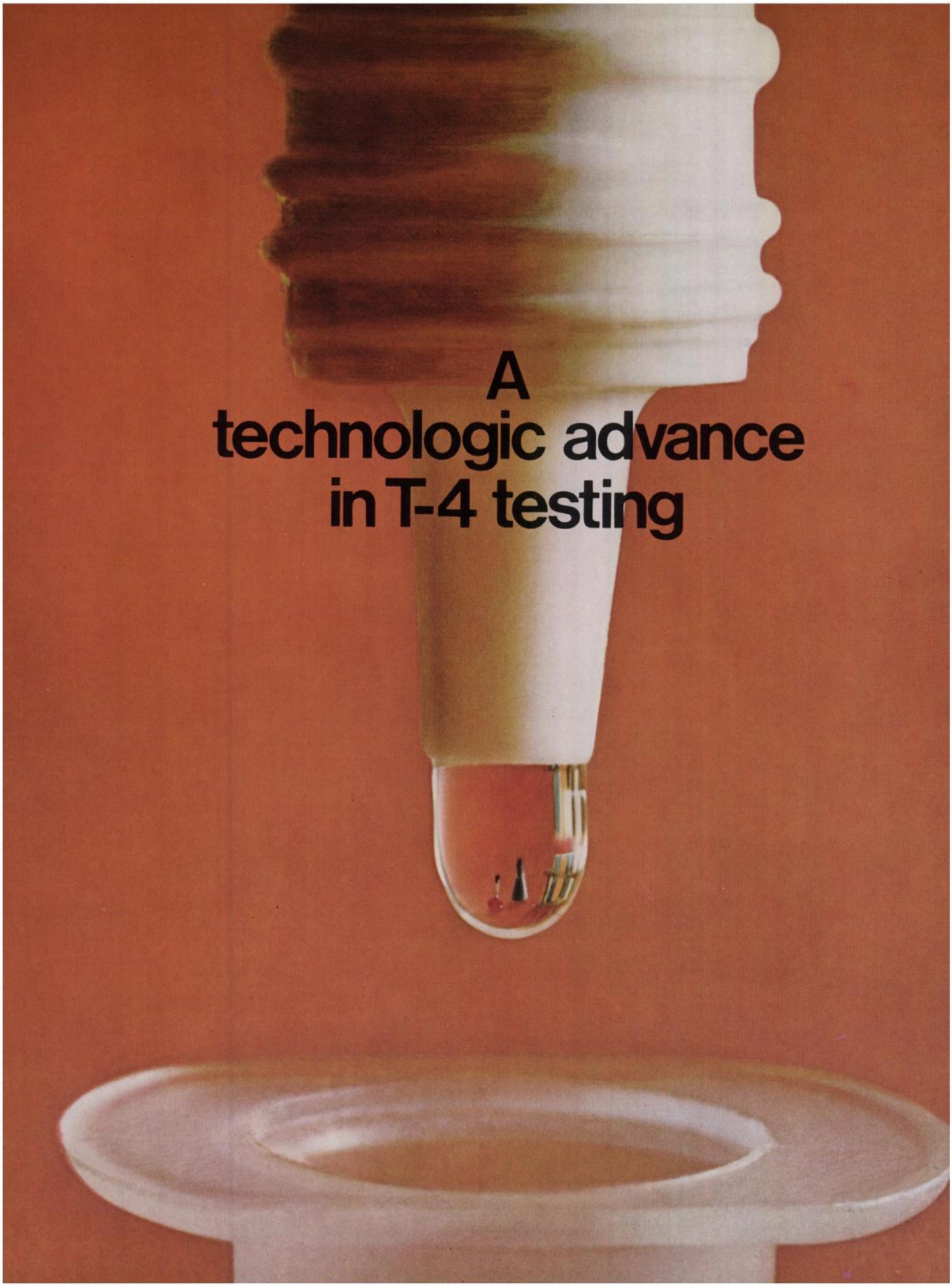
A
technologic advance
in T-4 testing

New Tetralute®

^{125}I Column T-4 Test for Thyroid Function

Cuts time and steps compared to tests you may be using now

Eliminates centrifuging, incubating and evaporating... cuts testing time significantly

TETRALUTE® is a T-4 test that takes fewer steps and less time than older methods. A technologist can do approximately 60 tests in only 2½ hours.

TETRALUTE measures *total* thyroxine (both free and bound T-4). It provides information comparable in value to PBI testing, but test results are not distorted by inorganic or organic iodine which so often renders PBI measurements invalid.

In a comparative study, results obtained with TETRALUTE showed a correlation coefficient of 0.95 with results obtained with the Murphy-Pattee T-4 method.* Compared to such T-4 tests, however, TETRALUTE eliminates three time-consuming steps and the need for laboratory equipment to perform them. TETRALUTE obviates the need for centrifuging of specimens, evaporation to dryness plus incubation and subsequent cooling.

For T-3 testing

TRILUTE® requires fewer manipulations than most other T-3 methods. No timing or incubation is required, and a complete test takes only 20 to 25 minutes, compared to one to two hours with older methods.

Certain clinical conditions and treatment with certain drugs can affect the results of thyroid tests so that a euthyroid patient may appear to be hyper- or hypothyroid. When interfering factors are suspected, a "free thyroxine index" which is more representative of true thyroid status, should be calculated from T-3 and T-4 results.

One of the easiest-to-use counting instruments

For added convenience and reliability, both TETRALUTE and TRILUTE may be used advantageously with THYRIMETER®– a self-calculating gamma counting instrument, which displays percent retention automatically and presets all adjustments.

*Braverman, L. E.; Vagenakis, A. G.; Foster, A. E., and Ingbar, S. H.: Evaluation of a Simplified Technique for the Specific Measurement of Serum Thyroxine Concentration, J. Clin. Endocrinol., in press.

Tetralute®
^{125}I Column T-4 Test for Thyroid Function

Trilute®
^{125}I Column T-3 Test for Thyroid Function

Thyrimeter®
Direct Ratio Reading Gamma Counter

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Elkhart, Indiana 46514

140071

Only One Scintillation Camera Data System Does Everything You Require (It Even Communicates in English)

The ND Series 5000

Totally New! The dramatic result of ND's 3 years of growing clinical computer experience.

Designed exclusively for the Nuclear-Medicine diagnostician.

Comes "pre-programmed" to *record* dynamic and static studies, to *enhance* obscure boundaries and contours, to *produce dynamic function curves* for up to eight areas-of-interest (simultaneously!), to *produce profile histograms*, to *quantify* area-of-interest data . . . and to perform several additional tasks which elaborate basic camera images and provide improved documentation for referring physicians.

Interfaces with all gamma cameras.

Can be used "off-line" as an easily programmable (but very able) general purpose computer. With modest practice, the clinician can be developing his own programs to augment those supplied with the Series 5000 Data System.

Disc memory provides millisecond access to any given frame or frame sequence specified.

AVAILABLE FOR YOUR EVALUATION. VISIT US AT BOOTHS 25-28 DURING THE 1971 MEETING OF THE SOCIETY OF NUCLEAR MEDICINE.

To instruct the Series 5000 Data System, the clinician types two letter designators at the CRT control terminal shown. The full verbal equivalent of the two letter instruction appears automatically. If further data is required to complete the given command (for example: which frames specify the beginning and end of an area integration), then the verbal instruction appearing on the CRT terminal pauses to allow entry of required supplementary instructions at the appropriate points.

NUCLEAR DATA INC
POST OFFICE BOX 451, PALATINE, ILLINOIS 60067

Enhancement and Analysis of Diagnostic Scintillation Camera Images

Several new and valuable diagnostic routines are available to the Nuclear Medicine department which incorporates digital image analysis and processing into its gamma imaging system. To date, protocols have been developed which yield better visualization of both dynamic and static studies. Current technics are proving useful in obtaining improved renograms, pancreas images, lung ventilation/perfusion evaluations, residual urine volume determinations, and cerebral blood transit studies. Additional procedures permit improved visualization of organ contours, lesion boundaries, subphrenic abscesses and myocardial perfusion abnormalities. Additionally, with digital image enhancement and processing, clinicians have been provided with data not available at all from the "unassisted" scintillation camera display.

THE DIGITAL DATA SYSTEM: WHAT IT CONTRIBUTES

Among the image enhancement modes available with the digital data system are camera response uniformity correction, isocount contour display, data smoothing and volumetric display. By employing the system's ability to correct for inherent scintillation camera response non-uniformities, the diagnostician is assured that all displayed data is patient data devoid of instrumentation artifacts. Data smoothing allows one to correct for random data by automatically averaging the intensity of each data point with that of each of its neighbors according to a statistical weighting program.

Available data quantification routines permit specification of any part or all of an image for analysis routines such as fully computerized dynamic function curve plotting, addition or subtraction of data in sequential frames and digital presentation of the total counts in any defined area of interest. With the dynamic function curve plotting capability, time-activity histograms for specified areas-of-interest can be quickly produced from a recorded sequential frame study and automatically displayed on the data system oscilloscope. The ability of the data system to add or subtract data in adjacent frames allows a frame with insufficient data for clear visualization to have data from the next frame added to yield increased data with a resultant improvement in visualization. Conversely, an "overloaded" frame can have data subtracted to yield better visualization. Finally the area of interest data quantification capability allows the diagnostician to compare the total accumulated counts in one region of the study with those in another. Quantitative pre- and post-treatment radionuclide uptake or excretion comparisons may also be made.

CLINICAL APPLICATIONS

Renograms

Standard split-crystal ^{131}I hippuran renograms yield data not only on renal excretion, but also on any other activity within the field-of-view. Consequently, unilateral obstruction resulting in accumulated activity within a ureter could easily distort the renogram. Or, in pediatric renal studies, and in ectopically located renal transplants, accumulated data within the bladder can tend to distort the true renal excretion pattern.

With the Series 5000, separate areas-of-interest within the recorded renal excretion study may be specified by the clinician. These areas-of-interest may be established to correspond only to the right and left renal contours, or to regions within the kidneys. Then, after appropriate brief instructions (typed in at the video data terminal), complete right and left renograms appear on the Series 5000 oscilloscope. Since the renograms represent activity only within the defined areas-of-interest, distorting background data, activity within the ureters and accumulated bladder activity do not mask renal activity. Such accurate dynamic renal function curves can be generated from the recorded renal studies within seconds.

Cerebral Blood Transit

The ability of the Series 5000 to generate dynamic function curves for up to eight areas-of-interest means that right versus left cerebral blood transit comparisons can be made for four different regions simultaneously. Thus, dynamic activity curves comparing comparable regions within the cerebral hemispheres and right versus left carotid blood transit can be displayed in seconds.

Static Study Analysis

While film has been, traditionally, the solitary recording medium for scintillation camera "data", it has some significant shortcomings. For example, if poor exposures are obtained, the patient must be recalled for an additional study at corrected scintillation camera control settings. On the other hand, by acquiring the initial study and storing it within the disc or tape memory of the Series 5000, exposures can be made electronically. The need for a second study is eliminated because the clinician selects and displays the "ideal" amount of data to be photographed prior to making the actual exposure. Furthermore, the image enhancement capabilities of the Series 5000 Data System significantly extend the clinicians ability to visualize data which is obscured in conventional analog scintigraphs.

Techniques for elaborating basic static camera data with the Series 5000 Data System include image superimposition, normalization, field uniformity correction, data area-of-interest integration and contrast enhancement of displayed images.

And More!

New techniques for obtaining increased diagnostic clinical data through image enhancement and analysis are constantly being developed by ND Data System users. And, with their help, ND has found several new ways to make the communication between diagnostician and clinical computer a productive and rewarding interaction. We'd like you to find out just how useful (and helpful) scintillation camera data analysis can be in your facility. For demonstrations of the new Series 5000 Data System, visit us at booths 25-28 during the 1971 Meeting of The Society of Nuclear Medicine.

You will also want to evaluate the totally new Series 5000 Scintillation Camera and Tomographic Camera systems. Both cameras incorporate unique technological and performance innovations. And both cameras will be available for your inspection at "SNM '71".

We could have stopped here.

We could have stopped here.

...But we didn't!

System 75

We never stop exploring ways to make the operation of your hot lab safer and more convenient. Our latest endeavor is SYSTEM 75, a convenient and economical assembly of equipment and accessories:

The first item is our Technetium-99m Sterile Generator with its specially designed auxiliary shield which provides a total of 3 full inches of lead shielding. Then there's the Mediac® Dose Calibrator which enables you to conveniently assay the technetium and to check for molybdenum. A radium standard is included, too, to check instrument function and to calibrate the instrument. Also included is a Portable Area Monitor that continually monitors the radiation level in your hot lab. All this for a low weekly service charge—not much more than the cost of the Tc-99m Generator alone.

An extra bonus: after approximately 2 years, all the components become yours! Your only expense after that is for your weekly Technetium Generator.

To get the complete story on the unique new SYSTEM 75, call us collect at 312-593-6300.

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An Activity of G. D. Searle & Co. and the Radiochemical Centre

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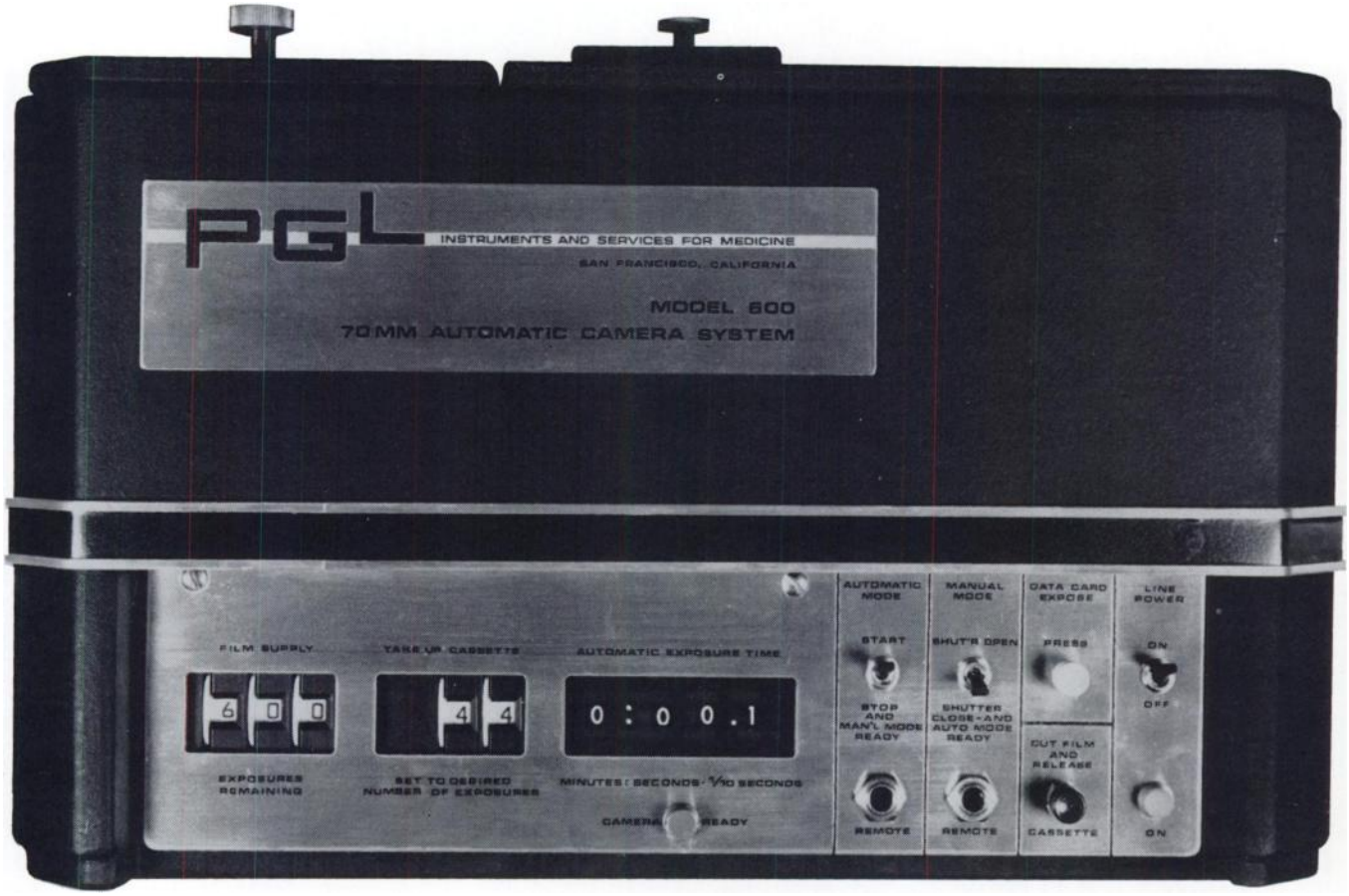
Arlington Heights, Illinois 60005
Telex. 28-2452

OUR SPECIFIC ACTIVITY IS SERVICE

PGL Model 600: A Modest Revolution

If we told you that the PGL Model 600 was specifically designed for Nuclear Medicine, each component from inception specifically designed to fulfill the exact requirements of clinical scintiphotography by combining camera, lens, timer, power supply and bezel mount in one integral unit, would you call this a modest revolution? How about daylight loading of 70 mm film, 150 feet of it, 720 exposures, automatic threading —advancing—cutting—releasing, up to 10 exposures per second, film advance and shutter time of 30 milliseconds, two exposure counters? Are we reaching you? How about direct viewing of 70 mm film without a projector, or the view port for direct viewing of CRT, or the data card for on-film recording of patient information? The high speed film transport is 10 times faster than the 35 mm Nikon, 25 times faster than the 70 mm Hasselblad. Modest revolution? If we're reaching you, reach us at PGL.



Write to PGL, 1280 Columbus, San Francisco, Ca 94133, Phone (415-474-6338)

Important notice to all Dynacamera™ 2 owners.

(And anyone else interested in a scintillation camera.)

Whether you now have a Dynacamera 2—or just contemplate the purchase of a scintillation camera—we have news for you. And an offer.

The Dynacamera 2 is now being widely used for an impressive variety of both static and dynamic studies. Picker is working with many of the institutions using Dynacamera 2 and is assembling a collection of "application data sheets" showing the versatility and usefulness of this instrument. These data sheets outline in detail the techniques currently being used for many important studies including: static views of brain, lung, liver, thyroid, and kidney; dynamic function studies of brain, heart, lung, kidneys.

We want all Dynacamera 2 users to see what others are doing, and we also want all prospective scintillation camera owners to be fully familiar with the capabilities of this impressive device. Accordingly, fill in the coupon below so that we can fill you in. Or, write Picker Corporation, 333 State Street, North Haven, Connecticut 06473. Thank you.

Picker Corporation, 333 State Street, North Haven, Connecticut 06473

Please send the Dynacamera 2 applications data sheets.

Name_____

Title_____

Department_____

Organization_____

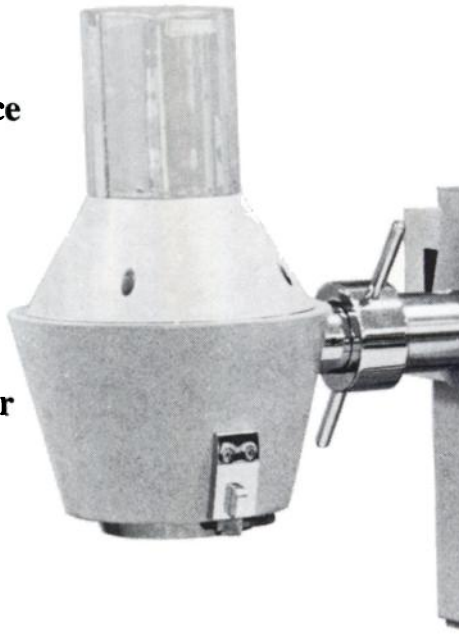
Address_____

_____ Zip_____

NM

PICKER

Here are the four questions before buying a rectilinear



1. **Does the control panel follow the set-up sequence in a logical left to right pattern?**
GRAPHIC™ does, and the detector head has a built-in rate meter to make positioning easier and more accurate. It's obviously designed with the user in mind.

2. **Does it offer a choice of digital mode scanning or selectable fixed levels of film density, contrast enhancement and background erase?**
GRAPHIC™ does, plus scan speeds of 10 to 750 cm/min. and a dual position 14″ x 17″ film cassette. This allows you to scan 17″ across the chest or lengthwise along the body. Graphic has a wide range of capabilities.

3. **Is there a collimator locking system to make changing or removing collimators easier and guard against dropping?**
GRAPHIC™ has one. It was designed with patient and operator safety in mind. A remote handset with a deadman switch positions the detector head while protecting against accidental movement.

4. **Is the manufacturer a full line supplier? *Abbott Laboratories* is the *first* and *only full-line supplier* of *nuclear instruments and radio-pharmaceuticals*. Our continuing interest in your business assures you of prompt, reliable servicing of all your needs.**

Before you buy a rectilinear scanner, ask your Abbott Radio-Pharmaceutical Representative about the GRAPHIC™.

GRAPHIC™

you should ask scanner:

ABBOTT LABORATORIES
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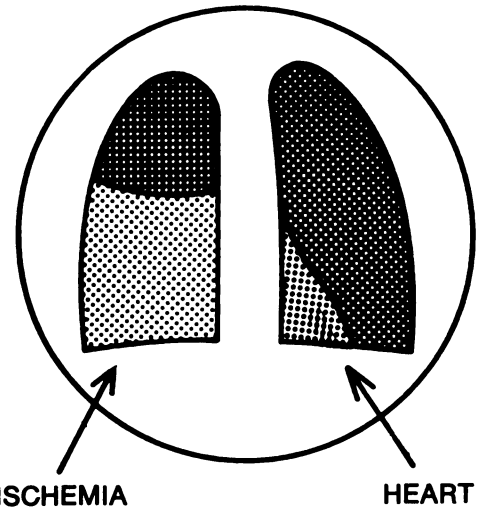
North Chicago, Illinois 60064
Health Care Worldwide
World's Leading Supplier
of Radio-Pharmaceuticals
Vertretung für Europa: LABOPHARMA Medizinische Produkte GmbH., Abt. Radiopharmazeutika, 6236 Eschborn, Ts, Germany, Postfach 1245

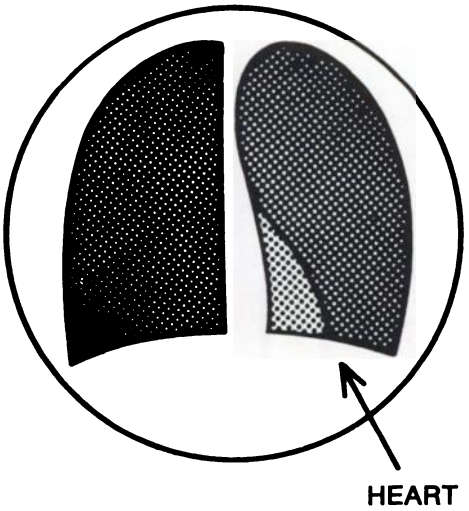
Pulmonary Embolism?




ANTERIOR PERFUSION

"Although perfusion lung scanning has proved clinically useful in the diagnosis of pulmonary embolism, many other disorders that affect ventilation can produce abnormalities of regional pulmonary blood flow. Therefore, some additional test is required for a specific diagnosis of pulmonary embolism." ①

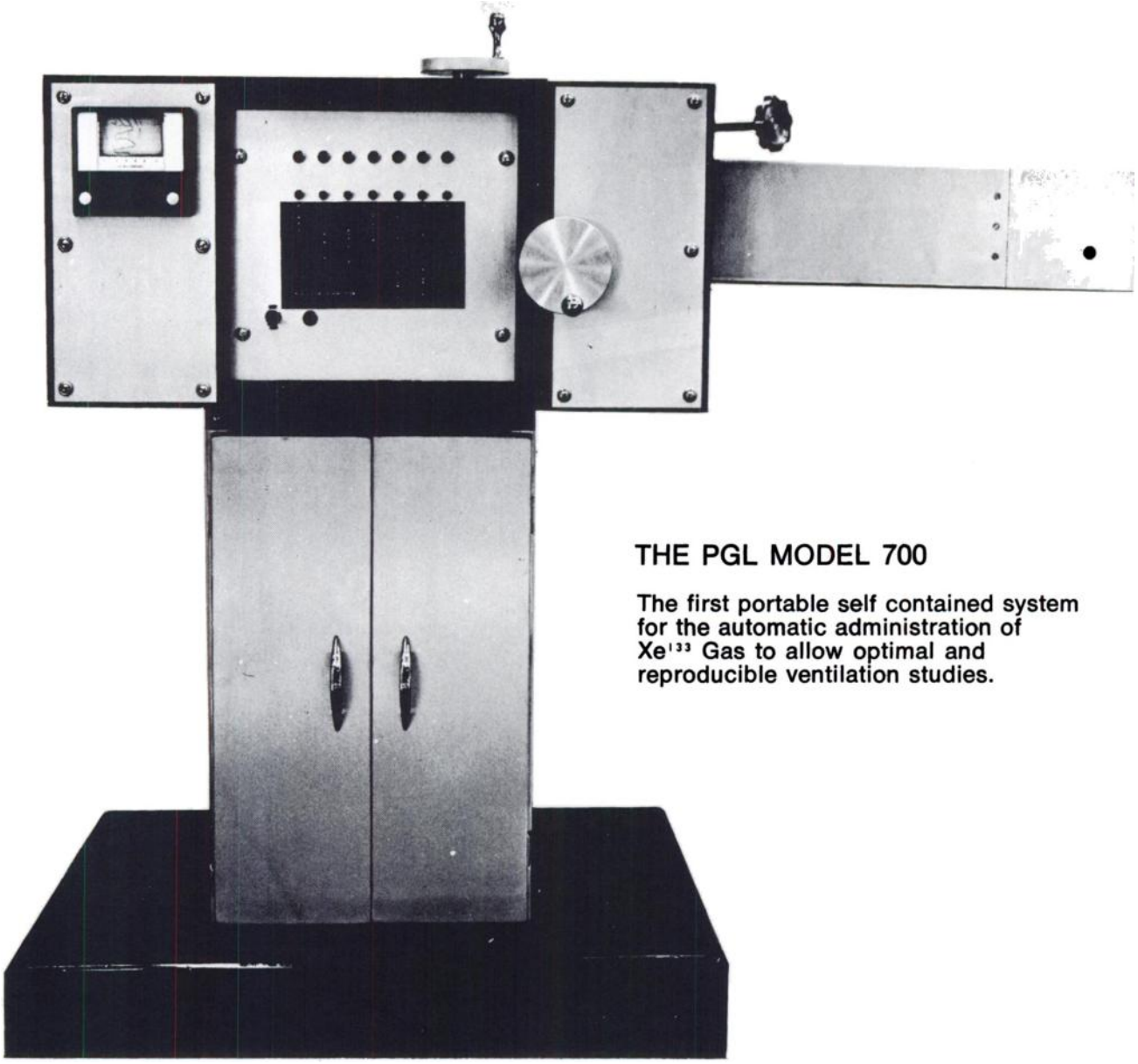
There's one way to be sure....




ANTERIOR VENTILATION

"The Xe^{133} ventilatory lung scan is a simple and sensitive method of distinguishing pulmonary embolism from other causes of perfusion abnormality. In embolism without infarction, the embolic area of the lung appears underperfused but well aerated. This is reflected on lung scans by relatively normal ventilation in association with appreciable perfusion abnormalities. In other pulmonary diseases, the ischemic regions are also poorly ventilated." ②

But how do you administer Xe^{133} Gas accurately, safely and conveniently?



THE PGL MODEL 700

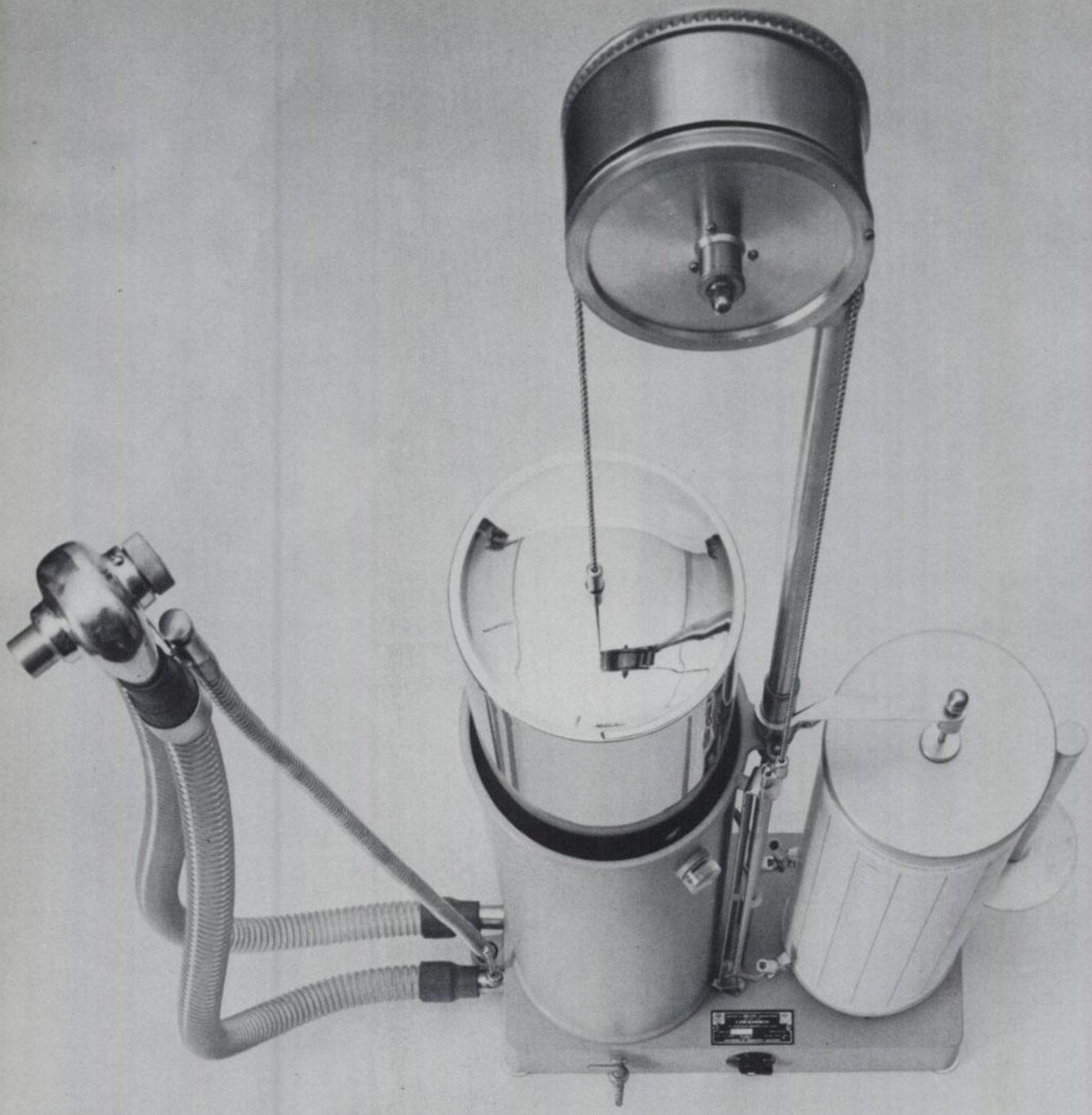
The first portable self contained system for the automatic administration of Xe^{133} Gas to allow optimal and reproducible ventilation studies.

Unique clinical features:

- Automated to assure the precise control of Xe^{133} Gas administered.
- Designed for single technician operation.
- Versatility in programming allows you to vary the clinical regimen (for example, tidal volume inspiration, maximum inspiration, rebreathing, etc.)
- Adaptable to any patient position (seated, supine etc.)

PGL

For complete specifications and ordering information contact:
PGL, 1280 Columbus Avenue, San Francisco, Ca. 94133 (415) 474-6338



Xenon Pulmonary Studies?

Plan now to expand your scintillation camera capabilities to pulmonary function studies. Include in those plans the 50 years of Collins' respiratory testing instrumentation experience. Keep your testing current with the latest technique in lung function studies. Both single breath and continuous breathing maneuvers are performed simply and accurately, using a safely shielded Collins Respirometer.

Write or call us collect (617 843-0610) to help you plan your Xenon pulmonary testing system.

Complete your program with these features:

- 9 or 13.5 Liter capacity Respirometer
- Internally occluded for minimum Xenon gas requirements
- Lead shielded for operator safety
- Petcock for admitting Xenon, or
- Ampule crushing device
- Motor Blower for complete mixing
- Valves for flushing patient and Spirometer into hood
- CO_2 Absorber

wec inc.

WARREN E. COLLINS, INC. / DEPT. F
220 WOOD ROAD / BRAINTREE, MASS. 02184

A small hospital just can't go into nuclear medicine.

(Pity that 700 of them didn't know that.)

Actually, 700 hospitals with fewer than 200 beds have already established Departments of Nuclear Medicine. And we have ample evidence—that we'll be pleased to share with you—that the gain justifies the effort.

What *do* you gain? How do small hospitals train their staffs for nuclear medicine? How do they go about getting AEC-licensed? Where in the world do they find space in their institutions for new equipment? How can they possibly afford it? Isn't it really a tremendous bother?

If you clip the coupon, we'll try to answer those questions. If the coupon is missing, just write to Picker Corporation, 333 State Street, North Haven, Connecticut 06473 and ask for information on starting a Department of Nuclear Medicine.

PICKER

Picker Corporation, 333 State Street, North Haven, Connecticut 06473

☐ Although I don't wish to commit this institution to anything at this time, I would like to know more about: the advantages of nuclear medicine, the problems of getting into it and solutions that others have devised, the economics, and so forth. Accordingly, please have your representative call me (or_____ (name & title)) for an appointment.

☐ Please send relevant small hospital case histories and other information on starting a Department of Nuclear Medicine.

Name _____

Title _____

Institution _____

Address _____

_____

Phone _____

NM

Feel free to answer the phone.

Your T3 tubes are incubating nicely. Only 30 seconds to go. Then... someone calls you to the telephone! It could be one of a hundred important sorts of message. And if the T3 test you are using is time and temperature dependent, you may have to spend valuable time in making mathematical calculations to allow for the interruption.

With Thyopac-3 you avoid that risk no time/temperature correction is needed. Yet there is no loss of accuracy and reliability.

Thyopac-3 makes savings in other ways too: only 0.1 ml of serum is required for each test; no filtration or washing is required; all the materials needed for the test–12 vials of adsorbent granules in T3-I 125 buffer and 1 bottle of desiccated standard serum are presented in a kit designed to act as a test tube stand. So the whole kit is very simple and easy to use. With just a little practice you could do ten tests in 45 minutes!

If you think this all sounds too good to be true–just ask some of your colleagues who use Thyopac-3. Or write to the Radiochemical Centre for full information. In the meantime we promise not to telephone you.

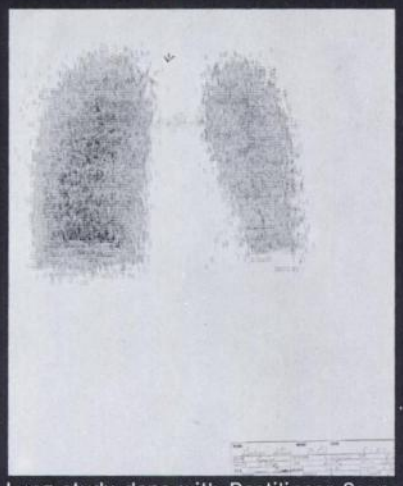
Use Thyopac*-3 for T3 testing.

*Trademark

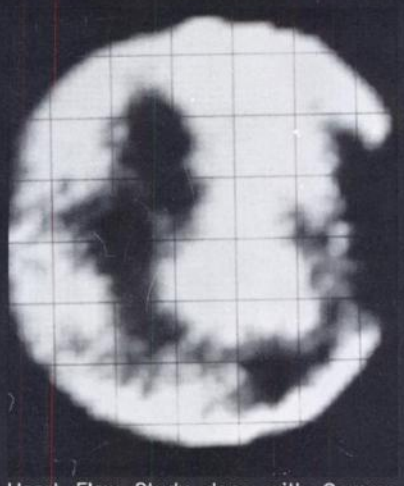
The Radiochemical Centre, Amersham, Bucks
Available in USA, Canada and S. America from Amersham/Searle
2636 S. Clearbrook Drive, Arlington Heights, Illinois 6005, USA

1967 1970

Lung and Liver study done with Rectilinear Scanner, TcSc injection and TFS*.



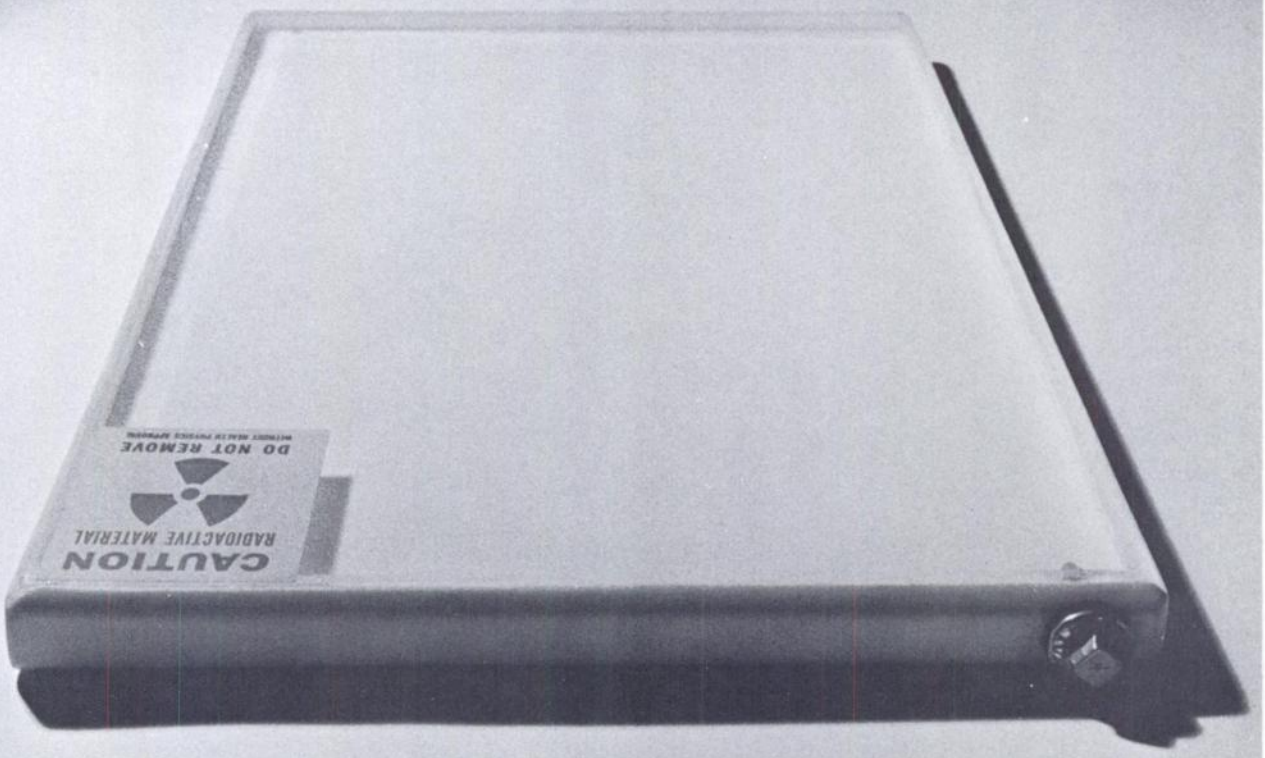
Lung study done with Rectilinear Scanner, Tc99m in TFS.



Heart Flow Study done with Gamma Camera, Tc99m injection and TFS.

THESE STUDIES WERE DONE WITH THE AID OF AN $85 TFS.™

HONEST.



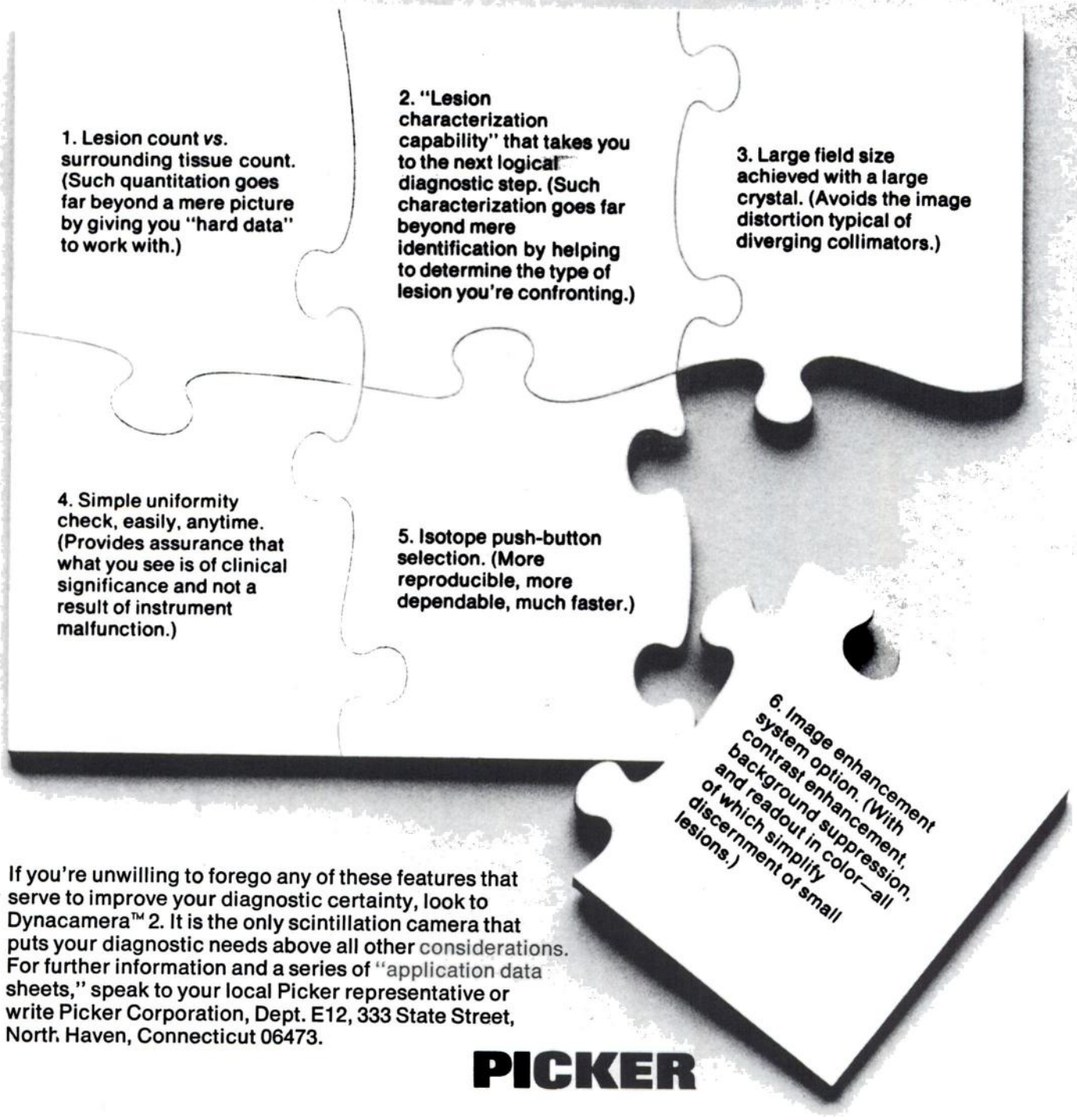
CDS

CDS PRODUCTS, P.O. BOX 198, CENTEREACH, NEW YORK OR CALL (212) 372-2689

*TFS, Transmission Flood Source. © 1971 CDS Products. Scans contributed by Nathan A. Solomon, PhD, MD, Downstate Medical Center, Dept of Nuclear Medicine.

Which of these scintillation camera features are you willing to do without?

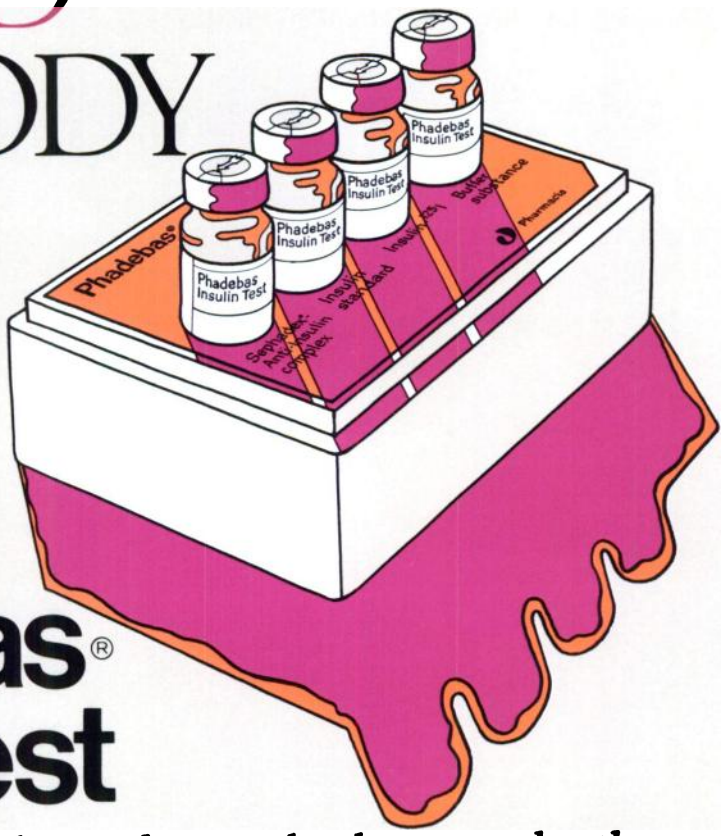
They all do one thing: increase your diagnostic certainty.



If you're unwilling to forego any of these features that serve to improve your diagnostic certainty, look to Dynacamera™ 2. It is the only scintillation camera that puts your diagnostic needs above all other considerations. For further information and a series of "application data sheets," speak to your local Picker representative or write Picker Corporation, Dept. E12, 333 State Street, North Haven, Connecticut 06473.

PICKER

INTRODUCING THE FIRST INSULIN TEST WITH A BUILT-IN SECOND ANTIBODY

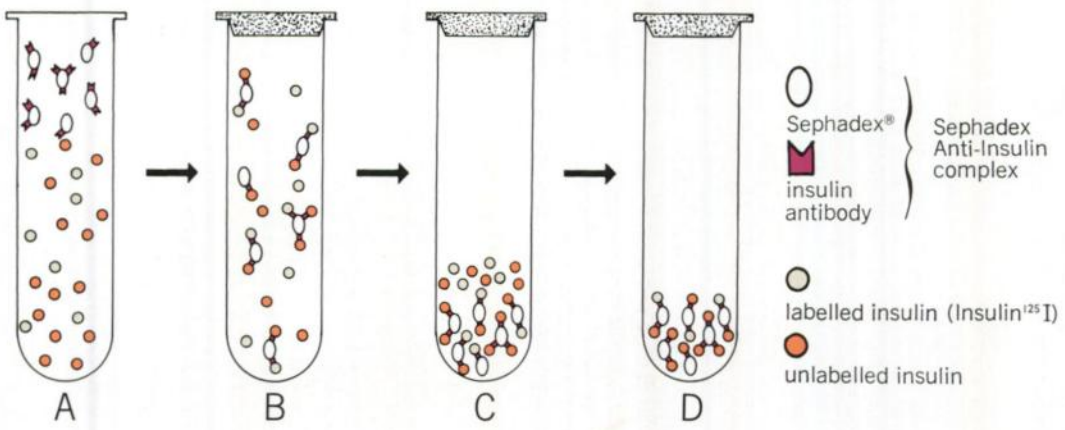


Phadebas® Insulin Test

Radioimmunoassay with insulin antibodies covalently coupled to Sephadex® as the solid phase support.

Makes small- and large-scale insulin testing of serum and other body fluids simpler, faster and more convenient than ever before possible.

The solid phase principle at work in insulin testing



A. Sephadex Anti-Insulin complex and labelled insulin are mixed with insulin standard or unknown sample.

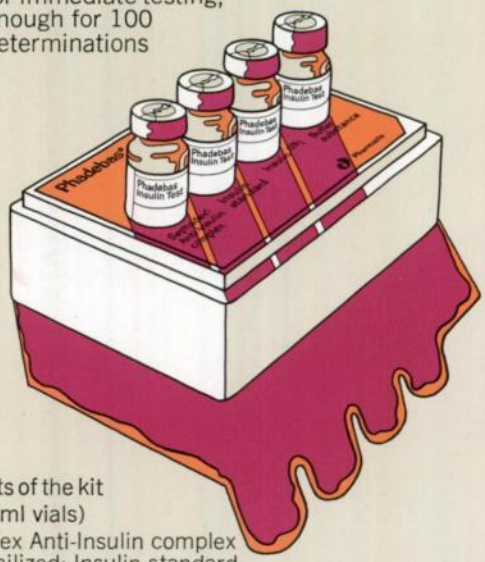
B. Mixture is incubated for a minimum of three hours or overnight. Insulin in the serum competes with the added radioactive insulin for a place on the Sephadex Anti-Insulin complex.

C. Solid particles are centrifuged and washed.

D. Radioactivity measured. Standard curve is prepared and insulin levels "read".

New Phadebas® Insulin Test for faster, more accurate results

- eliminates time-consuming procedures of conventional double-antibody methods—no refrigeration, microfiltration, buffer preparations
- room temperature testing and incubation—with shorter incubation time—three hours or overnight
- meets rigid clinical standards—specific, sensitive and reproducible. Covers wide range of serum levels from 3 μU/ml to 320 μU/ml
- self-contained kit—stable for 4 months, ready for immediate testing, enough for 100 determinations



Contents of the kit
(4 x 10 ml vials)
Sephadex Anti-Insulin complex —lyophilized; Insulin standard (320 μU/ml after reconstitution)—lyophilized; Insulin ^{125}I (8ng∿3 μCi at date of manufacture)—lyophilized; Buffer substance

If you would like to see the Pharmacia Representative for more complete details, simply mail in the coupon below to:

Phadebas® Insulin Test
Pharmacia Laboratories Inc.
800 Centennial Avenue
Piscataway, New Jersey 08854

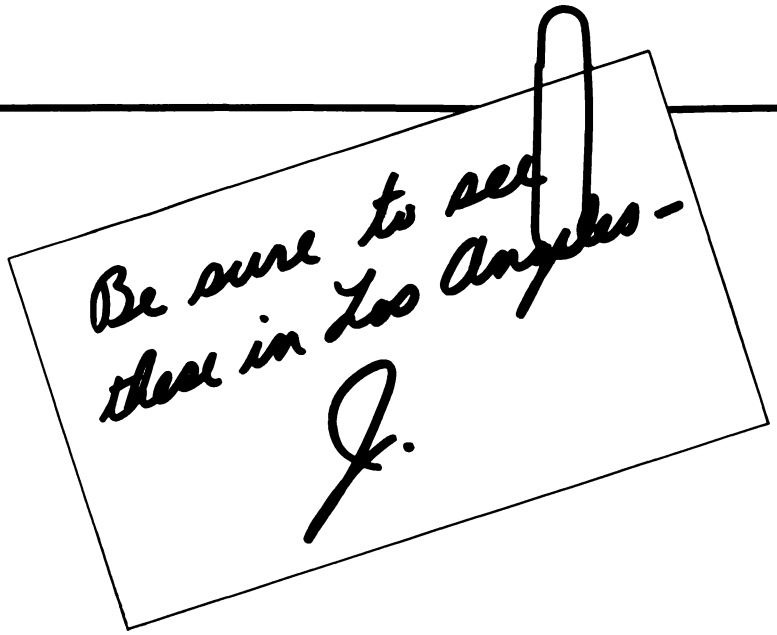
NAME & TITLE

HOSPITAL OR LABORATORY

STREET

CITY STATE ZIP

Pharmacia



RBE

When you want more data from your scintillation camera studies . . .

RBE offers four effective, reliable instruments combining scientific accuracy and clinical ease of operation:

1 **Image Recorder** – Records camera signals at 3 speeds on ¼" tape – less than 1% data losses at 400K CPM - - model 600M

2 **Dual Area Generator** — Quantify two independent areas of interest from tape or directly from the camera - model 500M

3 **Variable Persistence Monitor** — Forms a dynamic and coherent image for visual reference during study - model 553

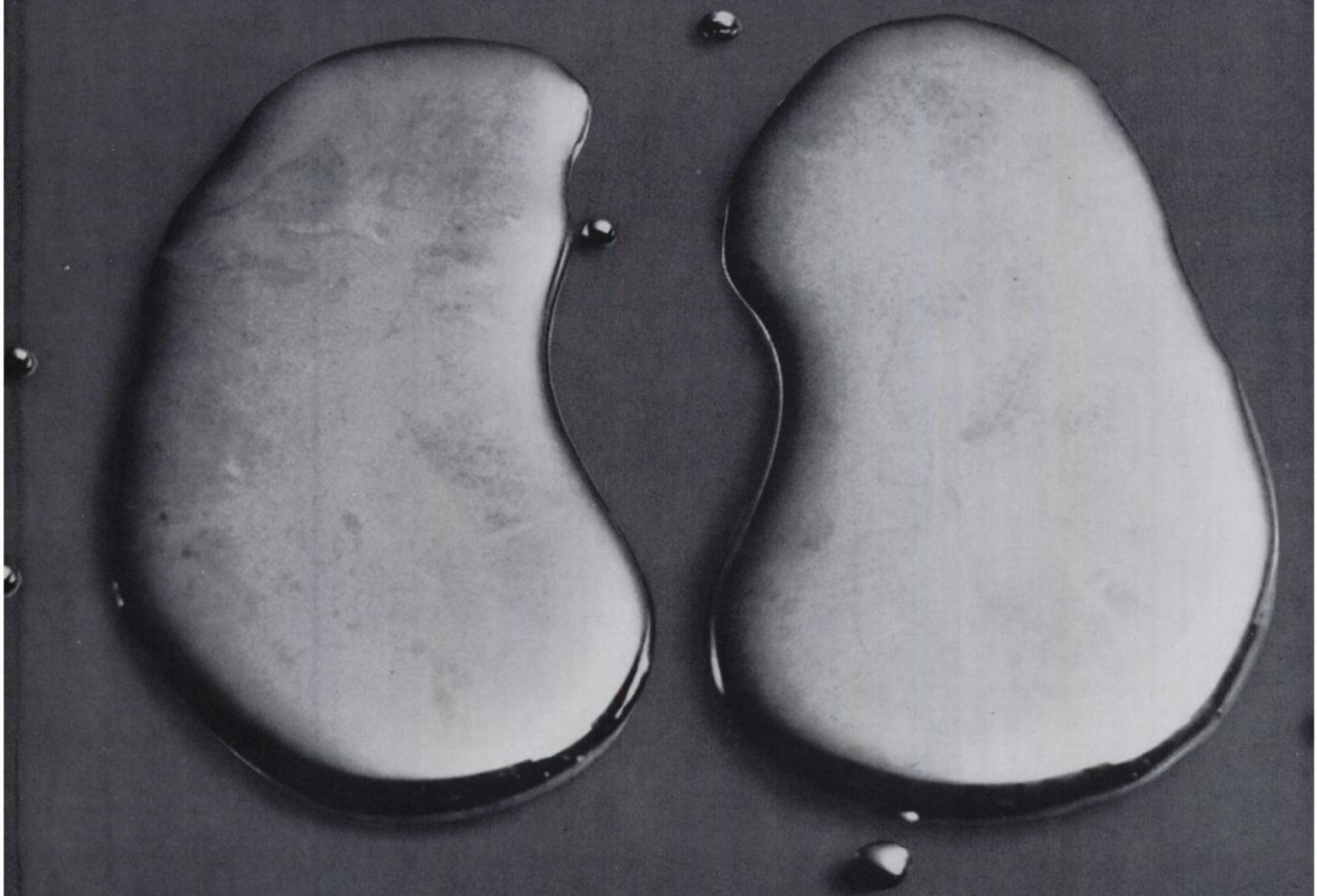
4 **Dual Channel Recording Ratemeter** – designed to provide a permanent record of dynamic events - - - - - model 200MR

Write or call collect:

RIVERSIDE BIO-ENGINEERING, INC.

Phone (714) 682-5025 • 4217 Luther Street • Riverside, California 92506

Squibb takes the mercury out of kidney scanning.



The new Renotec™ Kit.

(Technetium 99m-Diethylenetriamine Pentaacetic Acid [DTPA])

The Non-Mercurial Renal Scan

A convenient, easy-to-use kit for preparing technetium 99m-DTPA—a renal scanning compound that gives you *all* these advantages:

- low radiation exposure to the kidney
- sustained activity in the kidney for conventional rectilinear scans
- doses prepared in minutes, utilizing ^{99m}Tc eluate from your Squibb generator.

After intravenous injection, ^{99m}Tc-DTPA is rapidly cleared by the normal kidney. Sufficient activity remains in the kidney, however, to permit conventional scans at two hours after injection.

Unlike radiomercurial compounds for renal scanning, the much shorter physical half-life of technetium 99m (only six hours) greatly reduces the radiation exposure to the kidney. Toxicity due to DTPA is not a major problem with the dose of chelate administered in subjects with either normal or depressed renal function.

With Renotec, doses can be prepared in minutes, as you need them, utilizing the ^{99m}Tc eluate from your Technetope® II (Technetium 99m) Sterile Generator.

New Versatility For Your Squibb Generator

The Technetope II (Technetium 99m) Sterile Generator provides a means of obtaining a sterile, non-pyrogenic supply of technetium 99m for use with *two different Squibb diagnostic kits:* the new Renotec (Technetium 99m-DTPA) Kit *and* the Tesuloid® (Technetium 99m-Sulfur Colloid) Kit (an easy-to-use kit for preparing technetium 99m-sulfur colloid solution for liver and spleen scanning).

See next page for brief summary.

New Renotec™ Kit
(Technetium 99m-Diethylenetriamine Pentaacetic Acid [DTPA])
The non-mercurial renal scan.

The RENOTEC (Technetium 99m-Diethylenetriamine Pentaacetic Acid [DTPA]) Kit includes: 1) 5 vials (2 cc. each) of Sterile Reaction Solution providing 5 mg. ferric chloride per cc. and 2.5 to 5 mg. ascorbic acid per cc.; 2) 5 Unimatic® Disposable Syringes (2 cc. each) containing Sterile 0.07N Sodium Hydroxide Solution providing 2.8 mg. sodium hydroxide per cc.; and 3) 5 Unimatic Disposable Syringes (2 cc. each) containing Sterile DTPA Solution providing 2.5 mg. diethylenetriamine pentaacetic acid per cc.

The TESULOID (Technetium 99m-Sulfur Colloid) Kit includes: 1) 5 vials (3 cc. each) of Sterile Sulfur Colloid Reaction Mixture providing 4 mg. sodium thiosulfate, 3 mg. gelatin, 8.5 mg. potassium phosphate, and 0.93 mg. disodium edetate per cc.; 2) 5 Unimatic Disposable Syringes (2 cc. each) containing Sterile 0.25N Hydrochloric Acid Solution providing 9 mg. hydrochloric acid per cc.; and 3) 5 Unimatic Disposable Syringes (2 cc. each) containing Sterile Buffer Solution providing 35 mg. sodium biphosphate and 10 mg. sodium hydroxide per cc.

TECHNETOPE II (Technetium 99m) Sterile Generator provides a means of obtaining a sterile, non-pyrogenic supply of technetium 99m as sodium pertechnetate.

Warnings: The contents of the syringes in the Renotec Kit and the Tesuloid Kit should **not** be injected directly into a patient.

Usage in pregnancy—These agents should not be administered to women who are pregnant or who may become pregnant and during lactation unless the indications are exceptional and the need for the agent outweighs the possible potential risk from the radiation exposure involved.

Since sodium pertechnetate ^{99m}Tc may be taken up by the fetus and excreted in human milk, administration of the preparation during pregnancy and lactation is not recommended.

Formula feedings should be substituted for breast feedings if these agents must be administered to the mother during lactation.

^{99m}Tc-DTPA, ^{99m}Tc-S colloid, and sodium pertechnetate ^{99m}Tc should not be administered to persons less than 18 years of age unless the expected benefit outweighs the hazards. It should be noted that although radiopharmaceuticals are not generally used in individuals under 18, procedures using ^{99m}Tc-DTPA or ^{99m}Tc-S colloid are occasionally necessary in such patients. The low internal radiation dosage of ^{99m}Tc-DTPA makes it a very satisfactory agent when scans of the kidney, brain, or blood vessels are necessary in young patients. The low internal radiation dosage of ^{99m}Tc-S colloid makes it a very satisfactory agent when liver or spleen scans are necessary in young patients.

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

When obtaining elutions from Technetope II (Technetium 99m) Sterile Generator, proper radiation safety precautions should be maintained at all times. The column containing ^{99}Mo need not be removed from the lead shield at any time. There is a high radiation field surrounding an unshielded column. Solutions of sodium pertechnetate ^{99m}Tc withdrawn from the generator should always be adequately shielded. The early elutions from the generator are highly radioactive. **Important:** Since material obtained from the generator may be intended for intravenous administration, aseptic technique must be strictly observed in all handling. The stoppers of the eluent bottle, of the elution tube, and of the collecting vial, as well as both rubber closures in the generator column, should be swabbed with a suitable germicide before each entry. All entries into the generator column must be made aseptically with sterile needles. Only the eluent provided should be used to elute the generator. Use a fresh milking tube and collecting vial for each elution; sufficient equipment is provided for this purpose. All equipment used to collect or administer sodium pertechnetate ^{99m}Tc must be sterile. Do not administer material eluted from the generator if there is any evidence of foreign matter.

NOTE: The Renotec Kit and the Tesuloid Kit are not radioactive. However, after the eluted ^{99m}Tc is added, adequate shielding of the resulting preparation should be maintained.

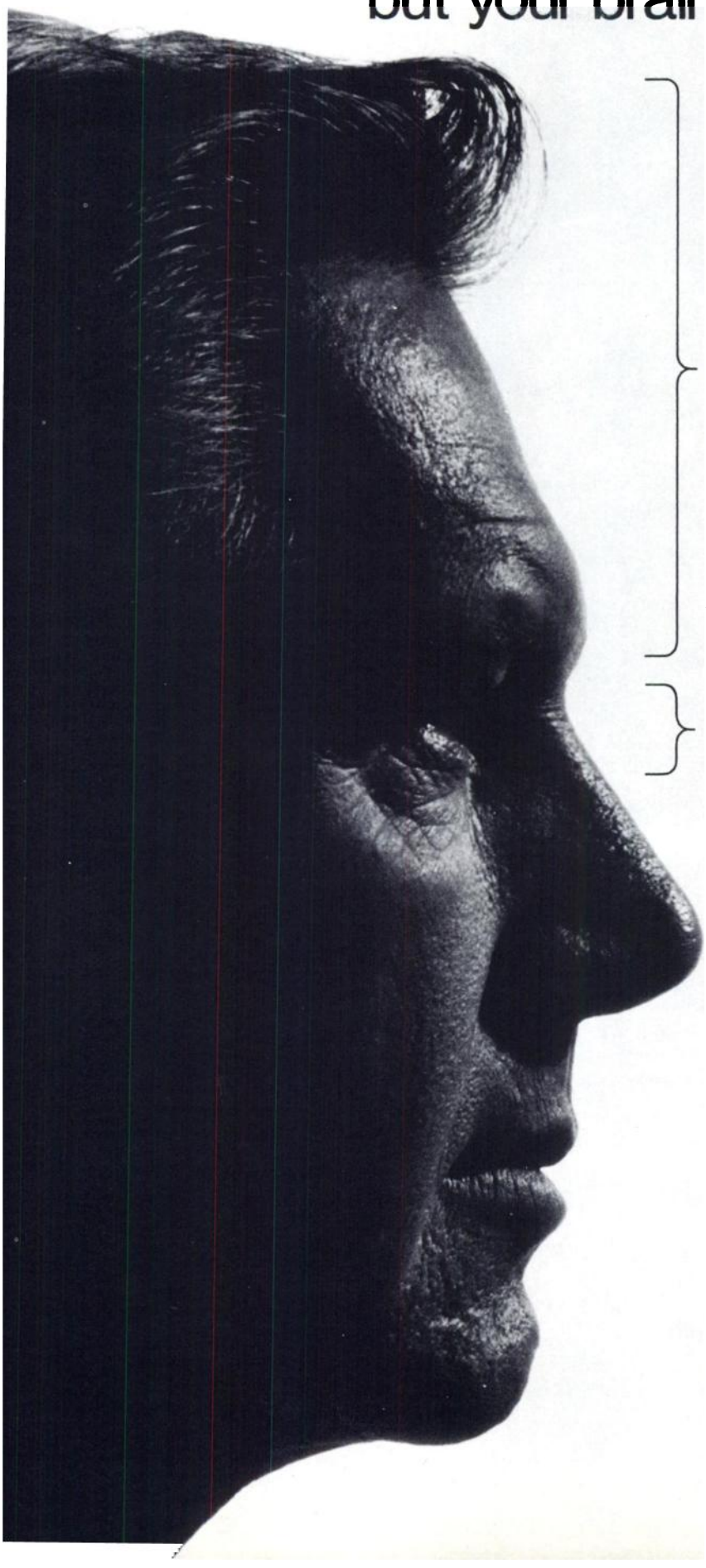
Precautions: When using radioactive material, care should be taken to insure minimum radiation exposure to the patient (*i.e.*, by using the smallest dose of radioactivity consistent with safety and validity of data) as well as to all personnel directly or indirectly involved with the patient. Before a test is repeated in the same patient, the need should be carefully evaluated; this is especially true in younger patients.

Each elution from Technetope II (Technetium 99m) Sterile Generator should be assayed before use for ^{99m}Tc activity and for the possible presence of ^{99}Mo. Material containing more than 5 microcuries of ^{99}Mo per dose of ^{99m}Tc pertechnetate exceeds Atomic Energy Commission limits and should not be administered. Poor gastrointestinal absorption of an oral dose of pertechnetate and resultant low blood radioactivity levels have been observed in the postprandial state, in seriously ill patients, and in a small number of normal, fasting individuals. Since pertechnetate is concentrated by the gastric mucosa and the salivary glands, secretions of the digestive tract are radioactive and may cause artifacts on the cranial scan. Therefore, all possible care should be taken to avoid extracranial contamination, not only for the protection of patients and of hospital personnel but also to avoid obtaining a falsely positive scan due to extracranial radiation. Any condition which alters the blood-brain barrier or the normal cranial vasculature may cause abnormal areas of increased radioactivity. The brain scan with sodium pertechnetate ^{99m}Tc is therefore likely to be abnormal in patients with scalp contusions or acute head injuries. Following a craniotomy, uptake of radioactivity is increased throughout the operative field, usually for only a few weeks but in some instances for prolonged periods. Since cerebral radiographic techniques temporarily affect the blood-brain barrier, brain scanning with sodium pertechnetate ^{99m}Tc should precede cerebral angiography when possible, or should be postponed for several days thereafter. A negative brain scan does not rule out the possibility of a lesion and should therefore never be considered diagnostically conclusive. Because the normal vascular structures are more apparent on a ^{99m}Tc pertechnetate scan than on a radiochlormerodrin scan, and because the choroid plexus may be visible, it is particularly important to recognize the appearance of a normal brain scan when ^{99m}Tc pertechnetate is used, in order to avoid incorrect interpretation.

NOTE: The Renotec Kit and the Tesuloid Kit were designed for use with the sodium pertechnetate eluate obtained from a Technetope II Sterile Generator. It is recommended that only Technetope II be used as the source of sodium pertechnetate with the Renotec Kit and the Tesuloid Kit unless the user has demonstrated that other sources of ^{99m}Tc are consistently compatible and meet the standards of Technetope II.

SQUIBB
Division of Nuclear Medicine
New Brunswick, New Jersey 08903

Your eyes are great but your brain is better.



Staring at a supposed lesion on a scintigram is one thing; knowing its count rate is quite another.

Some scintillation cameras ask you to base your diagnosis exclusively on a picture. Dynacamera™ 2 goes far beyond this and gives you the numbers.

You can precisely determine lesion count *vs.* normal surrounding tissue count. Or count one region *vs.* another. With Dynacamera 2.

You can provide a referring physician with comparative quantitative data. (Ideal for eyes not as expert as yours in judging scintigrams.)

Such quantitation is the inevitable next advance in confident diagnosis with a scintillation camera. And it's available now with the Dynacamera 2. No one else offers it.

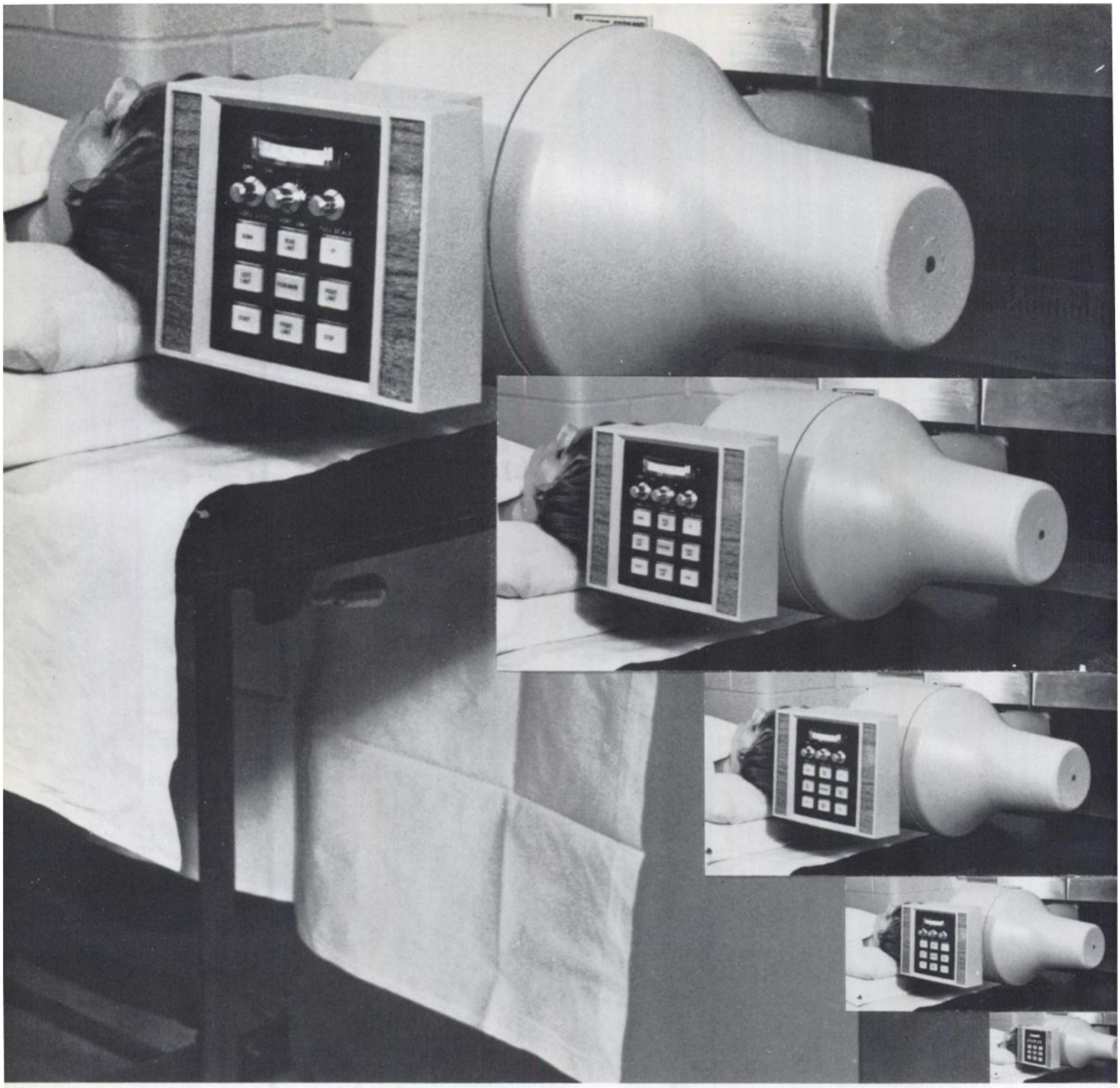
Obviously we quarrel not with Dr. Sam Johnson who said: "...to count is a modern practice, the ancient method was to guess."

Finally, this is just one of many ways in which the Dynacamera 2 provides you with what you want most: *maximum diagnostic certainty*. What else, after all, is there?

Very valuable for looking at scintigrams. Except for the situations when one's eyes may be deceived.

Speak to your local Picker man or drop us a line. We'll forward detailed information on the Dynacamera 2 and a series of Dynacamera 2 "application data sheets." Picker Corporation, Dept. A12, 333 State Street, North Haven, Connecticut 06473.

PICKER



The Baird-Atomic Scanner sees more patients. It's that simple.

Set-up is simple, for one thing. And so is operation, for another. The technician stays right there at the Scanner head. The B/A Scanner performs all views without repositioning the patient. It has the highest possible scan speed. A new concept in collimation and minification means portal to portal time (including 5 scans) is reduced to that of a dual detector . . . with no misleading artifacts.

And optional vertical scanning further compounds the value.

Performance? Ask the dozens of people who have them.

The B/A Scanner gives you greater patient comfort and greater patient through-put.

You'll want to know more, of course.

Just write or call. It's that simple.

Baird-Atomic, 125 Middlesex Turnpike, Bedford, MA 01730. (617) 276-6208

Baird-Atomic Limited, Braintree, Essex, England. Baird-Atomic (Europe) N.V., The Hague, The Netherlands.

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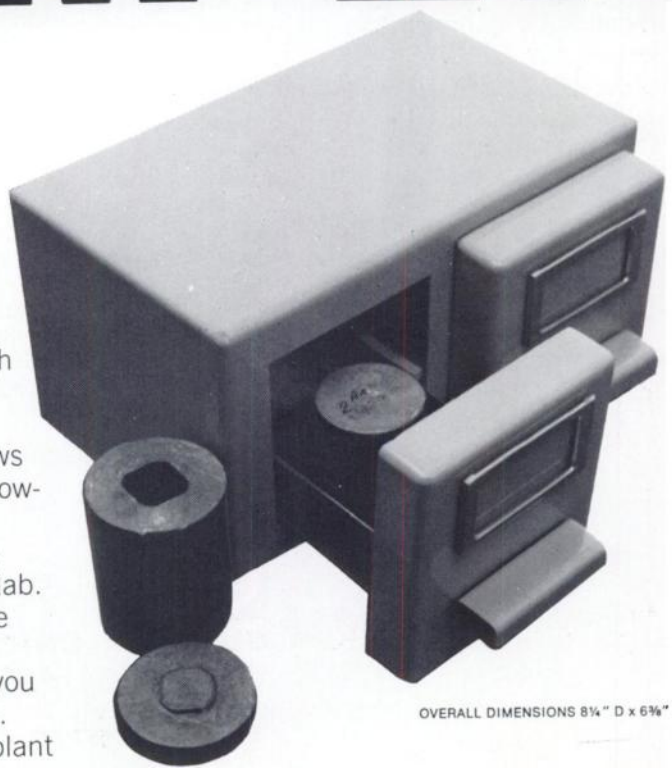

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The Pediatric Renal Study

Simplifying Difficult Renogram-Renal Scintiphoto Studies with the Nuclear-Chicago Pho/Gamma® Scintillation Camera Data-Store/Playback System

The methodology for simultaneously producing renograms and renal scintiphotos with ^{131}I hippuran has been well described. Occasionally the upper urinary tracts may be in proximity to the bladder or an ilial conduit. Positioning with the split-crystal technique then becomes difficult. This is particularly so in infants, or in patients with ilial conduits, cutaneous ureterostomies, or transplanted kidneys. An answer to these problems, however, exists in the area-of-interest specification capabilities of the Nuclear-Chicago Pho/Gamma Data-Store/Playback System. Data may be collected and stored on magnetic tape and then graphically recorded from selected regions of interest to exclude activity from unwanted regions in the resultant renograms.

SETTING UP. The camera is positioned so that the organ of interest is closest to the collimator face. Thus, in renal studies, the detector head would normally be located posteriorly. In renal transplants, however, the detector head may be placed anteriorly. The field of view when using the Data-Store/Playback System may include not only the upper urinary tracts but also the bladder or ilial conduit.

ISOTOPE AND DOSE. For renal transplant evaluation, the vascular phase is recorded with ^{99m}Tc pertechnetate administered in a bolus of 125 μCi/lb.

For the renogram-renal scintiphoto study, ^{131}I hippuran (50-100 μCi for children and 100-250 μCi for adults) is given intravenously after blocking the thyroid with a single dose of Lugol's solution.

DATA ACCUMULATION. In the renal transplant evaluation, pertechnetate transit through the transplant is recorded within the first two minutes following injection. After this time, background activity may prohibit adequate delineation of the kidney. This phase of the examination is recorded on magnetic tape which is subsequently played back to make Polaroid scintiphotos.

In the renogram-renal scintiphoto study, data is also recorded on the Data-Store/Playback System. While recording patient data, activity within the kidney can be simultaneously monitored on the system's Persistence Scope and recorded on Polaroid film from the "A"-scope of the Pho/Gamma. The recording is terminated when the majority of the radionuclide has been excreted or there is obvious retention of the radionuclide within the renal collecting system.

Areas of interest are chosen to encompass the kidney or kidneys and to exclude the ureters or urinary bladder. The relative count rates within these defined areas of interest can then be graphically displayed by using the Dual-Pen/Chart Recording System.

CASE HISTORIES. Case Study No. 1: A four-month-old male infant was admitted with a severe electrolyte imbalance following prolonged diarrhea. A cardiac arrest occurred and, subsequently, diminished renal function and a urinary tract infection were documented. While renal function was gradually returning to normal, an intravenous urogram was unsuccessful due to the collecting system being obscured by overlying gastrointestinal debris and gas. A radionuclide renogram was therefore requested.

The proximity of activity within the upper urinary tracts to that within the bladder is illustrated in Figure 1. Split-crystal technique yielded the renogram shown in Figure 2. The irregularity of the tracing is due in part to patient motion. The flatness of the excretion curve results from activity within the bladder. The study was simultaneously recorded on the Nuclear-Chicago Data-Store/Playback System for later evaluation. Electronically selected areas of interest were then positioned over the image of the upper urinary tracts in order to exclude the bladder area (Figure 3). The renogram was then recorded (Figure 4) and a definite excretion pattern is recognized.

Case Study No. 2: This 12-year-old female with chronic pyelonephritis experienced renal failure necessitating hemodialysis. Renal transplant was subsequently performed. During the initial post-operative evaluation of the transplant, the integrity of the vascular anastomosis is demonstrated with a ^{99m}Tc pertechnetate transit study. The kidney is well outlined during the vascular phase (Figure 5).

The ^{131}I hippuran study of the transplant was recorded with the Data-Store/Playback System and

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then reproduced through a chart recorder. The defined area of interest (Figure 6) resulted in a satisfactory post-transplant renal-function renogram (Figure 7). There is some retention, however, within the slightly dilated ureter. Routine positioning with the split-crystal technique would have led to recording of activity not only from within the kidney, but also from a portion of the dilated ureter (in spite of exclusion of the bladder by oblique positioning of the patient) and an unnecessary artifact would have thus been introduced into the renogram.

DISCUSSION. The technique of simultaneous recording of renograms and renal scintiphotos with the Pho/Gamma has proven to be a versatile method for examining the kidneys. With conventional split-crystal techniques, the existence of data from the bladder presents difficult positioning problems when making renograms. This is also the case with infants within whom the upper urinary tracts are relatively close to the bladder; in ectopically located kidneys, whether congenital or iatrogenic; or when collecting devices such as cutaneous ureterostomies or ilial conduits make routine positioning impossible. However, the Data-Store/Playback System, with its area-of-interest analysis capabilities, provides a means of obviating such positioning difficulties. Only data from pertinent, selected areas are displayed in the renograms.

The transit study through a transplanted kidney has proven of use in the immediate post-operative period. It permits evaluation of the vascular integrity of the renal transplant. In instances where a normal renal outline is not visualized, contrast arteriography should be performed for further evaluation. In addition to vascular obstructions, acute rejection phenomena may slow circulation within the kidney sufficiently to prevent a normal vascular appearance with the radionuclide transit study, regardless of intact vascularity.

CONCLUSIONS. The Data-Store/Playback System minimizes positioning considerations when recording renograms and renal scintiphotos. Areas of interest can be selected to exclude unnecessary and distorting data, thus providing a more significant study for interpretation.

CASE STUDY NO. 1. SIMULTANEOUS RENOGRAM-RENAL SCINTIPHOTO STUDY.

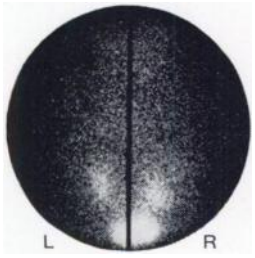


FIGURE 1.
^{131}I SCINTIPHOTO.
POSTERIOR VIEW.

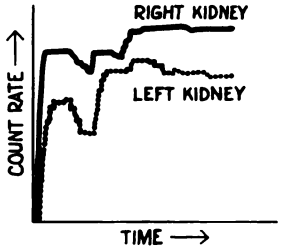


FIGURE 2.
SPLIT-CRYSTAL
RENOGRAM.

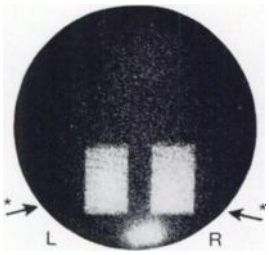


FIGURE 3.
AREA-OF-INTEREST
SCINTIPHOTO.
POSTERIOR VIEW.

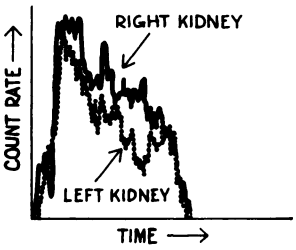


FIGURE 4.
AREA-OF-INTEREST
PLAYBACK
RENOGRAM.

CASE STUDY NO. 2. RENAL TRANSPLANT EVALUATION.

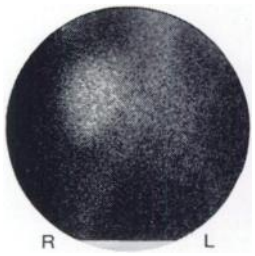


FIGURE 5.
^{99m}Tc SCINTIPHOTO.
ANTERIOR VIEW.

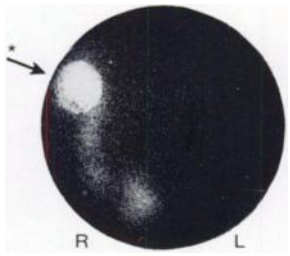


FIGURE 6.
AREA-OF-INTEREST
^{131}I SCINTIPHOTO.
ANTERIOR VIEW.

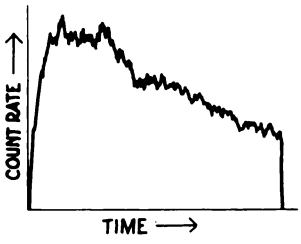
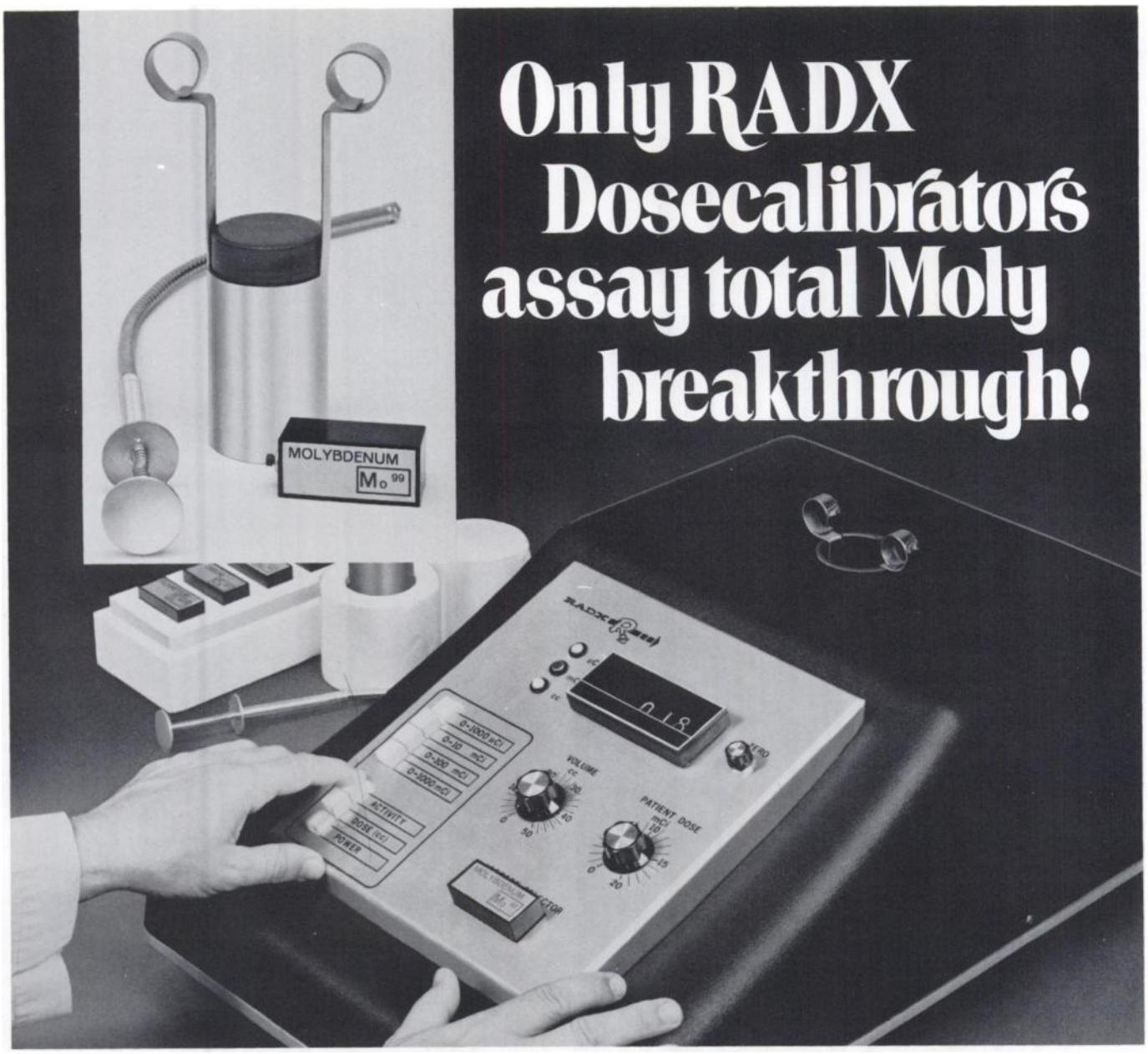


FIGURE 7.
AREA-OF-INTEREST RENOGRAM.
FULL-CRYSTAL PLAYBACK.

*Arrows indicate the electronically generated areas of interest. Note varied sizes and shapes.



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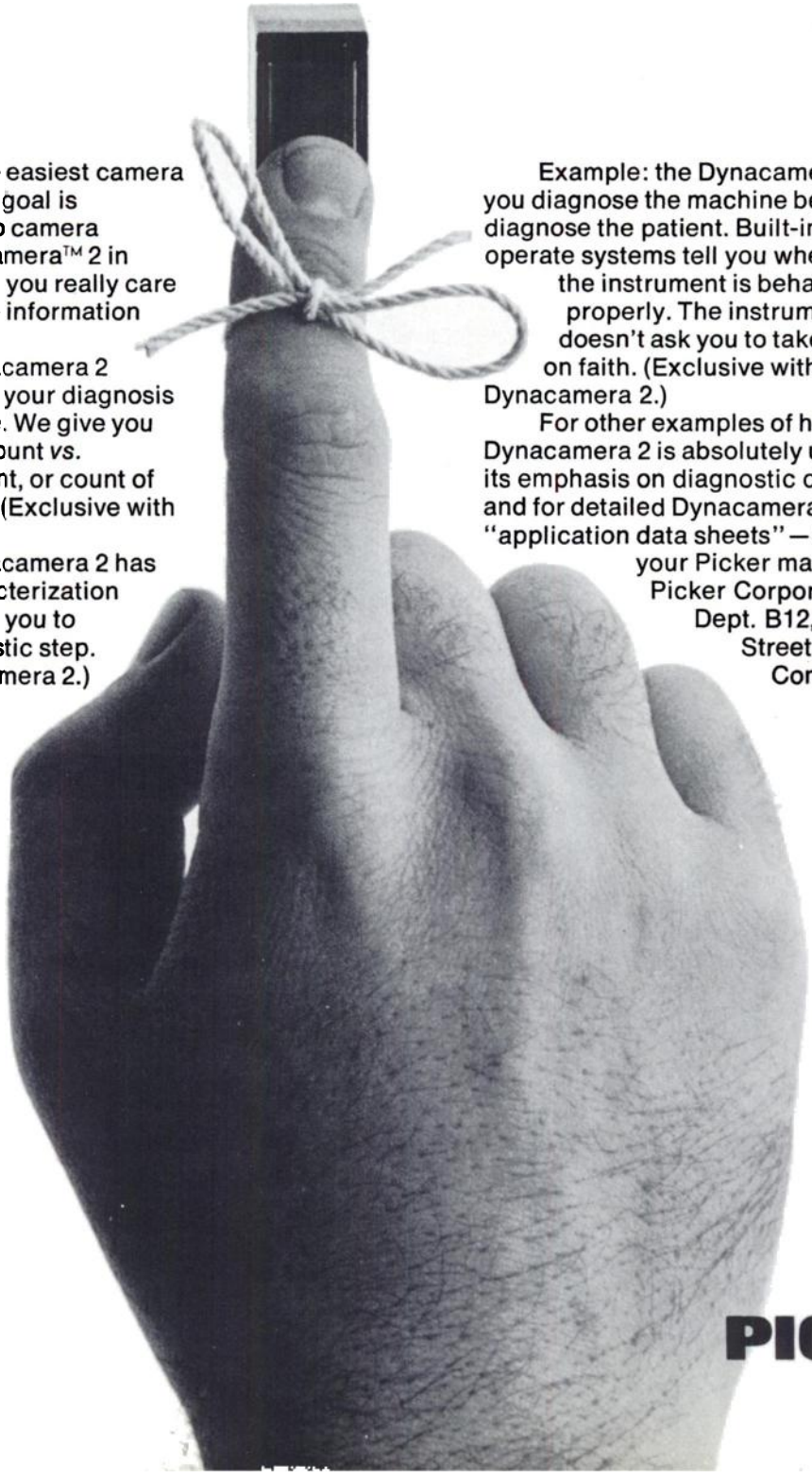

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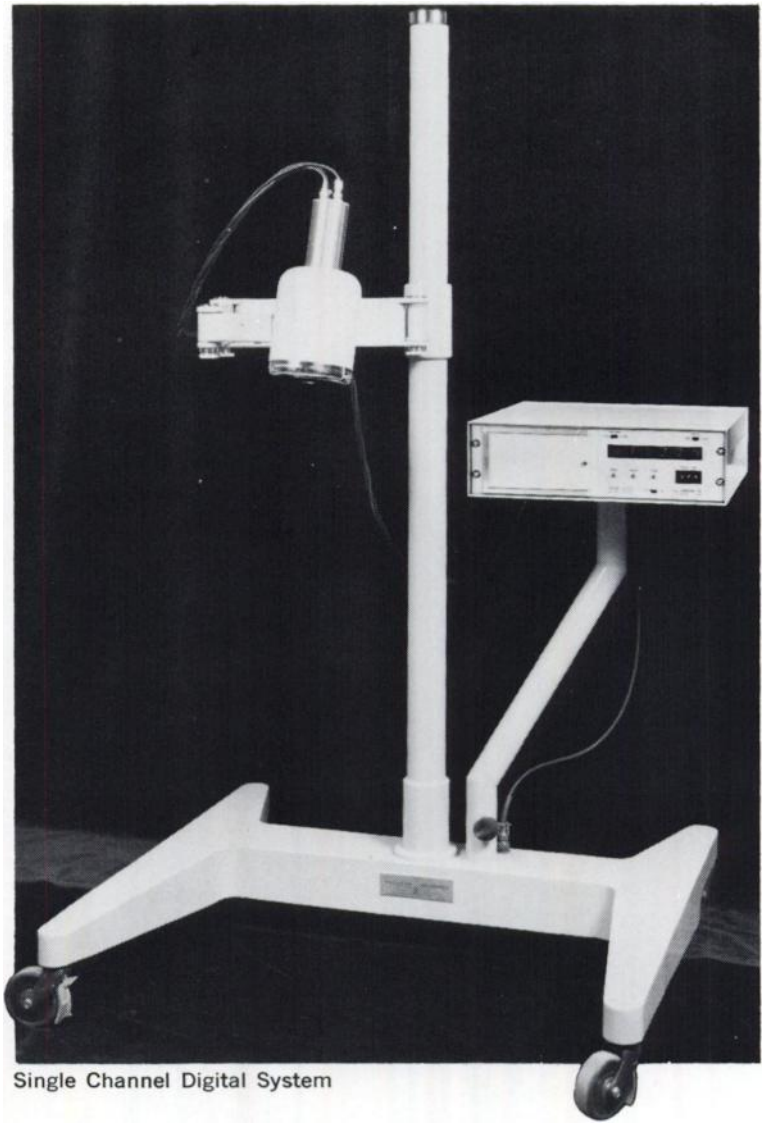

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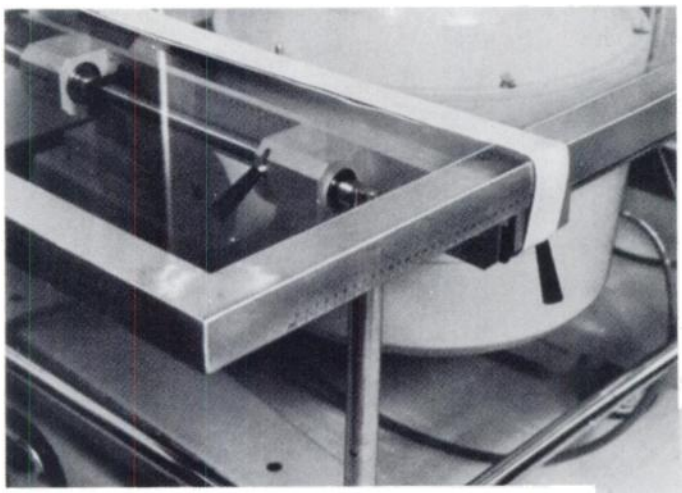

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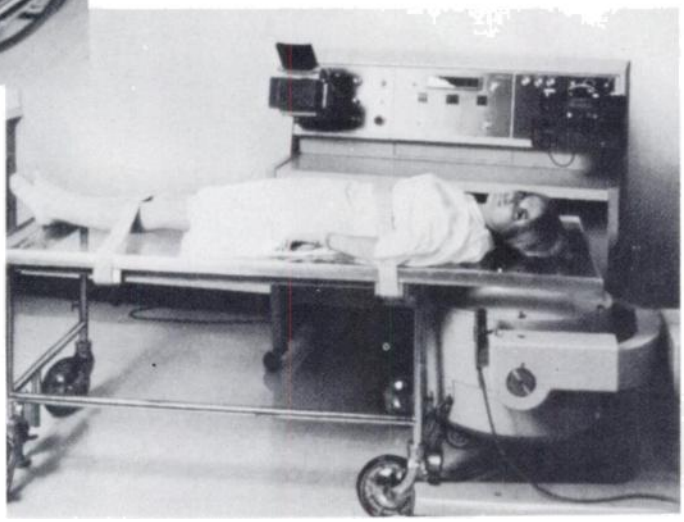

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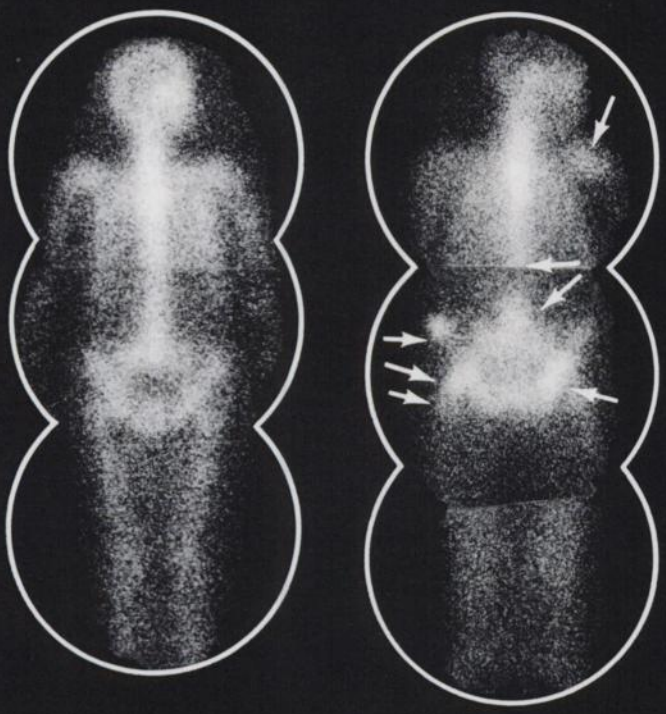
Bone Scintigraphy Using Fluorine-18

Pinhole Collimator-Scintillation Camera Images

Whole Body Survey Anterior View

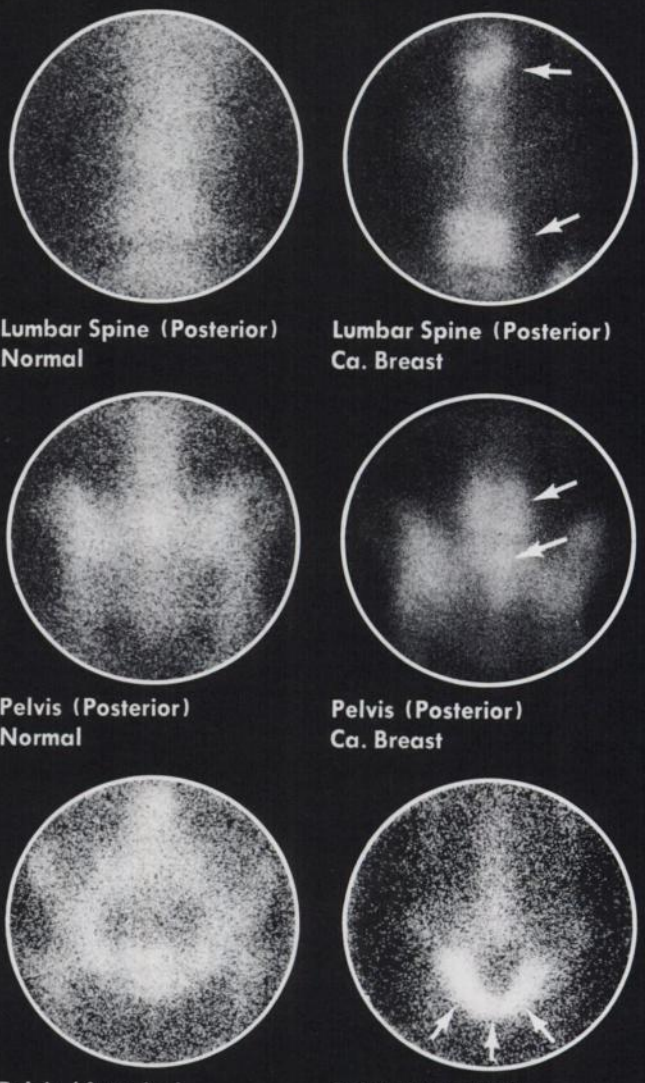


Normal

Metastatic Breast Ca.

Lesions are commonly found in the axial skeleton and a complete skeletal survey should include imaging of limbs as well as trunk.[5]

Close Up Images



Lumbar Spine (Posterior) Normal

Lumbar Spine (Posterior) Ca. Breast

Pelvis (Posterior) Normal

Pelvis (Posterior) Ca. Breast

Pelvis (Anterior) Normal

Pelvis (Anterior) Ca. Prostate

Scintillation camera images 2 to 4 hours after I.V. administration of 2 to 4 mCi of ^{18}F required 3 to 10 min. exposures each.

Rectilinear Scanner Images (5 inch crystal)

Metastatic Renal Cell Ca. (Anterior)

Paget's Disease (Posterior)

Dual probe rectilinear whole body imaging 2 hours after I.V. administration of 1 to 2 mCi of ^{18}F required 30 min. exposure. (Negative image of original shown to compare with camera images.)

References

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Radioisotopic Imaging of Bone in Clinical Medicine

Review

Various radioisotopes are known to preferentially accumulate in both malignant and benign lesions of bone. When such radioisotope accumulation is detected and imaged, using suitable instrumentation, clinically useful information is frequently obtained which cannot be readily acquired using other methods. Examples of this are the detection of primary and metastatic tumors in bone. Tumors metastatic to bone most commonly spread to spongy (trabecular) bone. Such lesions can be visualized by X-ray examination only when they are greater than 1.5 cm in diameter and 50% to 75% of the local calcium is lost.[1,2] Localization of radioisotopes in the region of metastases has been shown to be an earlier and more sensitive indicator of the presence of bony metastases than that provided by conventional radiographic techniques.[3] While Strontium-85 was the radioisotope most commonly used in initial studies, subsequent evaluations have shown fluorine-18 to be a superior radioisotope since its use results in both improved image quality and markedly lower radiation dose to the patient.[4,5,6,7]

Indications

The suspicion of malignant neoplastic involvement of bone, either primary or metastatic, is the principal indication for performance of a radioisotopic study of bone. Such a possibility should be considered in the primary evaluation of patients with a diagnosis of malignant tumors of the breast, lung, stomach, prostate gland, thyroid gland, and other carcinomas which commonly spread to bone, and in evaluating the extent of involvement of primary bone tumors, multiple myeloma, etc. Such studies should be particularly useful in patients in whom extensive surgery is proposed for the possibility of total extirpation of neoplastic tissue, since demonstration of a previously unrecognized metastasis may influence the proposed therapy. Lymphomas, such as Hodgkin's disease, frequently involve bone, and it has been recommended that patients with these disorders have radioisotopic skeletal surveys as a part of their initial staging.[8] Subsequent to initial evaluation of patients with various carcinomas and sarcomas, periodic radioisotopic skeletal surveys may be useful in demonstrating presence and extent of bone lesions. A large number of nonmalignant conditions can result in abnormal deposition of radioisotopes in bone (arthritis, fractures, osteomyelitis, Paget's disease, etc.). Whether sufficient beneficial information can be obtained from the performance of a radioisotopic bone study in patients with these non-neoplastic diseases to warrant the performance of such a study remains to be established.

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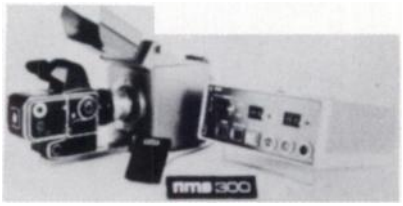

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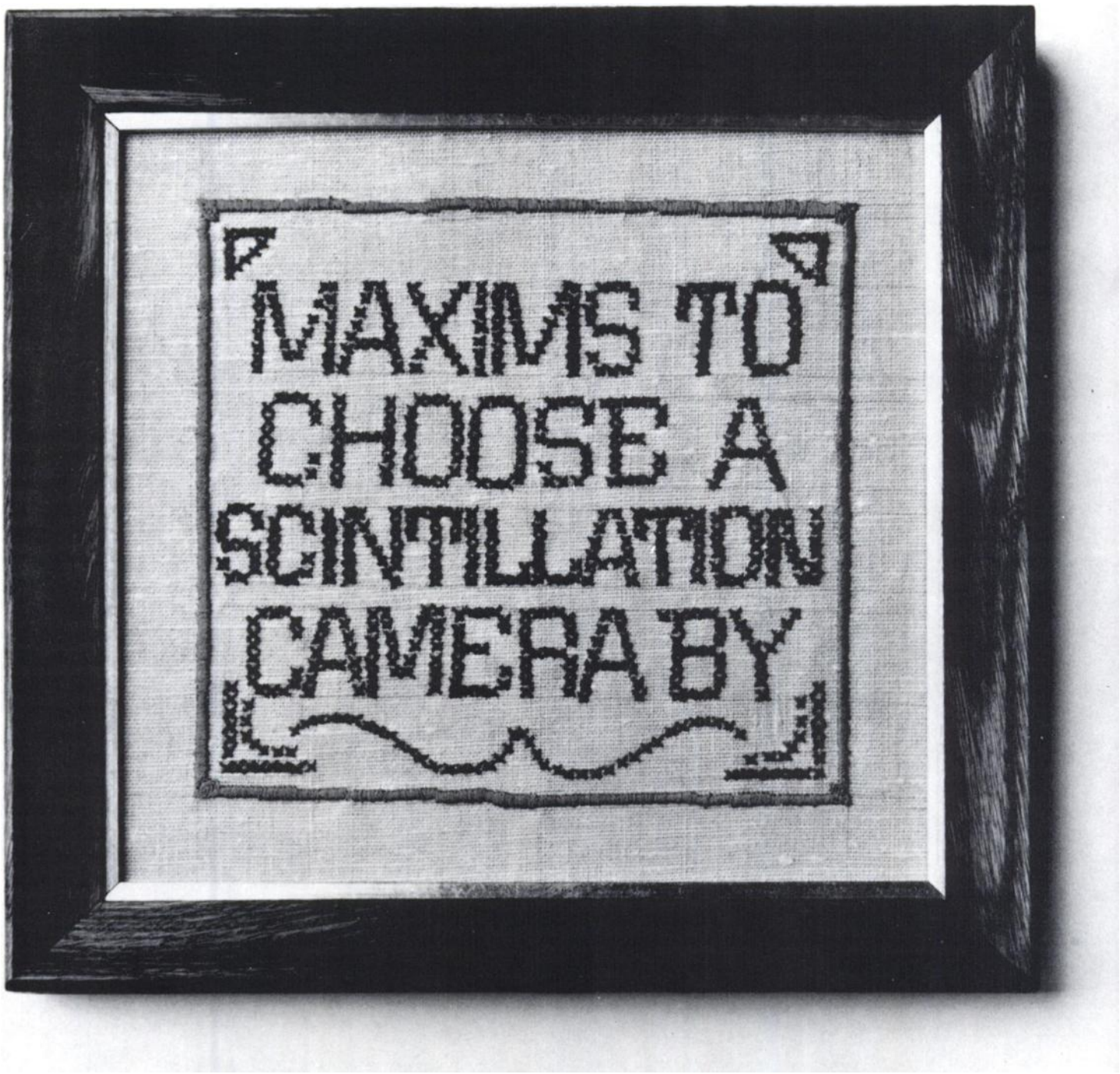

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2. Before you diagnose the patient, be sure you can diagnose the machine.

3. First, diagnostic confidence. Everything else, second.

4. Choose not a scintillation camera that asks you to accept its output on faith.

5. Sacrifice diagnostic certainty *last*.

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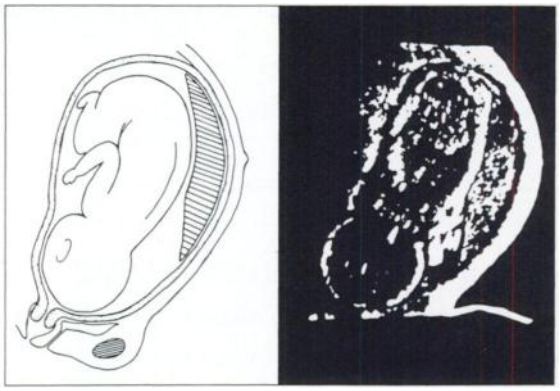

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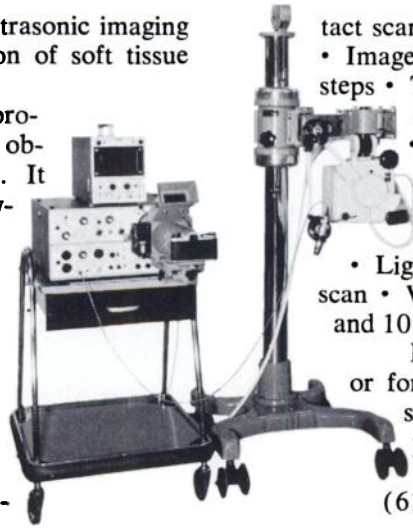

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FACULTY:

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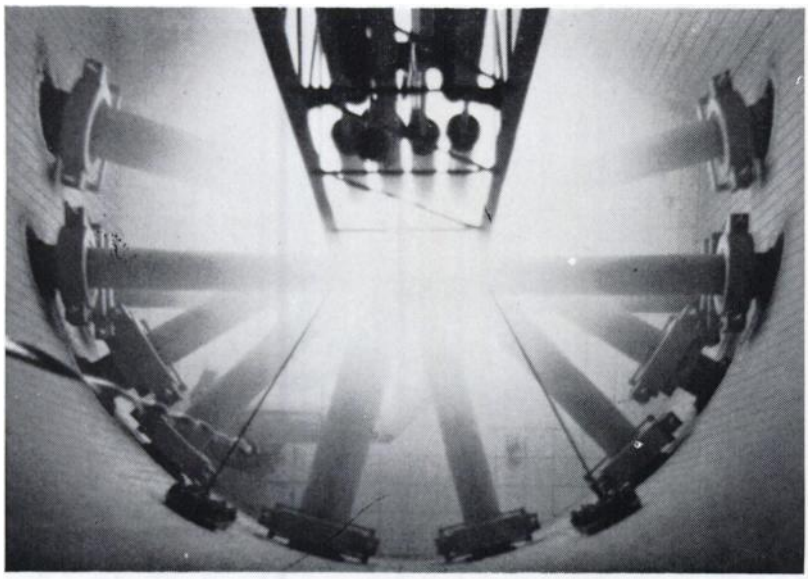

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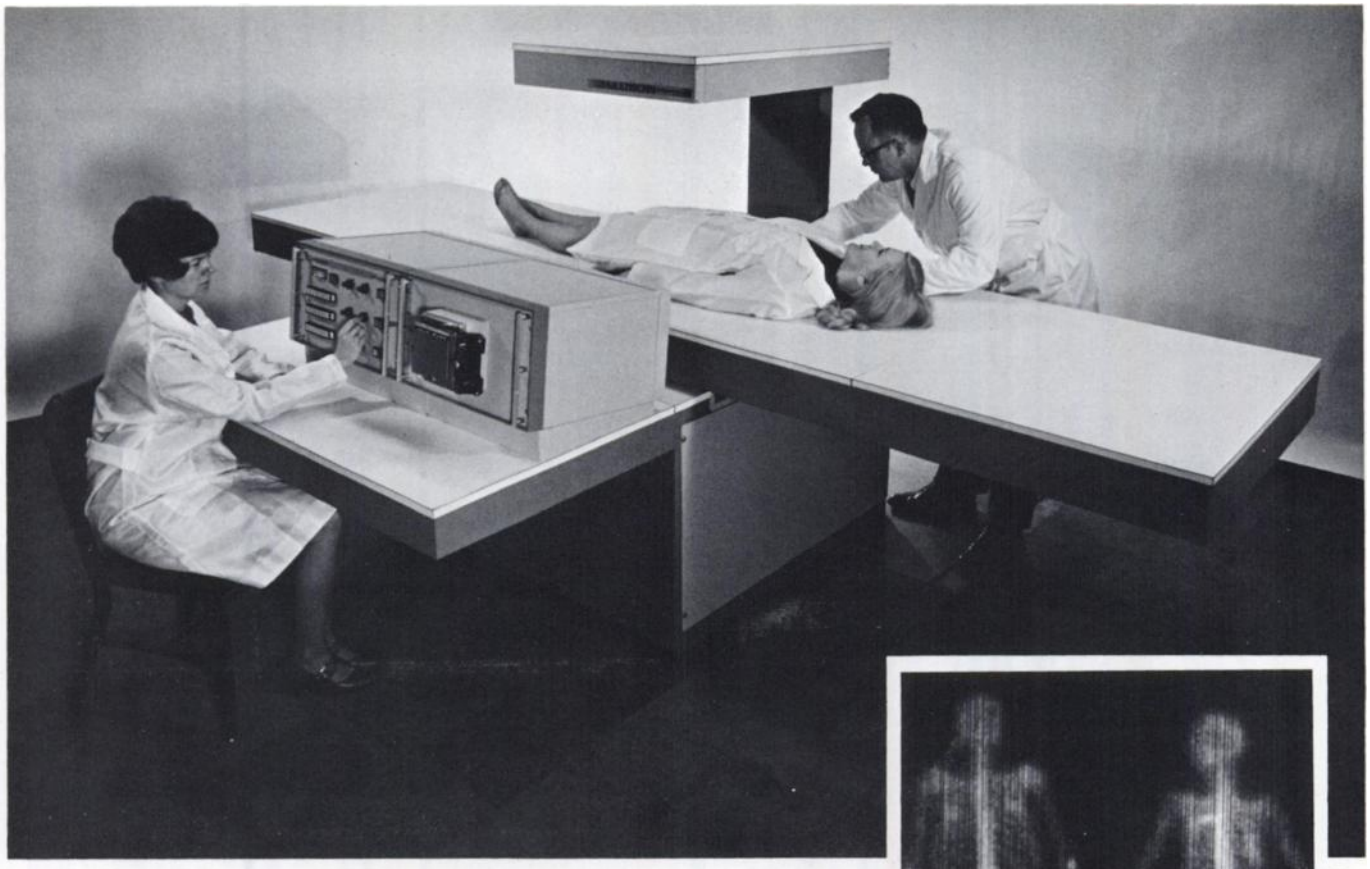

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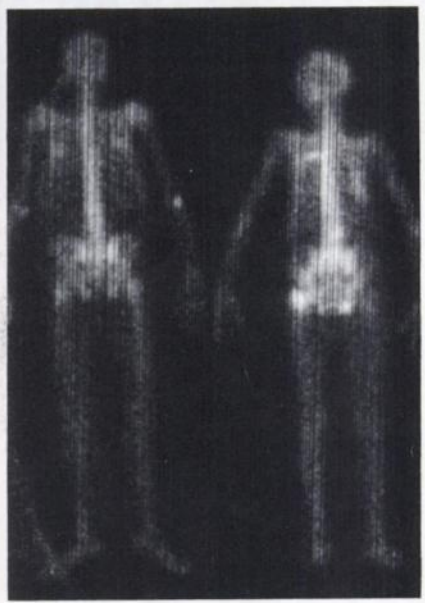

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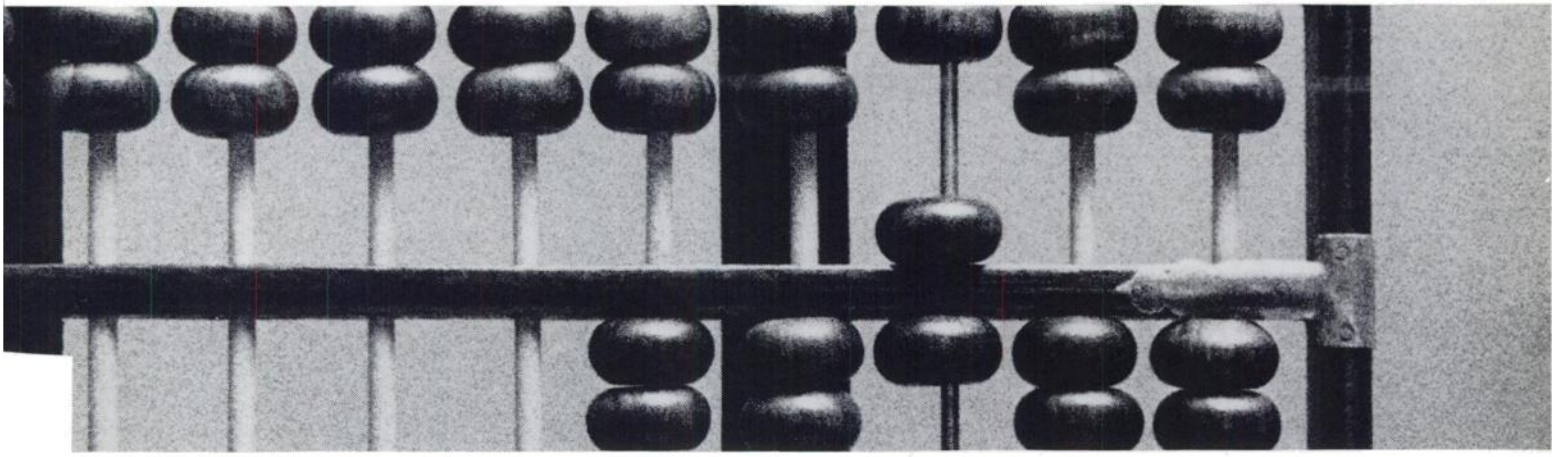

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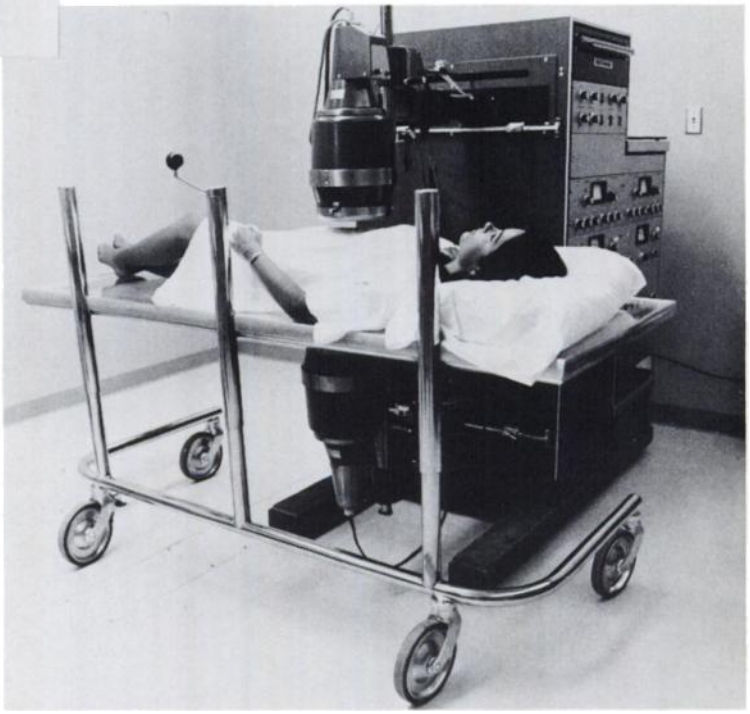

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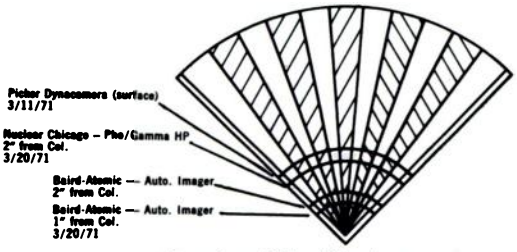
INDEX TO ADVERTISERS

The Camera with the Scanner image.

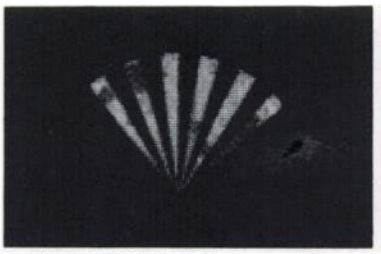
A closer look at the old image surrounding Cameras, and at the new images being generated at Baird-Atomic.

By Johan Govaert and Frank Troiani

Star Phantom^{57} Co 1 mc

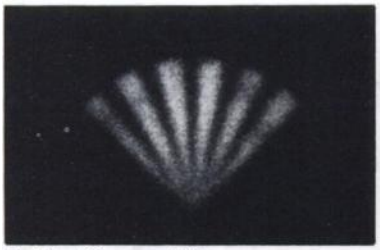


Drawing of Star Phantom
(Separation of radiants imaged all the way down to the separation of 2 to 2.5mm by Autofluoroscope)

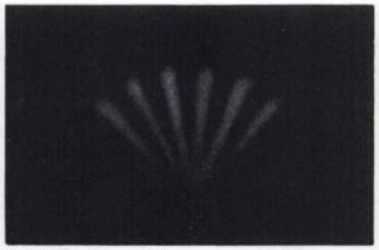


1. Model 5700 Autofluoroscope®
140,000 counts, 80 seconds
2 inches from Standard Collimator
(All defects – bubbles – are accurately imaged. Separation of radiants imaged by Autofluoroscope at 2 to 2.5mm)

4. Model 5700 Autofluoroscope
Positive Mode: lungs



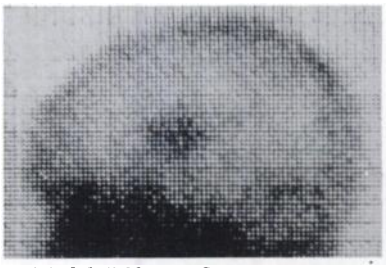
2. Pho/Gamma-HP
50,000 counts, 70 seconds
2 inches from High Resolution Collimator



3. Dynacamera™
On surface of Collimator

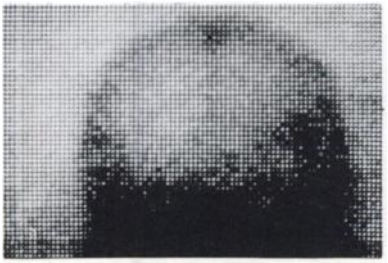
5. Model 5700 Autofluoroscope
Positive Mode: liver/spleen

Positive Brain Study



1. Model 5700 Autofluoroscope
Left lateral 0% BS

3. 5 inch Rectilinear Scanner
Left lateral



2. Model 5700 Autofluoroscope
Anterior 0% BS

4. 5 inch Rectilinear Scanner
Anterior

Patient: 66 year old male. CVA. Isotope: 10mc ^{99m}Tc.

Traditionally, of course, Cameras have been valuable because of their through-put capabilities. That certainly is not an insignificant contribution to nuclear medicine. But one which we here at Baird (and no doubt elsewhere) have not been willing to leave alone. After all, there is a lot more to the picture – if you will – than that.

All of which has led B/A to several years of intensive and extensive work. Our Camera, the Autofluoroscope®, has always done a satisfactory job in the area of statics. But there, too, we were far from satisfied.

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And as of now, we've got it.

This comparative Star Phantom study shows that. Picture number 1 shows Baird's Model 5700 Autofluoroscope's image compared to those of the

Nuclear Chicago Pho/Gamma HP® and the Picker Dynacamera™ in pictures 2 and 3, respectively.

One thing which you'll notice right off is the accuracy with which the Autofluoroscope has imaged all defects — eg bubbles. And that the star radiants are imaged all the way down to the separation of 2 to 2.5mm.

Now take a look at pictures number 4 and 5. They show the Autofluoroscope's ability to image large organs — lungs and liver/spleen — in the positive mode.

All right. From there, let's pass on to a Positive Brain Study. This is of a 66 year old male, CVA. The isotope dosage is 10mc ^{99m}Tc. Pictures 1 and 2 are made by the Model 5700 Autofluoroscope. Pictures 3 and 4 are of the same man, same data, but made by the 5-inch Rectilinear Scanner.

Quite frankly, we never expected the Camera to come along quite this far. We're getting the imaging capability, the clarity, the resolution from the *Autofluoroscope* that you'd only expect from the Scanner. With none of the narrow-focus problems. None of the concern for missing a lesion by being at the wrong depth.

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What this means is that Baird-Atomic has taken the Autofluoroscope and compounded its value by giving it imaging capabilities like those of the Scanner. In both statics and dynamics.

And the whole point is that, as of now, the Autofluoroscope isn't like any other Camera. It's virtually a new kind of instrument (incidentally, all the capabilities that we've talked about here can be readily installed in existing Autofluoroscopes).

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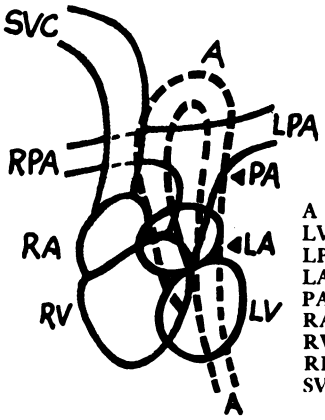
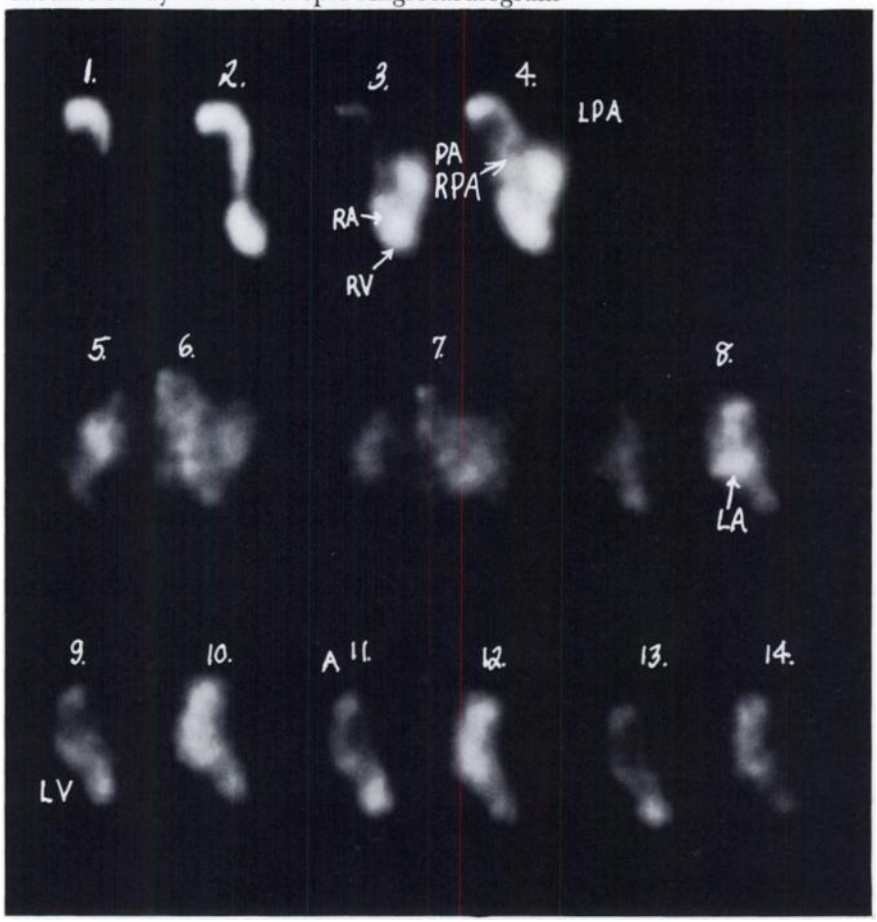


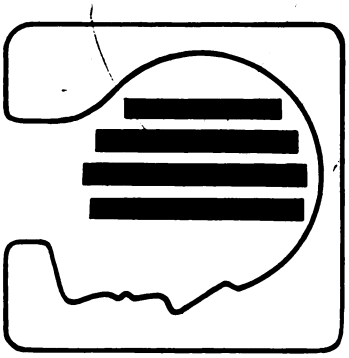
A — Aorta
LV — Left Ventricle
LPA — Left Pulmonary Artery
LA — Left Atrium
PA — Pulmonary Artery
RA — Right Atrium
RV — Right Ventricle
RPA — Right Pulmonary Artery
SVC — Superior Vena Cava

Cardiac Study. Radioisotopic Angiocardiogram



1. Radioactive bolus enters superior vena cava. Frames 157-160, .0-.8 secs. 2. Bolus continues onto right atrium and right ventricle. Frames 161-164, .8-1.6 secs. 3. Clear visualization, right atrium, right ventricle and main pulmonary artery. Frames 165-168, 1.6-2.4 secs. 4. Bolus branches into right and left pulmonary arteries. Frames 169-172, 2.4-3.2 secs. 5. & 6. Bolus completes passage from heart to lung. Frames 173-176, 3.2-4.0 secs; frames 177-180, 4.0-4.8 secs. 7. Bolus in the lung field. Frames 185-188, 5.6-6.4 secs. 8. Bolus, now strung out, enters left side of heart (left atrium) clearly visualized. Frames 193-196, 7.2-8.0 secs. 9. Bolus in left ventricle, and passing up aorta. Frames 197-200, 8.0-8.8 secs. 10, 11, 12, 13, 14. Continuing passage of the activity through left atrium, left ventricle and aorta. Increased activity in left ventricle (11 and 13) and corresponding activity-increase in aorta (10 and 12) suggest delineation of heart contractions. Frames 201-220, 8.8-12.8 secs.

Anterior view, normal subject. 12.4 mc ^{99m}Tc. I.V. Accumulation time .2 sec. per frame.



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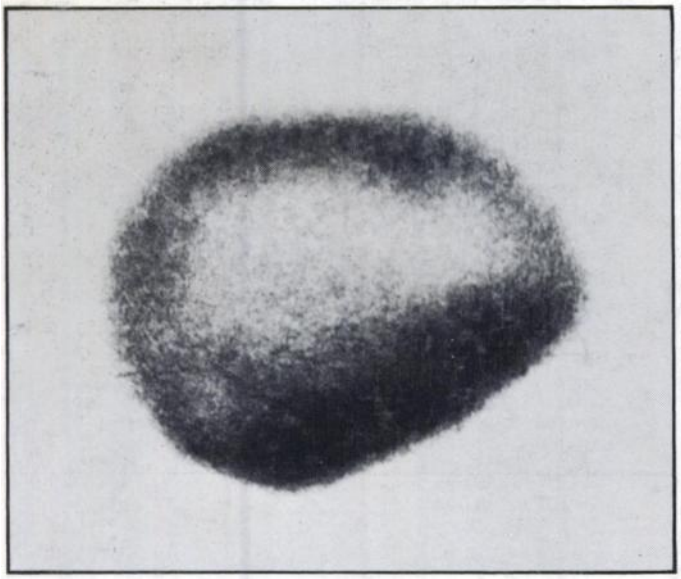
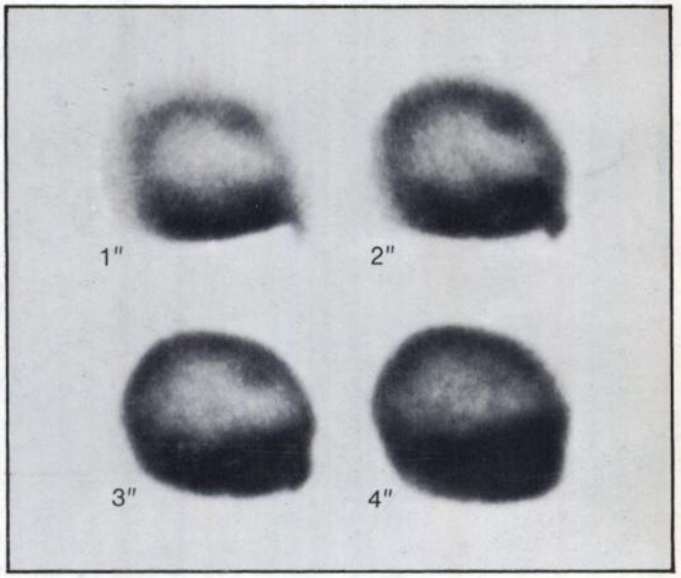


Brain, right lateral view. Standard scintiphoto.



Brain, right lateral views presented simultaneously in a single tomographic scintiphoto. Lesion in right frontal region is delineated best at 2- and 3-inch depths. Surgery revealed well differentiated adenocarcinoma.

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