If you know get to know

Triosorb®-125 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.

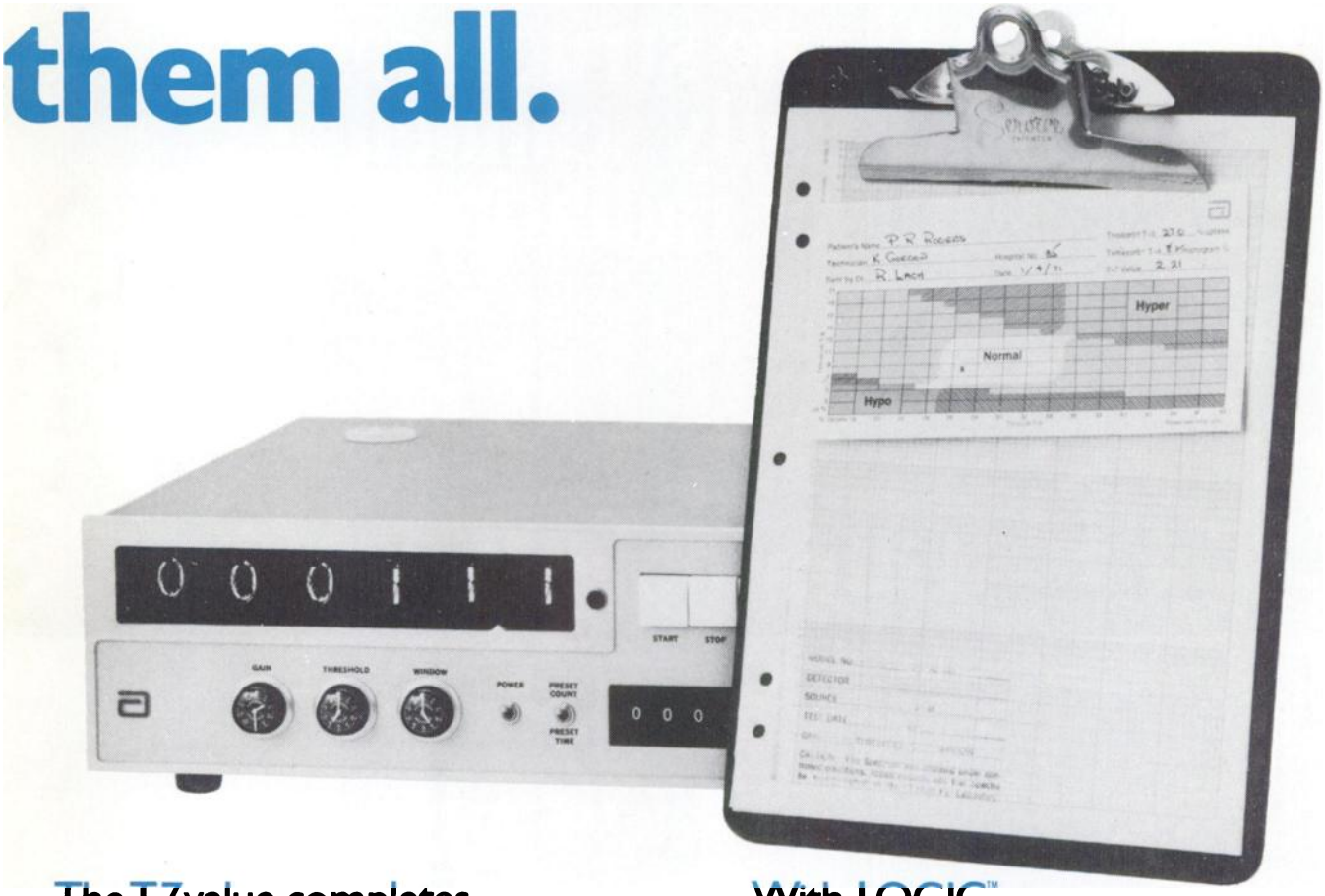
Accurate. Approximately 15 drugs and conditions produce misleading Triosorb®-T-3 test results, compared with over 200 factors which affect PBI.

* Also available as Triosorb®-131.

Tetrasorb®-125 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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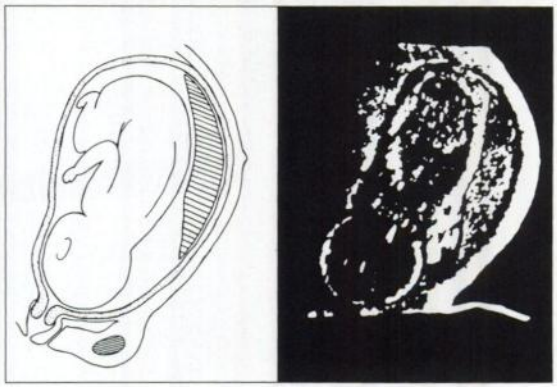
How can soft tissue structures be visually scanned without radiation?

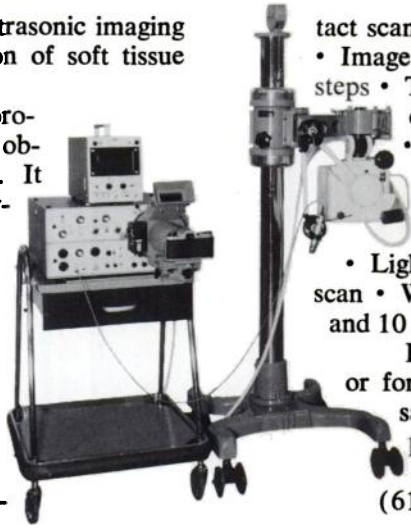
Ultrasonically.



Raytheon's Sonascan is an advanced ultrasonic imaging device for two-dimensional visualization of soft tissue structures . . . without radiation.

This unique contour scanning device provides rapid cross-sectional imaging in obstetrical and gynecological applications. It can determine placental localization, hydatidiform mole, ectopic and multiple pregnancy, and solid or cystic ovarian tumors. It also can provide continuous monitoring of fetal development.

Other applications include differentiation of cystic and solid masses, as well as mapping of the liver, kidney, spleen, gall bladder and the carotid artery for blocks and occlusions.



Sonascan features a rugged, direct-contact scanner mounted on a movable stand, plus • Image minification and magnification in seven steps • Transverse to longitudinal scanning accomplished without moving the patient • Patient's name and pertinent information recorded on Polaroid film automatically • Camera mounting for 35 mm or Polaroid back as desired • Light beam marker to illuminate plane of scan • Wide frequency response — 1, 2.25, 5 and 10 megahertz.

For additional information and pricing, or for the name of your nearest Raytheon sales office, contact Raytheon Company, Medical Electronics, 190 Willow St.,Waltham, Mass. 02154. Telephone (617) 899-5949.

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Questions about scanner performance and service are best answered by asking someone who has one. Why not ask someone who has an Ohio Nuclear scanner?

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Lung scanning?

All macroaggregated serum albumins are not the same. Macroscan-131 offers all 5 of these benefits:

- **Uniformity** of particle **size** distribution
- **Minimal free iodide**
- **Superior manufacturing technique** (supernatant is removed in the manufacturing process)
- **Safety** (no recorded reactions to date in thousands of scans)
- **Cost** (lowest of the 3 leading products)

Macroscan-131 is aseptically prepared and non-pyrogenic. It is ready to use and should not be heated prior to use.

INDICATIONS: For scintillation scanning of the lungs to evaluate total, unilateral, and regional arterial perfusion of the lungs.

WARNINGS: Radio-pharmaceutical agents should not be administered to pregnant or lactating women, or to persons less than 18 years old, unless the information to be gained outweighs the hazards. There is a theoretical hazard in acute cor pulmonale, because of the temporary small additional mechanical impediment to pulmonary blood flow. The possibility of an immunological response to albumin should be kept in mind when serial scans are performed. If blood is withdrawn into a syringe containing the drug, the injection should be made without delay to avoid possible clot formation.

PRECAUTIONS, ADVERSE REACTIONS: Care should be taken to administer the minimum dose consistent with patient safety and validity of data. The thyroid gland should be protected by prophylactic administration of concentrated iodide solution. Urticaria and acute cor pulmonate, possibly related to the drug, have occurred. 009249

MACROSCAN®-131 AGGREGATED RADIO-IODINATED (I^{131}) ALBUMIN (HUMAN)

Each milliliter contains 1 to 3 mg. aggregated human serum albumin labeled with iodine 131, with benzyl alcohol, 0.9%, as preservative. Radioactivity is usually between 800 and 1300 microcuries per ml. on first day of shipment. For full prescribing information, see package insert.

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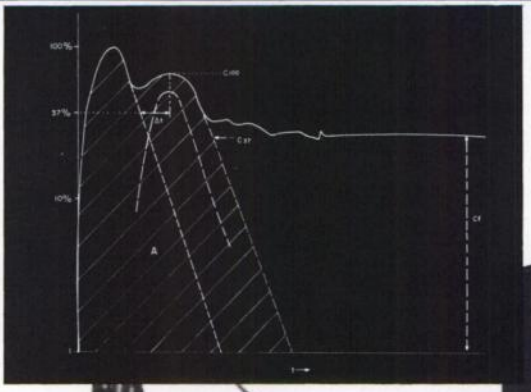

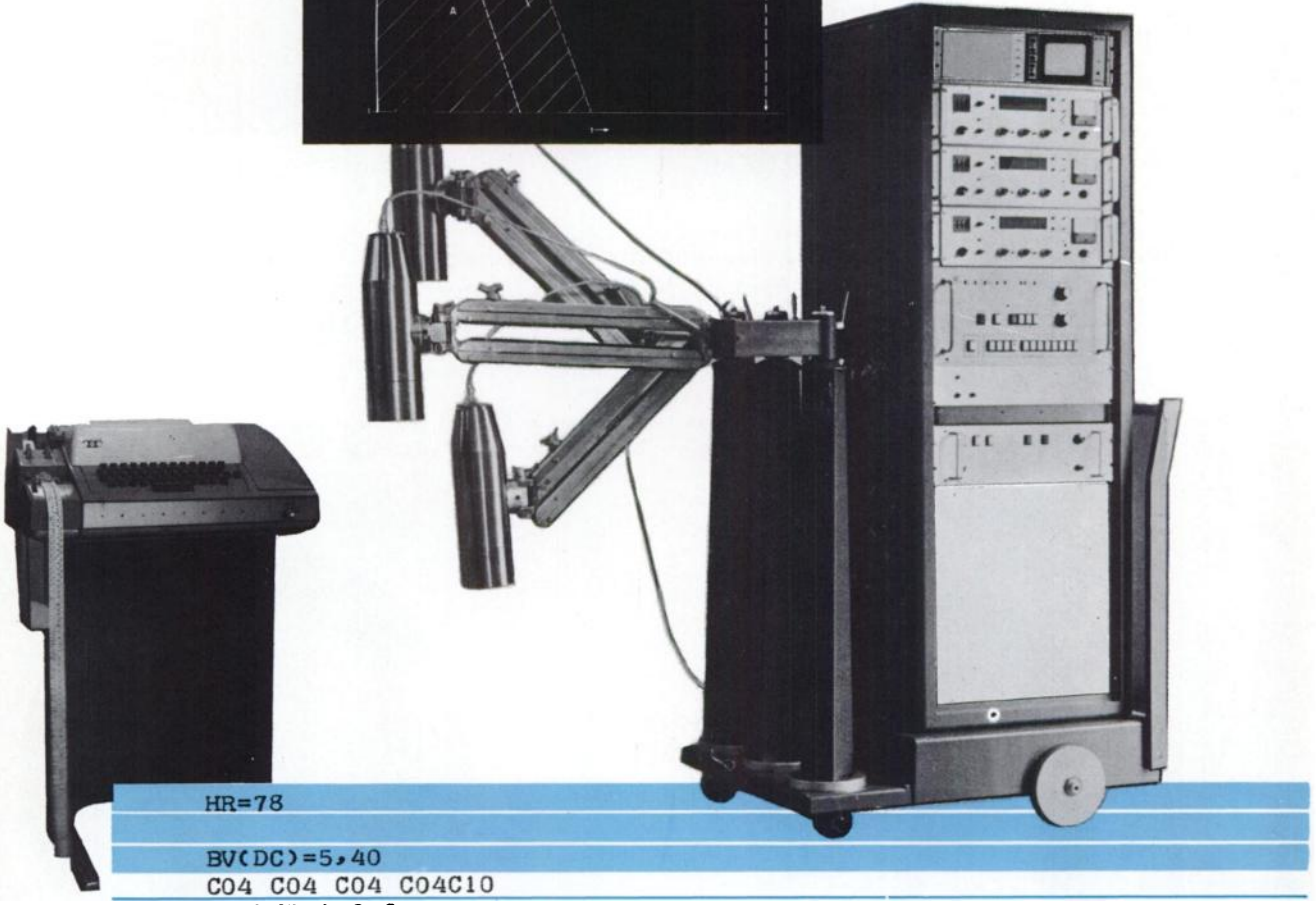

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HR=78

BV(DC)=5,40
C04 C04 C04 C04C10
READYD 1 2 3
READYC
DT=5

HR=78

BV(DC)=5,40

HC=        +0000.769    1/S
PMCT=      +0003.919    HC
CO=        +0009.960    L/M
SV=        +0125.402    CC
PBV=       +0491.505    CC
READYD 1 2 3
```

ELSCINT INC. BUILDING 812, RARITAN CENTER WOODBRIDGE AVE.
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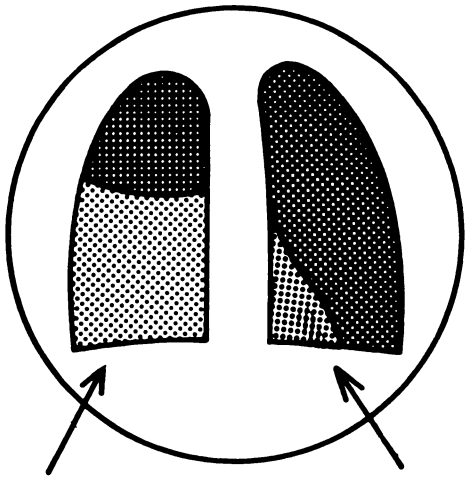
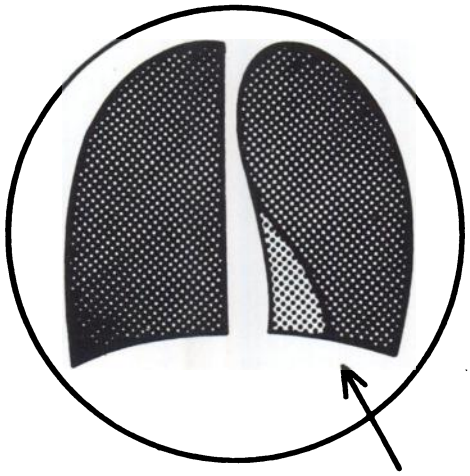
Pulmonary Embolism?



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....

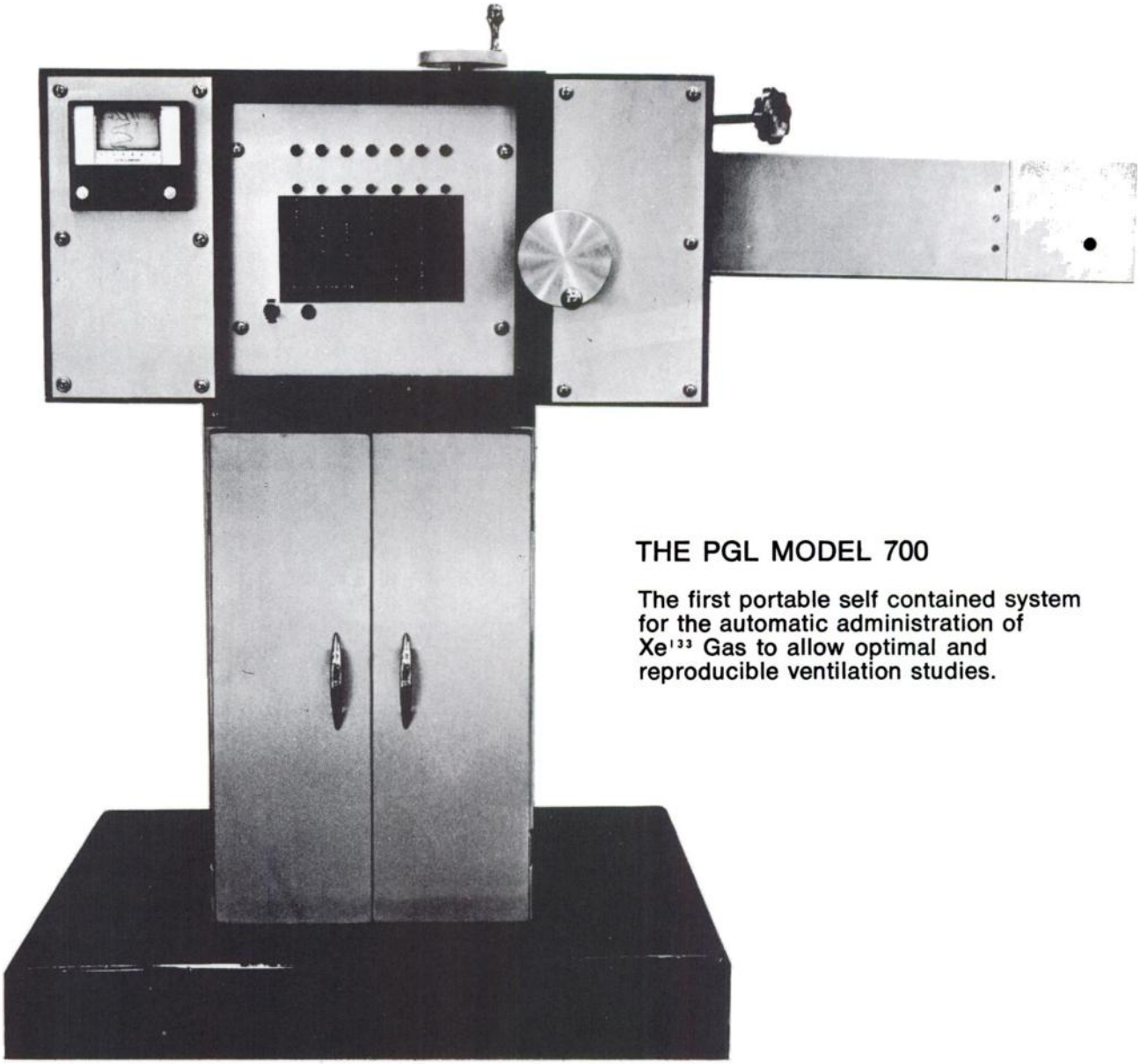


ANTERIOR VENTILATION

"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

DE NARDO G.L., et al: THE VENTILATORY LUNG SCAN IN THE DIAGNOSIS OF PULMONARY EMBOLISM. NEW ENG J MED 282:1334-1336 (JUNE) 1970

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



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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.)

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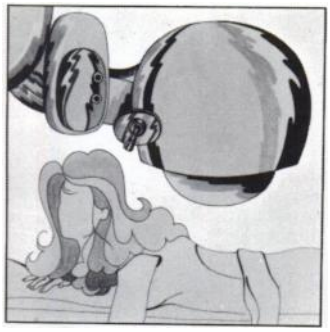
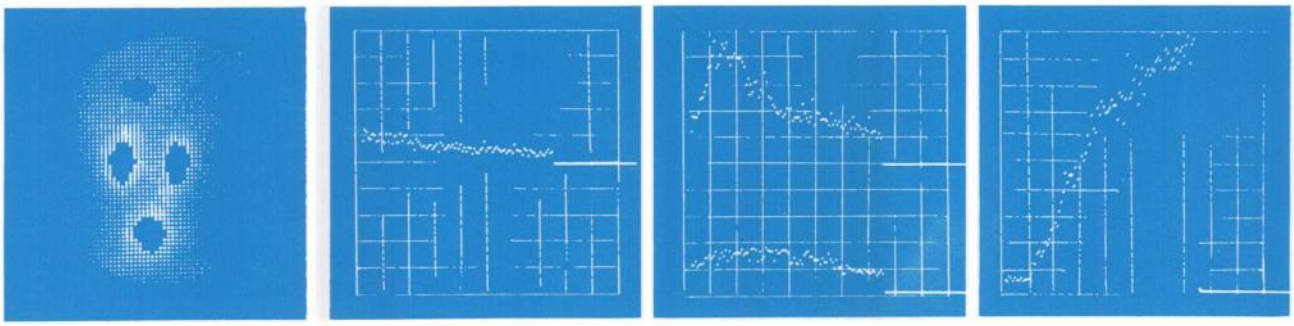


from one single examination cinescintigraphy* shows you a complete dynamic uptake process

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.



The Cinescintigraphy* system can be connected to any gamma-camera commercially available to-day.

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* Intertechnique trade name.

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Does the 35mm or 70mm Photography System you are planning to install on your Gamma Camera include the following important features?

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b. Digitally set and controlled inter-exposure intervals over the same range.

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d. Operation from a remote location.

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c. A camera mount that allows camera to scope distance to be quickly changed, so that variable image size is possible.

d. A mount which allows the use of the incomparable Hasselblad 500 EL 70mm camera.

If the system you are considering does not have these features, but only takes photos, then stop considering it.

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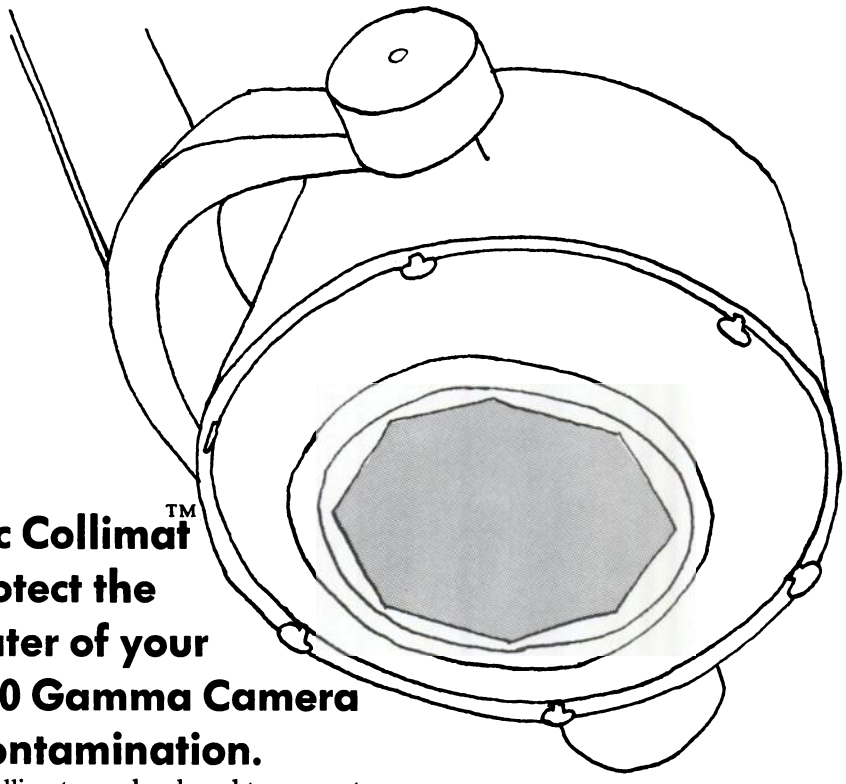
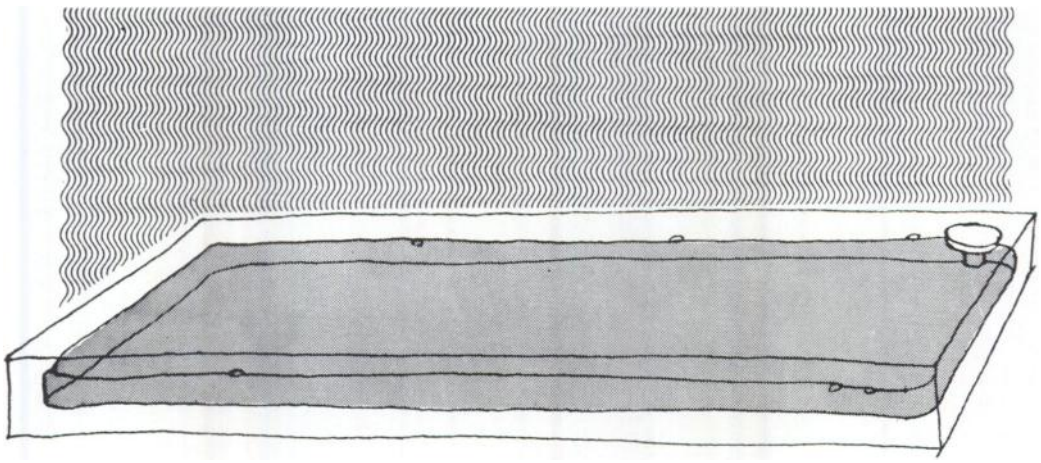


This 29c Collimat™ will protect the collimater of your $100,000 Gamma Camera from contamination.

This new Collimat was developed to prevent any artifacts from coming into contact with the collimater face. It's applied as easy as a bandaid. Strip off backing and adhere to collimater face. When Collimat becomes contaminated peel it off and apply a new one. $30 per 100.

TFS—for uniform crystal flooding and nuclear transmission studies. $85.00

Approximate volume 1500cc.
13½" wide, 16¾" long, 1¼" thick.



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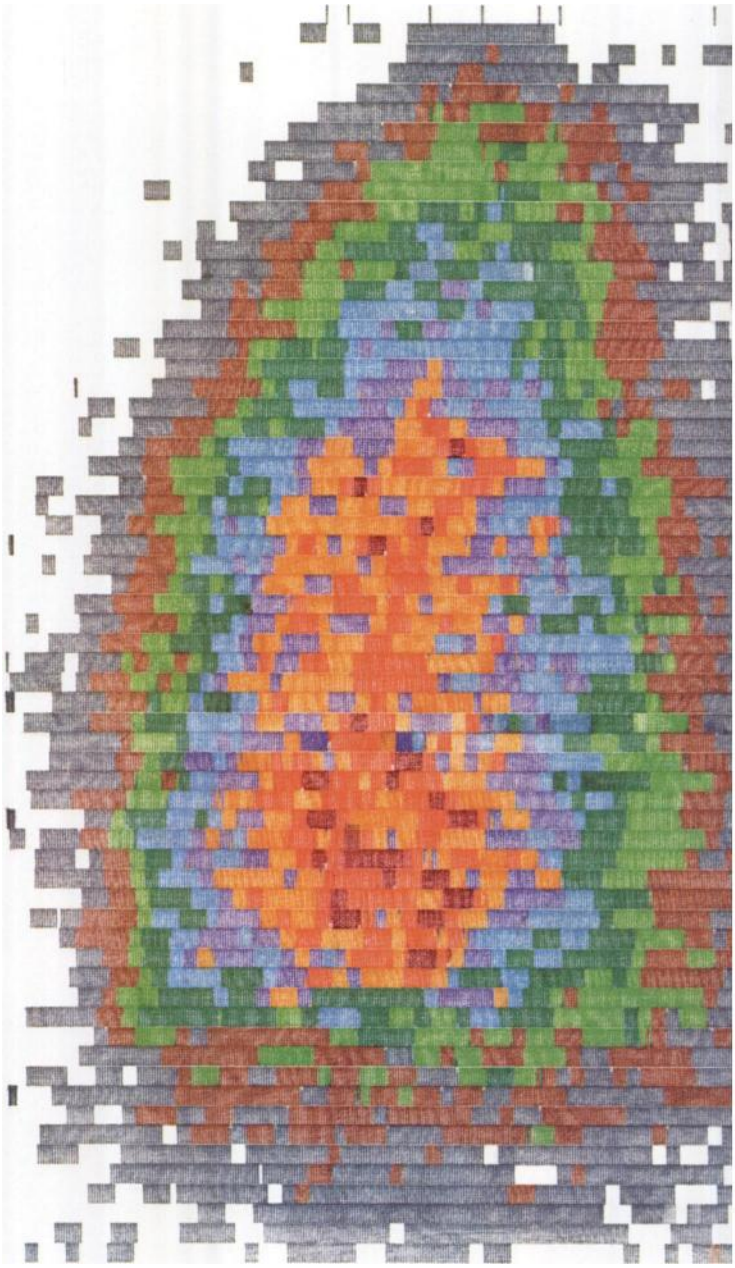
Color scans have always been colorful.



Now they're useful.

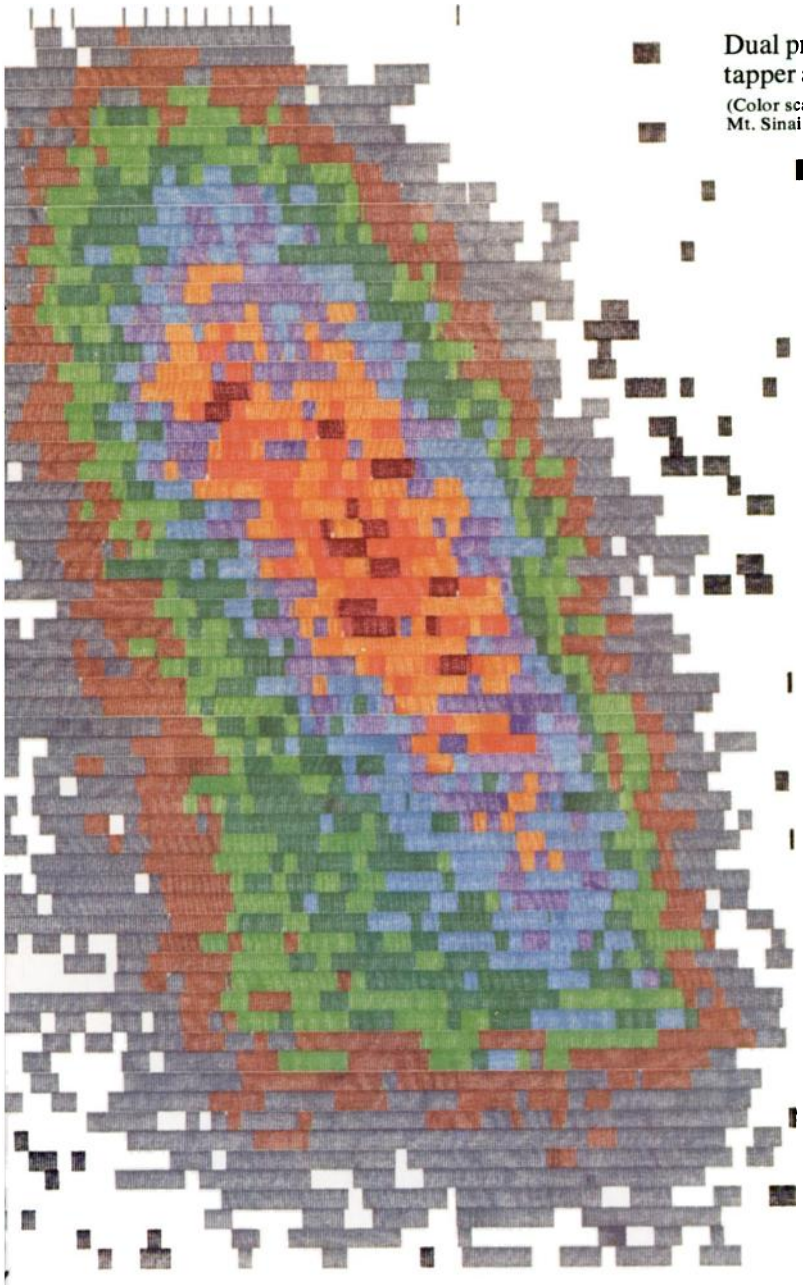
When count rate differences between target and non-target areas are extremely small, color contrast enhancement produces scans that contain considerably more information, thus simplifying diagnoses. And only Raytheon nuclear imaging devices give you this advantage.

By simply inserting a plug, you can change a Raytheon imaging device from conventional linear color operation to the color dot contrast enhancement mode. Raytheon offers a wide variety of plugs to meet your clinical requirements for color contrast enhancement. The accompanying graph illustrates the results you can expect at various count rate activity levels.

In addition, you have a choice of continuous color, another Raytheon exclusive, or conventional color recording with variable tapper frequency.

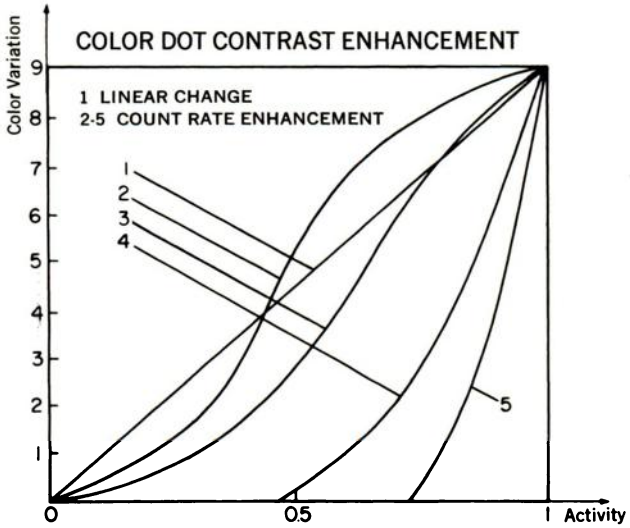
But there are a number of features of Raytheon nuclear imaging devices that make them the most advanced units available today. For example: The scanning heads are completely flexible. Tomograms, oblique scans of normally masked areas, parallel-headed scanning for whole body applications, and conventional opposed-head scanning are some of the ways the heads can be manipulated.

Here is another important feature: You can get four different scintigrams simultaneously when the scanner is equipped with a subtraction option. Thus, you can obtain four views of the brain at one time: 1. right lateral on photo; 2. left lateral on photo; 3. right lateral plus left lateral on color dot recorder; 4. right lateral minus left lateral on color dot recording. Or perhaps you may only want one view with four levels of contrast enhancement. No need to perform multiple scans. The Raytheon



Dual probes in summation with continuous tapper and linear color.

(Color scan courtesy of Amiel Z. Rudavsky, M.D., Mt. Sinai Hospital, New York City.)



scanner will give you various levels of enhancement simultaneously.

With a Raytheon nuclear imaging device, you can also have a unit that can be updated to meet your future needs. You can convert a single 3″ scanner to a single 5, dual 3, or dual 5 right in the hospital.

Ease of operation is built into each unit. To set up for a scan, just insert the automatic energy selector plug, search for the hot spot, and select line spacing and a scan speed of up to 600 cm/min. Information density and film contrast are read out on a single easy-to-read meter.

We would like to provide you with additional details on Raytheon's family of nuclear imaging devices. Write or call Raytheon Company, Medical Electronics, 190 Willow St., Waltham, Mass. 02154. Tel. 617-899-5949.

RAYTHEON

Raytheon's 12-minute, color film on nuclear imaging devices is available for your viewing. To arrange a convenient time to see this informative film, contact your nearest Raytheon sales representative. Or, get in touch with Raytheon Company, Medical Electronics, 190 Willow Street, Waltham, Mass. 02154. Telephone 617-899-5949.

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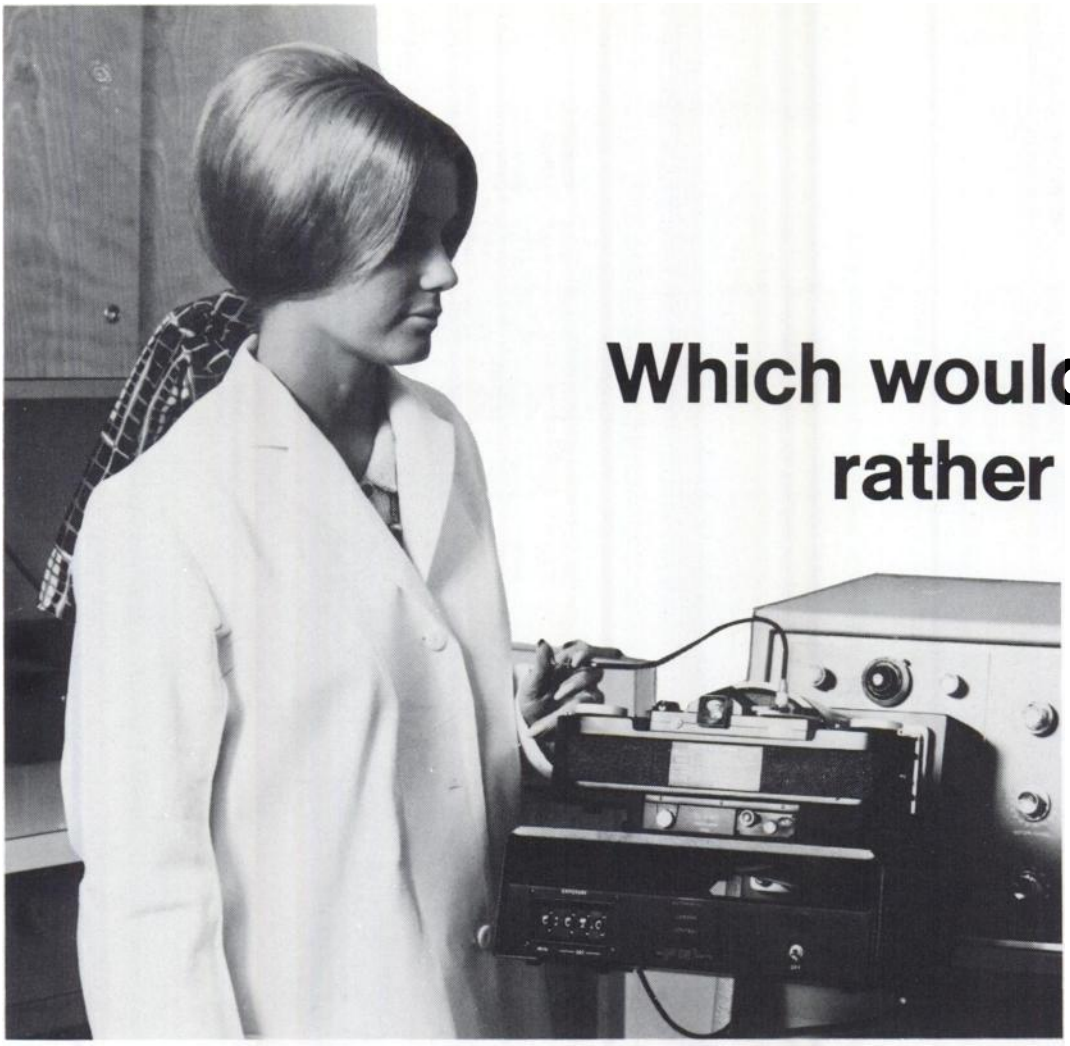

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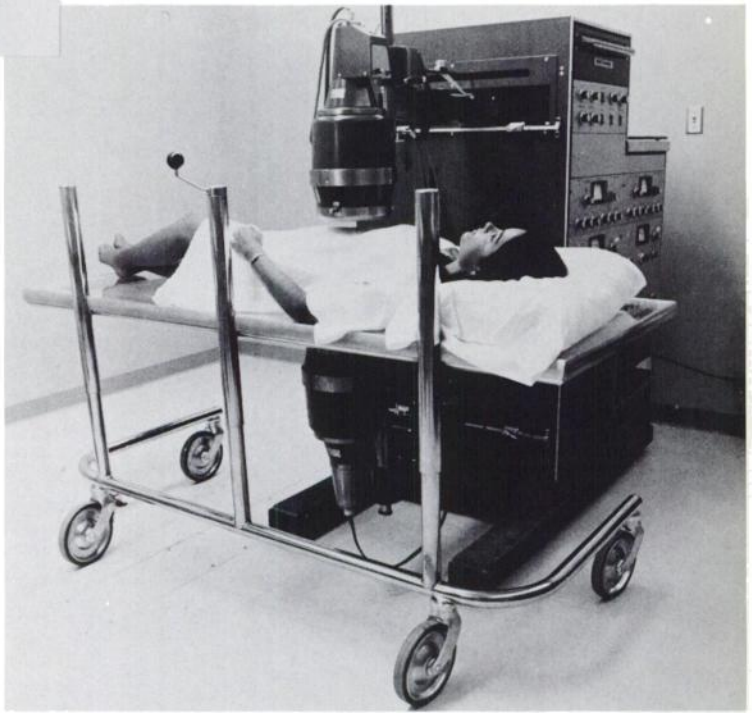

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2) Single & Dual Headed Rectilinear scanners (Nuclear Chicago, Picker, Baird Atomic, Ohio Nuclear, Raytheon, etc.
3) Multidetector Scanners (Dynapix, etc.)
4) Diagnostic X-Ray units.

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- Allows vertical height adjustment with patient on table — convenient & accurate patient positioning.

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- Transparent — detector head easily positioned below patient for posterior views. Strong—accommodates 400 lbs. and still raises & lowers smoothly. Low-Density—maximum transmission with low energy nuclides.

PHYSICAL SPECIFICATIONS

- Lucite Top: 72''x30''x½''
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- Finish: Brushed aluminum and chrome.
- Accessories provided: Restraining belt and polyurethane mattress with conductive vinyl cover.

UNOBSTRUCTED FRAME DESIGN

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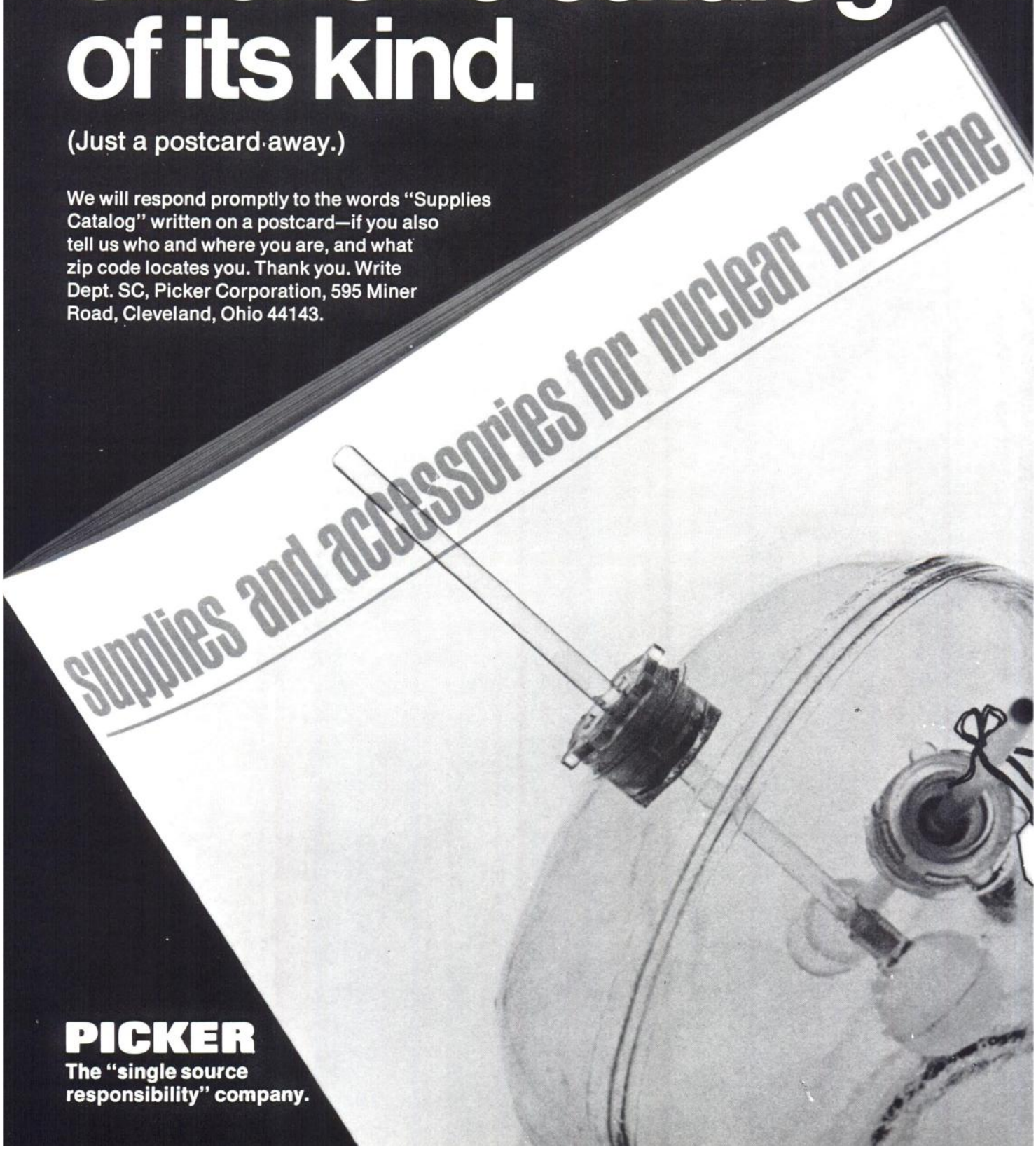

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CHIEF NUCLEAR MEDICINE TECHnologist, M.T. ASCP or highly qualified non-ASCP. Three to 5 years experience in active nuclear medicine department with broad license. Capable of supervisory and teaching responsibilities in all phases of nuclear medicine. Experience with NC scanner and camera. Send resume to: Dept. of Nuclear Medicine, Swedish Hospital Medical Center, 1211 Marion, Seattle, Wash. 98104.

POSITIONS WANTED

PHYSICIAN EXPERIENCED IN DIAGnostic, therapeutic and research uses of radioisotopes, administrative experience as head of radioisotopes in university hospital, seeks position in nuclear medicine. Reply Box 201, Society of Nuclear Medicine, 211 E. 43rd St., New York, N.Y. 10017.

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The Department of Radiology at Duke University Medical Center offers two programs of residency training in nuclear medicine. Applicants desiring certification by the American Board of Radiology may qualify for the diagnostic examination while completing their training in nuclear medicine. This is a four-year program of nuclear medicine and diagnostic radiology, closely interdigitated. A two-year program of nuclear medicine training is also offered to candidates who have completed at least one year as AMA-approved radiologists or internal medicine residents. The Division of Nuclear Medicine serves the 790-bed Duke Hospital and the 500-bed Veterans Hospital performing over 8000 clinical nuclear medicine studies annually. Residents are paid $8000 the first year and $8500 the second year. In addition a $1000 per annum dependency allowance will be paid the resident for the first dependent child and an additional $500 per annum for the second with a maximum of $1500 dependency allowance. A $30,000 term life insurance policy is purchased for each resident at no cost to the incumbent. This insurance policy may be continued following the completion of the residency program. Contact: Jack K. Goodrich, M.D., Director, Division of Nuclear Medicine, Department of Radiology, Duke University Medical Center, Durham, North Carolina 27706.

DIRECTOR OF NUCLEAR MEDICINE EDMONTON, ALBERTA, CANADA Position available May, 1971

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FIGURE 1. SERIAL SCINTIPHOTOS. ANTERIOR VIEW.

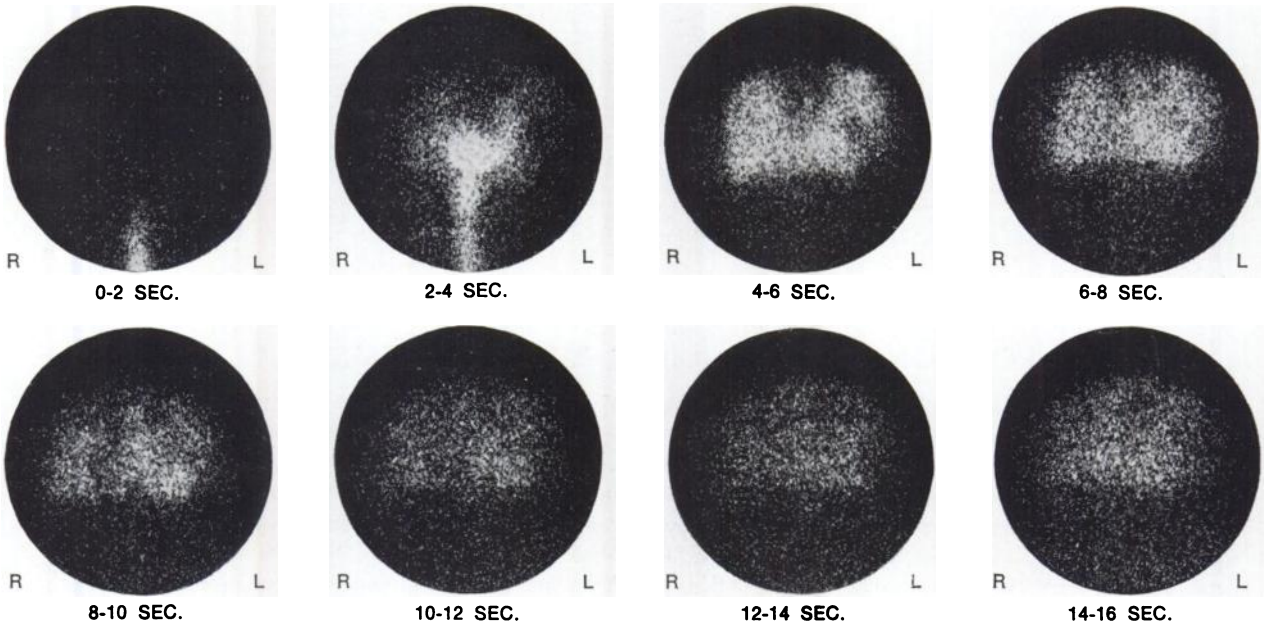

FIGURE 2.
AREAS-OF-INTEREST.
ANTERIOR VIEW.

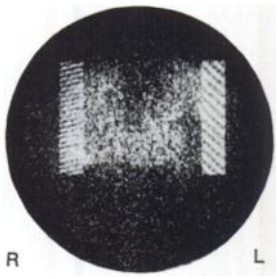

FIGURE 3. PULMONARY DILUTION CURVES, ABNORMAL.
Traced from original chart recordings for clarity of reproduction.

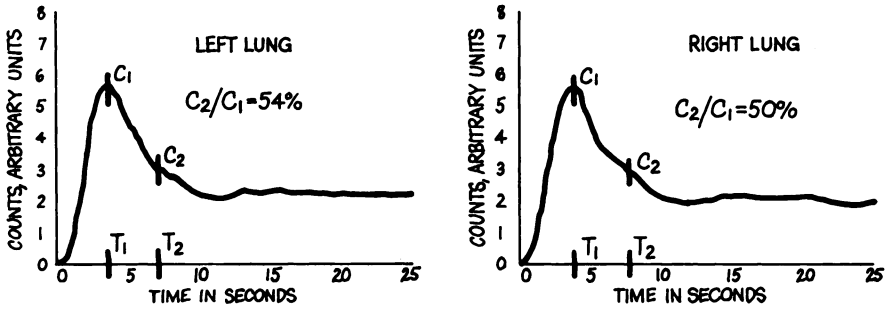

FIGURE 4. PULMONARY DILUTION CURVES, NORMAL.
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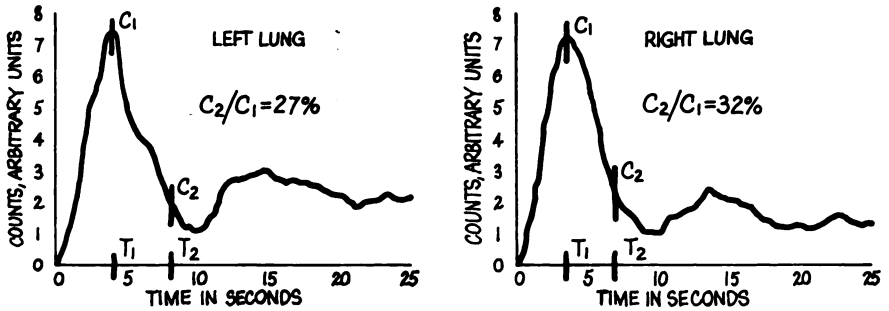

The Cardiac Dynamic Study

A Dynamic Technique Using the Nuclear-Chicago Pho/Gamma® Scintillation Camera and Data-Store/Playback System

This study combines serial scintiphotos of the circulation of ^{99m}technetium pertechnetate through the heart and lungs, photographed from the Pho/Gamma Scintillation Camera, with a time-concentration curve of the pulmonary circulatory dynamics using the Data-Store/Playback Accessory and a dual-channel ratemeter/dual-pen chart recorder.

SETTING UP. The patient is positioned beneath the Pho/Gamma detector so that the heart and lungs are included within the field of view. For adults, a central venous catheter is inserted and the tip is advanced to the superior vena cava. For children, a percutaneous femoral venous puncture is performed.

ISOTOPE AND DOSE. 50 microcuries/lb. of ^{99m}Tc pertechnetate are injected as a bolus. This is followed by a sterile saline "flush." It is imperative that the tracer be administered as a bolus for proper interpretation of the pulmonary dilution curve.

DATA ACCUMULATION. Since the ^{99m}Tc pertechnetate is injected so close to the heart, serial hand-pulled scintiphotos are started immediately. Each exposure is for 1-2 seconds and no more than eight films are necessary. Alternatively, the automatic-sequencing 35mm camera may be used to obtain precisely timed sequential images.

The Data-Store/Playback Accessory plays an important role in the examination. The entire sequence is recorded in a high-resolution digital format (256 x 256 matrix) on the magnetic tape recording system. Subsequent replay of the tape allows reconstitution of the serial images at any desired frame rate and permits correction of film exposure factors to provide excellent scintiphotos. The study may be viewed on the system's variable-persistence oscilloscope during both original recording and upon tape replay.

The pulmonary dilution curves are obtained by choosing two separate areas-of-interest, one corresponding to the right lung field, the other to the left lung field. With this system's variable controls, these areas-of-interest may be rectangular or oval in shape. It is important, however, that these areas-of-interest correspond only to the lung fields, and no portion of the heart or great vessels should be included. Time-activity curves are generated with the dual ratemeter/recorder with a time constant of 0.5 seconds and a chart speed of 12 inches/minute.

CASE HISTORY. The clinical study on the opposite page is that of a seven-year-old child suspected of having a small left-to-right intercardiac shunt based on the characteristics of a systolic murmur. The child was not cyanotic. Following the diagnostic nuclear-medicine procedure, the patient was catheterized. A ventricular septal defect with a 1.2-to-1 left-to-right shunt was revealed as determined by standard dye dilution curves. In addition, there was a supervalvular obstruction of the pulmonary artery. Systemic pressures were observed in the right ventricle suggesting the diagnosis of an "Acyanotic Tetralogy of Fallot."

EVALUATION. The serial two-second images (Fig. 1) were produced upon replay of the Data-Store/Playback Accessory. The bolus of ^{99m}Tc pertechnetate is clearly seen in the inferior vena cava (0-2 sec.), having been injected into the right femoral vein. The tracer, thereafter, flows into the right atrium (2-4 sec.), then into the right ventricle and out through the pulmonary artery into both lung fields (4-6 sec.). Later frames show the return of the tracer to the left atrium, the left ventricle, and then out the aorta.

The pulmonary dilution curves were produced by adjusting the area-of-interest controls of the Data-Store/Playback Accessory, causing the areas-of-interest to correspond to the right and left lungs as indicated by the intensified areas seen on the representative scintiphoto (Fig. 2). The resulting pulmonary dilution curves (Fig. 3) show a rapid rise in count rate to a peak count rate C_1 at time T_1. $T_1 - T_0$ is the interval from time of rise onset to time of peak activity. At time T_2 ($T_2 - T_1 = T_1 - T_0$), count rate C_2 is determined from the curve. As shown, C_2 is 50 - 54% (C_2/C_1) of count rate C_1. These curves are abnormal and suggest the possibility of a left-to-right shunt. Normally, C_2/C_1 is less than 40% as shown by normal curves (Fig. 4).

CONCLUSIONS. The diagnosis of a left-to-right shunt was confirmed in this case, both at cardiac catheterization and at surgery.

An abnormal pulmonary dilution curve, it should be noted, does not indicate the anatomical location of the defect, nor does it indicate the severity of the left-to-right shunt. This cardiac dynamic study should be considered only as a screening procedure. In the event of an abnormal radionuclide pulmonary dilution curve, further diagnostic procedures are indicated.

O-241

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Nuclear Medicine Institute
6760 Mayfield Road
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June 7–12, 1971
August 30–September 4, 1971
November 8–13, 1971

ONE YEAR TECHNOLOGIST COURSE NUCLEAR MEDICINE

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Nuclear Medicine Institute
6760 Mayfield Road
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1971
April 12–July 2, 1971
July 6–September 24, 1971
September 27–December 17, 1971

1972
January 3–March 24, 1972
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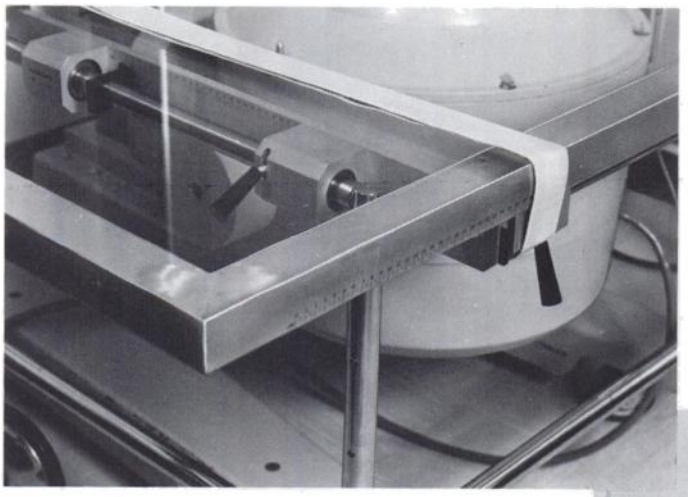

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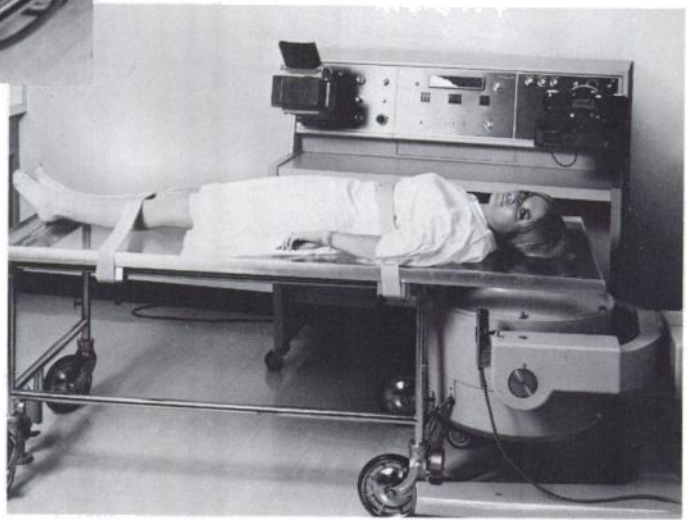

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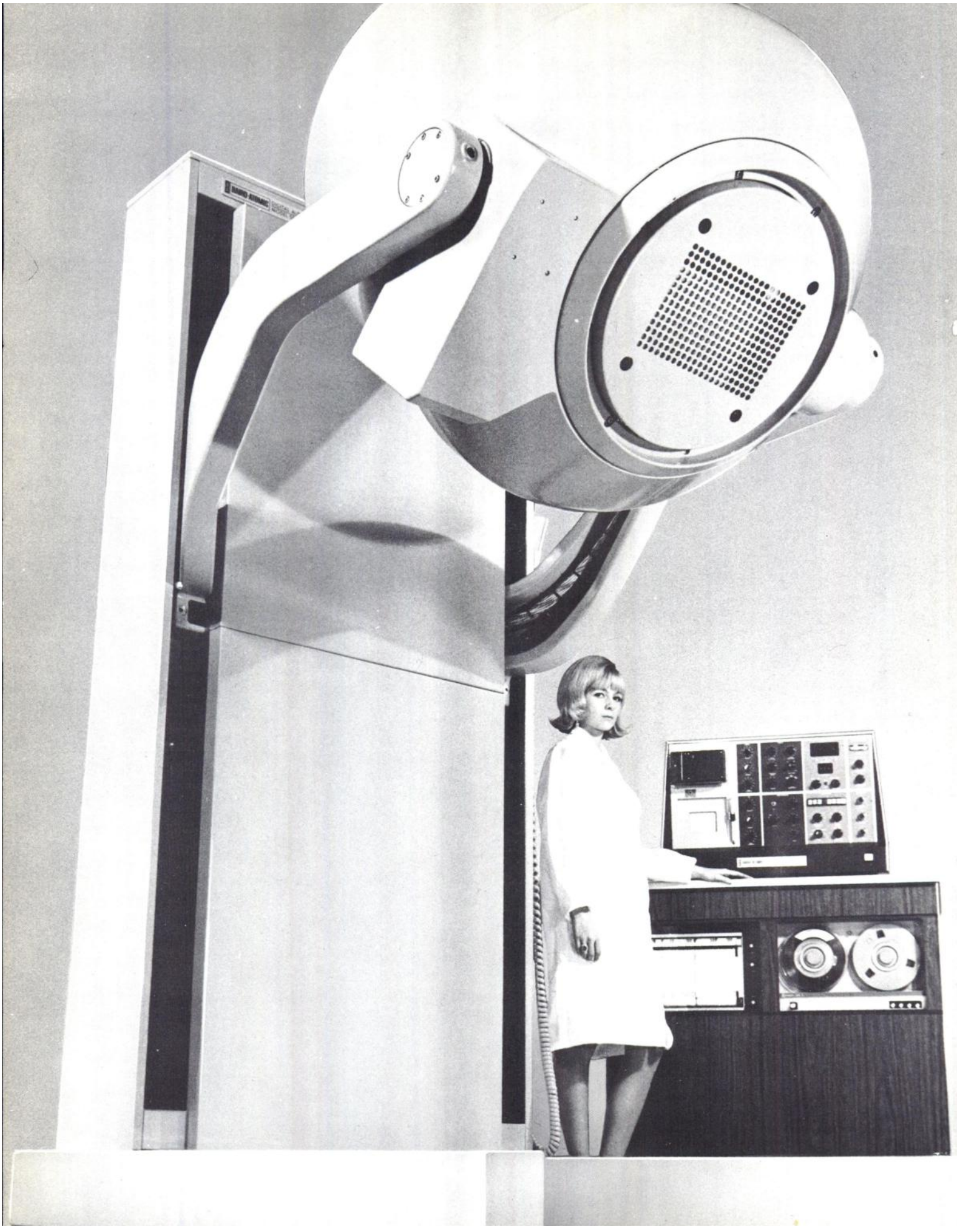

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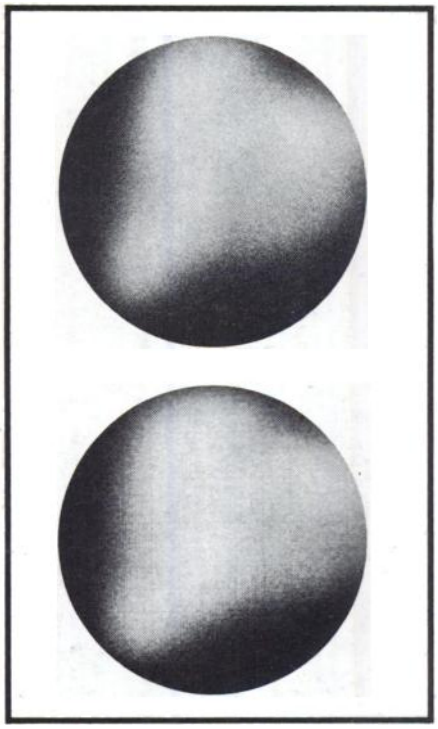
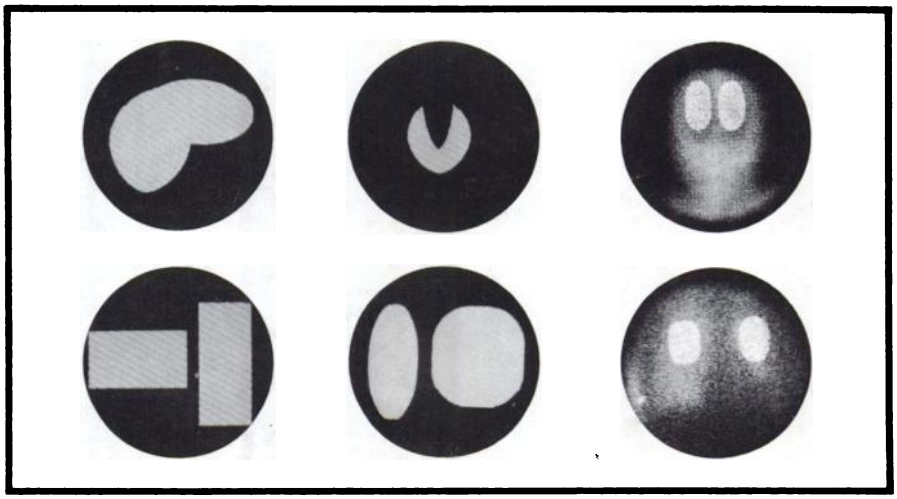


Normal Pho/Gamma analog display of image data (top). High-resolution recorded digital image played-back (bottom) demonstrates minimal raster artifact.

Components of the Data-Store/Playback Accessory: 1. Variable persistence oscilloscope. 2. Push-button control panel and microphone. 3. Data recorder. 4. Desk-height consolette for housing the data recorder and the required electronics.



Variety of selectable areas of interest processed from recorded data by Data-Store/Playback Accessory. Note total control of size, position, and shape of region of interest areas. O-238

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