

## when you want to "see" the liver!

### TECHNETIUM SULFIDE Tc 99m

**Indications:** For direct visualization of the liver and spleen.

**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. Radio-pharmaceuticals should be used only by physicians who are qualified by specific training approved by an individual agency or institution already licensed in the use of radio-isotopes.

**Precautions:** Care should be taken to ensure minimum radiation exposure to the patient as well as to all personnel. Although there have been no untoward reactions reported from the use of mannitol stabilized colloid, physicians administering this agent should be prepared to institute emergency resuscitation in the event of an anaphylactoid reaction. The absence of a

lesion in the scan does not necessarily rule out its existence.

### COLLOKIT

(KIT FOR TECHNETIUM SULFIDE Tc 99M)

**How Supplied:** Package of 6 units, each containing:

Vial 1: Sterile Thiosulfate—Mannitol Solution, 1 ml. Each ml. contains Mannitol 100 mg. and sodium thiosulfate 2.0 mg.

Vial 2: Sterile Hydrochloric Acid 0.25 N, 1 ml.

Vial 3: Sterile Buffer Solution, 2 ml. Each ml. contains potassium biphosphate 40.8 mg., sodium hydroxide 5 mg., and disodium edetate 1 mg. And accessory equipment.

### PERTGEN-99m

(TECHNETIUM Tc 99M GENERATOR KIT)

**How Supplied:** 50, 100, or 200 millicurie generators, and accessory equipment.

007221



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**NEW! This is the pair to see**

## **Announcing COLLOKIT™ KIT FOR TECHNETIUM SULFIDE Tc 99m**

Collokit is a "cold" kit that can be stored without refrigeration until you're ready to use it. Then, following directions, it takes just minutes to prepare a sterile, non-pyrolytic colloidal solution of Technetium Sulfide Tc 99m. Collokit offers many advantages:

- **Simplicity** (ease of handling)
- **Mannitol stabilizer** (patent pending)

- **Economy** (less cost than ready-made products)

- **Convenience** (individual units, each with all of the components for a day's use)

Collokit is specifically designed for use with Pertgen-99m. It is not recommended for systems with eluates containing oxidizing agents (such as sodium hypochlorite).

## **PERTGEN®-99m TECHNETIUM Tc 99M GENERATOR KIT**

**Fractional elutions** — the exclusive Abbott Metering Unit permits fractional elutions of the Pertgen-99m Generator allowing the preparation of high assay material using Collokit.

**Safety** — the protection afforded by the unique Rayshield™ (shown underneath the Pertgen-99m Generator), means that Pertgen-99m can be used on the lab bench —there's no need to hide this system behind

the bricks!

**Choice of calibration** — to best fit your needs, you can now order Pertgen-99m shipped on the weekend calibrated for Wednesday or Pertgen-99m shipped on Thursday calibrated for Tuesday.

**Collokit and the consistent and high yields of Pertgen-99 eluates provide an unbeatable combination!**

TM—Trademark.

# **Thyroid dysfunction? Pregnant? On the “pill”?**



# **CHARCOAT T-3. No fuss, no muss, no multiple pipetting or rinsing.**

You don't even have to throw in a sponge. □ What's more, CHARCOAT T-3 tests take only thirty minutes — start to finish — without complicated setups. You do everything in one little two-part vial. □ Merely pipette 0.5 ml of patient serum into each test vial, invert, incubate, centrifuge, and count the supernatant. □ But don't take our word for how simple and economical CHARCOAT T-3 kits are. Put one to



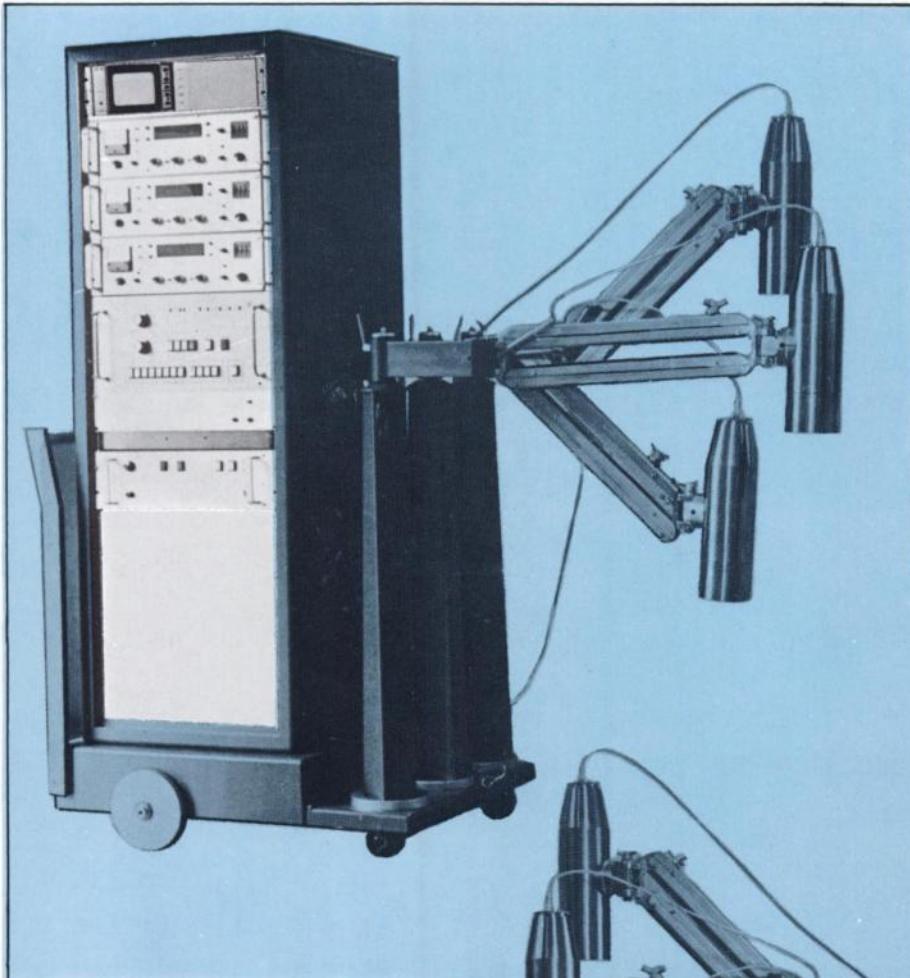
the test. A standard kit (13 test vials) is only \$20, and just a phone call away. Moreover, the extra long shelf-life of the CHARCOAT T-3 test kit makes quantity discount purchases practical. □ Ask about our Automatic T-3 Computer. Easy to use—no calculations. \$1680 sale or lease.



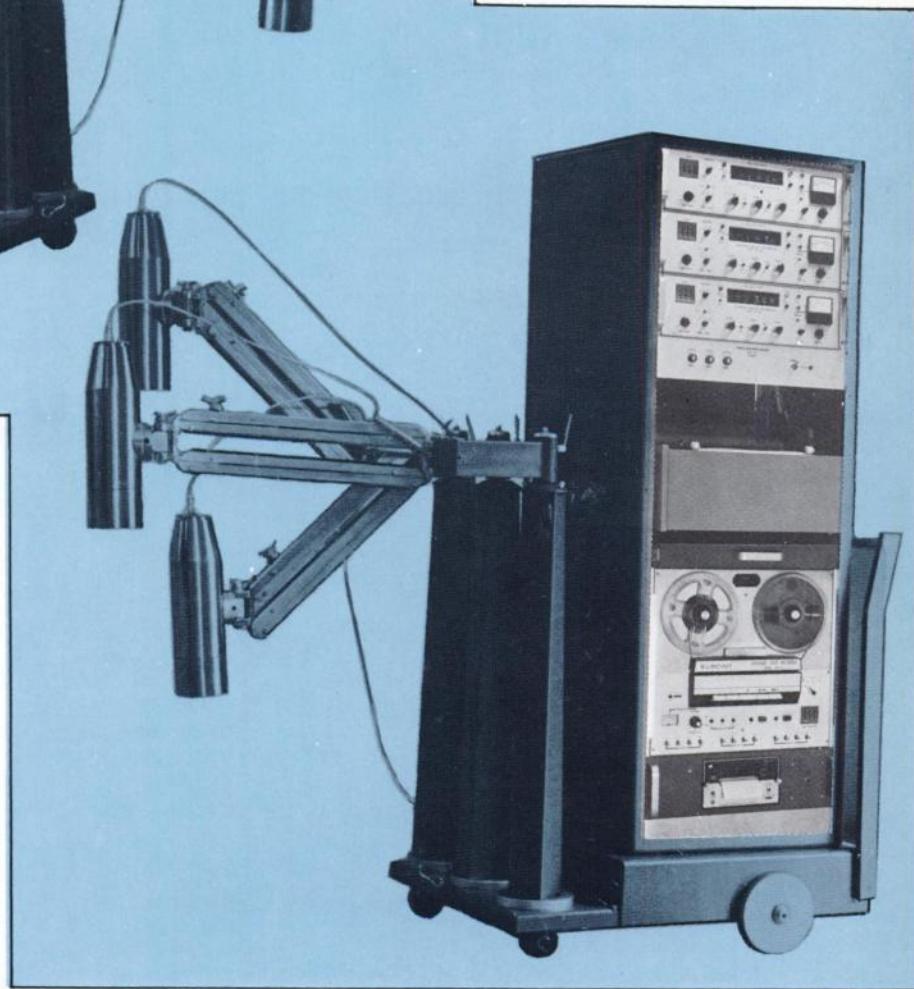
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# She's pregnant.

But if her doctor wasn't aware of it, and he scheduled a thyroid test, he could get the wrong answer.

In a study\* of 166 consecutively seen pregnant women, almost all of the euthyroid patients showed up as either hypothyroid or hyperthyroid, depending on the test used.

That's because pregnancy, like oral contraceptives and estrogens, can produce misleading results if only one test is used to determine thyroid function.

What's more, patients may knowingly or unknowingly give a false history. To prevent this, schedule both a T-3 test (Triosorb) and a T-4 test (Tetrasorb), which supplies the T-7 Value ( $T-3 \times T-4$ )—a highly reliable result:

When both test values are decreased, the patient is usually hypothyroid.

- When both test values are increased, the patient is usually hyperthyroid.
- When both test values are normal, the patient is usually euthyroid.
- When a patient is on oral contraceptives or is pregnant, the test values move in opposite directions.

Both Triosorb and Tetrasorb are *in vitro* tests providing accuracy, speed and convenience. They are available in disposable kits ready for use.

By multiplying the results of both tests, you arrive at the T-7 Value—a new level of confidence in thyroid diagnosis. In Godwin's study\*, when both T-3 and T-4 tests were given so that a T-7 Value could be determined, all of the euthyroid women appeared in the normal range.

010250

\*Godwin, Ira D., Scientific Exhibit, 17th Annual Meeting, Society of Nuclear Medicine, Washington, D.C., July 6-12, 1970.

## The T-7<sup>TM</sup> Value minimizes misleading test results for thyroid activity. ( $T-3 \times T-4 = T-7$ Value)



**TRIOSORB®-131 or  
TRIOSORB®-125**

T-3 Diagnostic Kit

TM—Trademark



**TETRASORB®-  
125**

T-4 Diagnostic Kit

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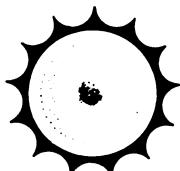




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# **WHEN THE PILL OR PREGNANCY DISTORTS THYROID TESTS**

## **Res-O-Mat™ Free Thyroxine (FT4) Index— easiest way to a more reliable determination of thyroid function**

The Res-O-Mat FT4 Index comes closest to being the most reliable assessment of thyroid function with the easiest procedure. The combined use of Mallinckrodt's Res-O-Mat T3 and Res-O-Mat T4 Tests gives an FT4 Index that compensates for conditions of pregnancy, estrogen medication, and other factors affecting this measurement.

It is so much easier and time-saving because the Res-O-Mat T3 and T4 strips simplify procedures. In the T3 measurement the strip eliminates all pipetting except initial transfer of serum to the vial. There is no washing, no critical temperature control, and the T4 procedure requires no evaporation or ice bath. There are fewer counting steps. Merely rotate the vials, remove the strips, and count the serum directly.

The Res-O-Mat FT4 Index is the ratio of Res-O-Mat T4 and T3 values. The FT4 index has been shown to have a high degree of correlation with the blood level of free thyroxine.\* And this simple Res-O-Mat FT4 method makes this determination a routine laboratory procedure.

Send for complete information on the Res-O-Mat FT4 Index, or contact your Mallinckrodt sales representative.

\*F. Clark and D. B. Horn, Journal of Clinical Endocrinology, 25:39-45, Jan. 1965.



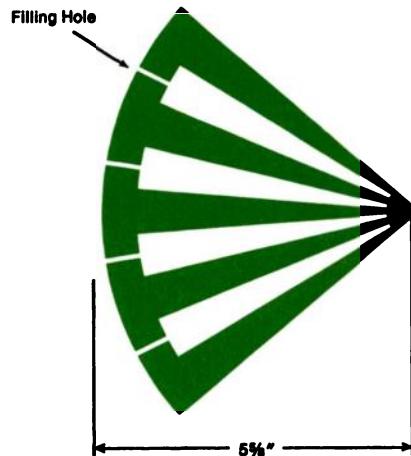
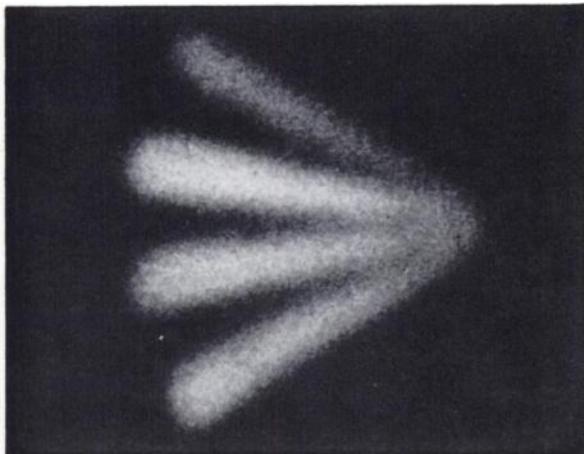
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# The Picker Dynacamera 2:

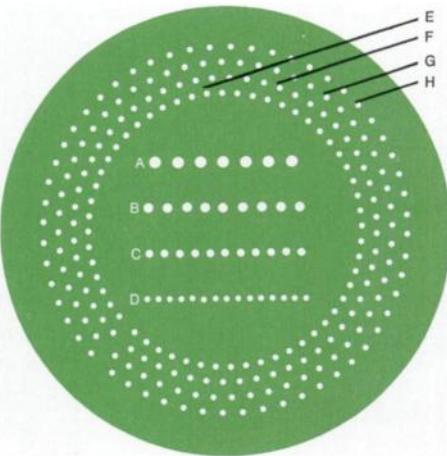
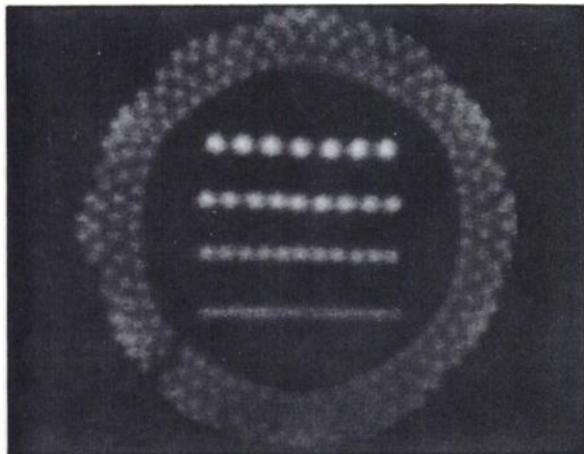
The scintillation camera with both high resolution and a large *undistorted* field of view:

## Resolution



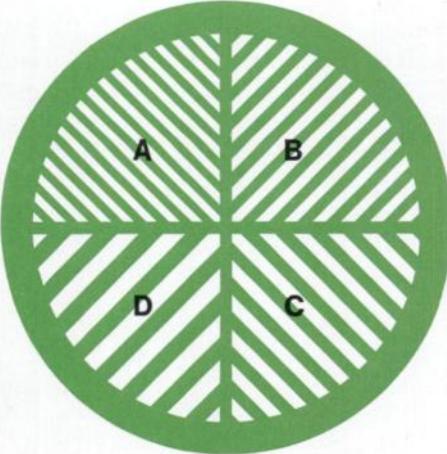
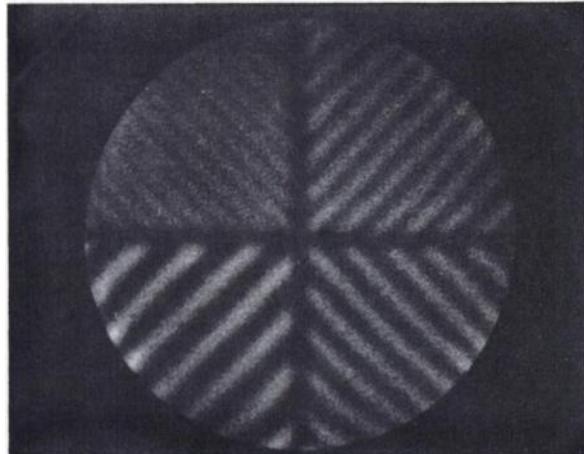
Phantom description: 3/8" thick lucite with four 1/8" thick radiating voids filled with activity.

## Resolution and large undistorted field of view



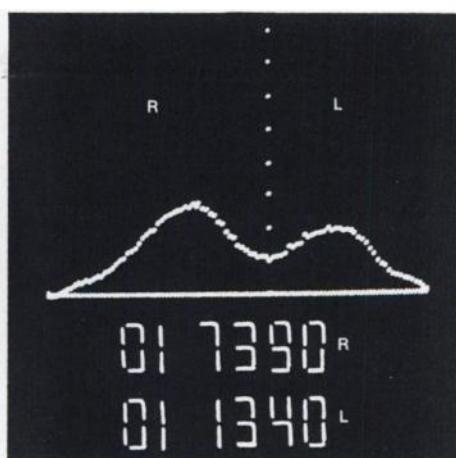
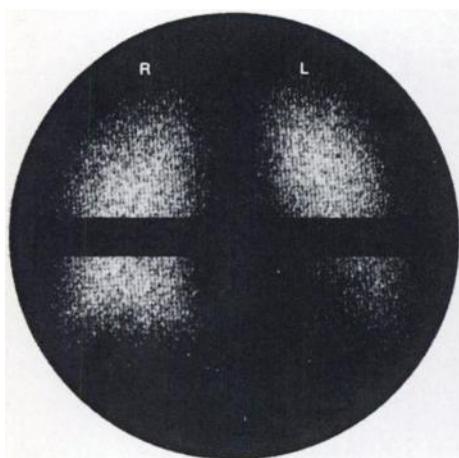
Phantom description: 1/8" thick by 15" dia. lead circle mounted between two circular pieces of 1/8" thick lucite.  
A. 3/8" dia. 3/8" space  
B. 5/16" dia., 5/16" space  
C. 1/4" dia., 1/4" space  
D. 3/16" dia., 3/16" space  
E. 3/16" dia. holes with centers on 9" dia. circle.  
F. 3/16" dia. holes with centers on 10" dia. circle.  
G. 3/16" dia. holes with centers on 11" dia. circle.  
H. 3/16" dia. holes with centers on 12" dia. circle.

## Resolution and large undistorted field of view



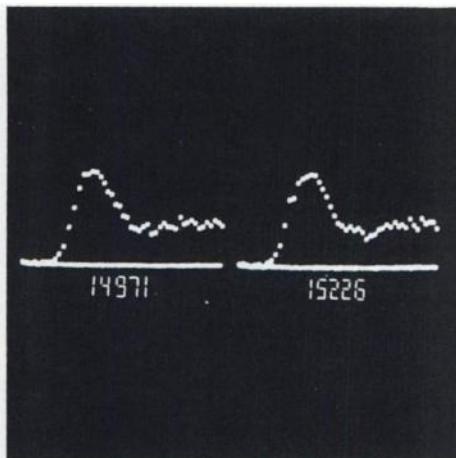
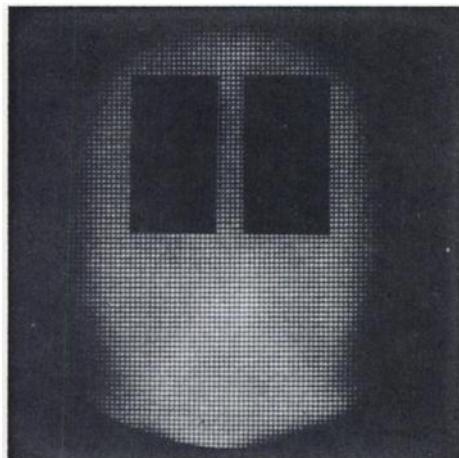
Phantom description: 1/8" thick lead bars mounted between two circular pieces of 1/8" thick lucite. A 14" outside diameter, 1" wide, lead ring surrounds the bars.  
A. 1/4" bars, 1/4" spaces  
B. 5/16" bars, 5/16" spaces  
C. 3/8" bars, 3/8" spaces  
D. 1/2" bars, 1/2" spaces

## The scintillation camera with more clinically useful and proven capabilities:



### Quantification of static studies (a built-in capability)

Dynacamera 2 is the scintillation camera that provides both Scintigrams and the total count in an organ or any portion of it.



### Quantitative regions of interest (a built-in capability)

Dynacamera 2 permits the selection of two regions of interest and simultaneously displays both count rate vs. time and total integrated counts in both regions.



### Quantitative dynamic studies (a built-in capability)

Dynacamera 2 performs quantitative dynamic function studies in selected regions without the need for modifications, accessory systems, or extra cost and produces digital histograms simultaneously for quantification of each discrete phase.

Please call your local Picker technical specialist for information about other Dynacamera 2 features or to learn about Dynacamera 3, the scintillation camera with a built-in image enhancement system. Or write Picker Medical Products Division, Dept. N, 595 Miner Road, Cleveland, Ohio 44143.

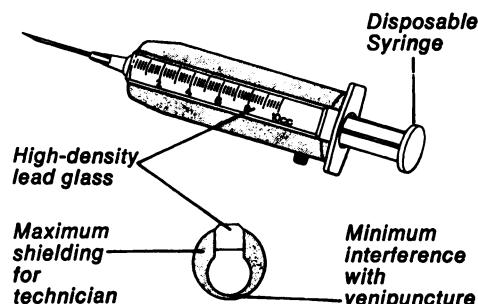
**PICKER**  
The "single source responsibility" company.

# GAMMA VUE™ SYRINGE SHIELD\*

**Protects your fingers and hands  
from radioactive doses  
administered by syringe**

- Reduces Tc-99m exposure by factor of 50.
- Maximum shielding for technicians.  
Tapered lead wall assures minimum interference with venipuncture.
- Uses standard disposable syringes.

"Gamma Vue" Syringe Shields reduce the radiation hazard from syringes containing millicurie quantities of radioisotopes. Though designed for use with Technetium-99m, they have sufficient lead thickness to reduce the ionizing radiation from other isotopes to tolerable limits. For example, where 8 mc of Tc-99m would normally expose the fingers to a 5 R/hr hazard, the "Gamma Vue" reduces this by a



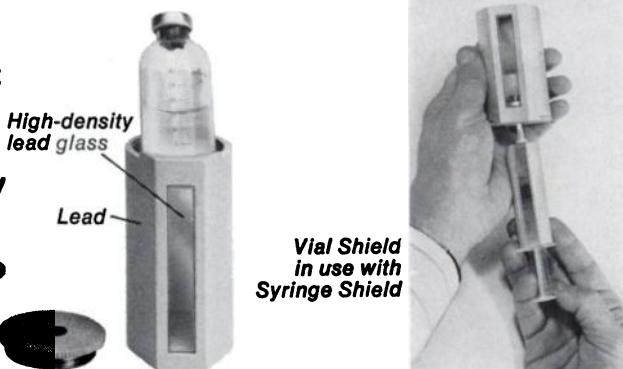
factor of up to 50. For I-131, the dose rates are reduced 4-fold.

Consists of a 3/16" lead cylinder with a high-density lead-glass panel for viewing the syringe calibration marks. Tapered lead wall assures minimum interference with venipuncture. Each shield will accept standard disposable syringes. When ordering, please state the size and brand name (or mfr.) of the syringe you will be using.

Shield Model No.	56-265	56-262	56-263	56-260	56-261
Capacity	1 cc <i>Tuberculin</i>	2½ cc	5 cc	10 cc	20 cc
Weight	3 oz.	4 oz.	5 oz.	9 oz.	13 oz.
Price	\$40.00	\$36.00	\$37.00	\$38.00	\$42.00

# GAMMA VUE™ VIAL SHIELD\*

**Lets you handle, dispense and view  
the contents of radioisotope  
containers—without removing  
them from their shields**



56-232 "Gamma-Vue" Vial Shield has a 1/4" lead wall; ideal for low-energy gammas such as Tc-99m. Accepts vials up to maximum 3 1/2" high and 1 1/2" D. Measures 4" high x 2" O.D. Weighs 3 lbs.....\$75.00

56-234 "Gamma Vue" Vial Shield has a 1/2" lead wall. Holds containers up to 2 1/4" high and 1 1/2" D. Measures 3" high x 3" O.D. Weighs 5 lbs.....82.50

## IMMEDIATE DELIVERY

ALSO SEND FOR NEW CATALOG 70-B

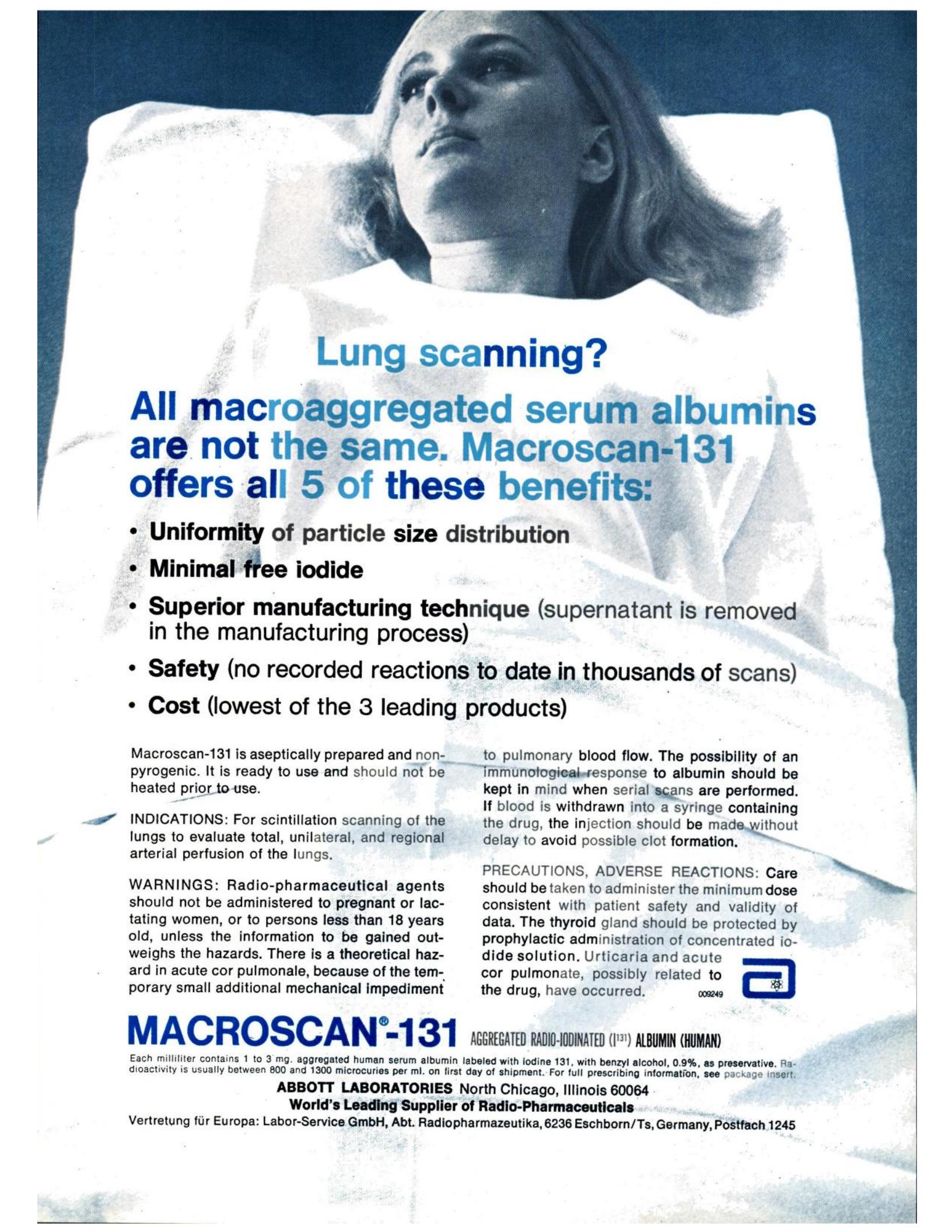
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\*Patent Pending



## 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 pulmonale, possibly related to the drug, have occurred.



## MACROSCAN®-131

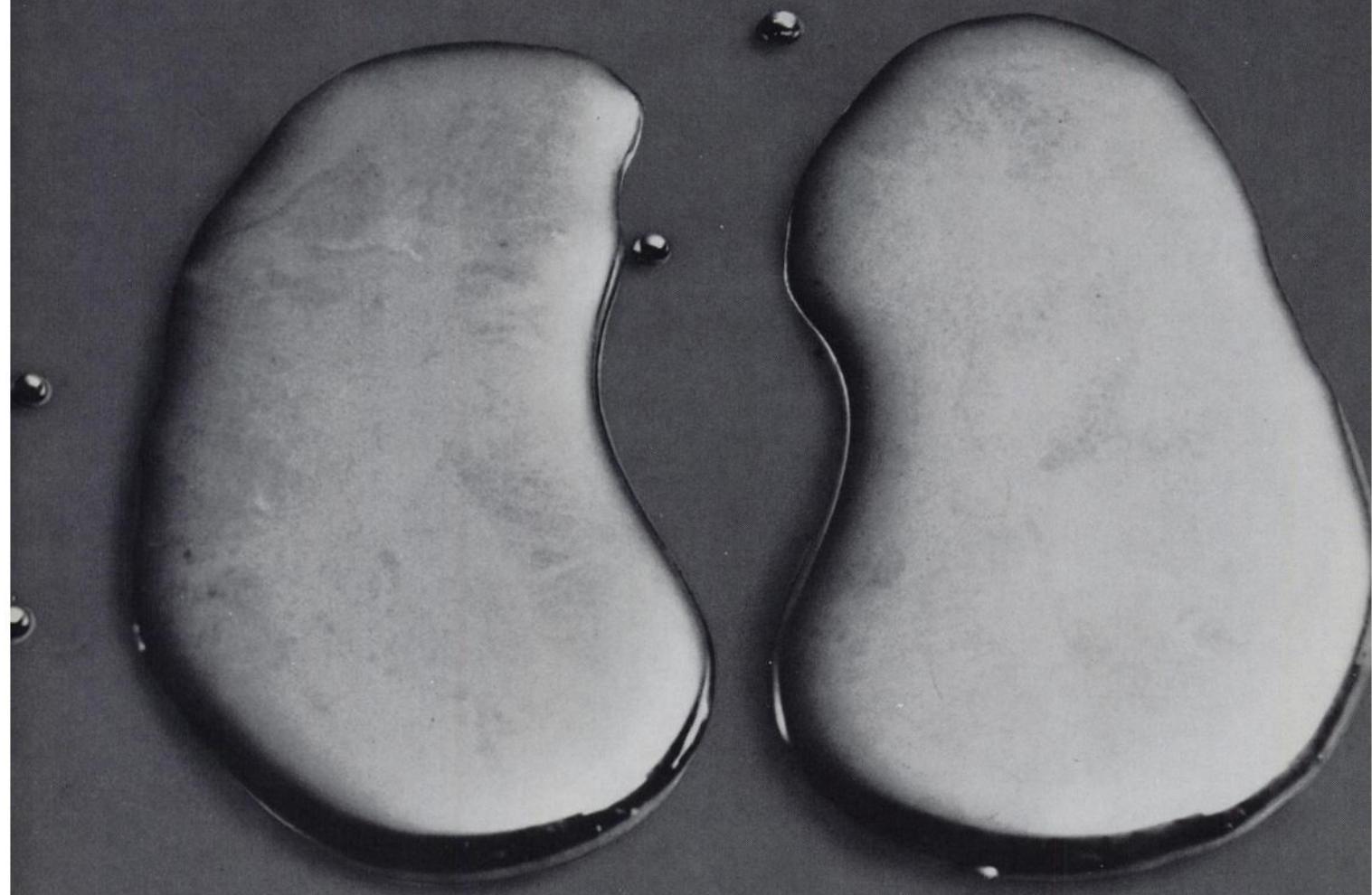
Each milliliter contains 1 to 3 mg. aggregated human serum albumin labeled with iodine 131, with benzyl alcohol, 0.9%, as preservative. Radioactivity is usually between 800 and 1300 microcuries per ml. on first day of shipment. For full prescribing information, see package insert.

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

**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  $^{99m}\text{Tc}$  eluate from your Squibb generator.

After intravenous injection,  $^{99m}\text{Tc}$ -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 radiomericurial 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  $^{99m}\text{Tc}$  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 (Tech-

netium 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  $^{99m}\text{Tc}$  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.

$^{99m}\text{Tc}$ -DTPA,  $^{99m}\text{Tc}$ -S colloid, and sodium pertechnetate  $^{99m}\text{Tc}$  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  $^{99m}\text{Tc}$ -DTPA or  $^{99m}\text{Tc}$ -S colloid are occasionally necessary in such patients. The low internal radiation dosage of  $^{99m}\text{Tc}$ -DTPA makes it a very satis-

factory agent when scans of the kidney, brain, or blood vessels are necessary in young patients. The low internal radiation dosage of  $^{99m}\text{Tc}$ -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  $^{99m}\text{Mo}$  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  $^{99m}\text{Tc}$  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  $^{99m}\text{Tc}$  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  $^{99m}\text{Tc}$  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  $^{99m}\text{Tc}$  activity and for the possible presence of  $^{99m}\text{Mo}$ . Material containing more than 5 microcuries of  $^{99m}\text{Mo}$  per dose of  $^{99m}\text{Tc}$  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  $^{99m}\text{Tc}$  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  $^{99m}\text{Tc}$  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  $^{99m}\text{Tc}$  pertechnetate scan than on a radiochloromerodrin scan, and because the choroid plexus may be visible, it is particularly important to recognize the appearance of a normal brain scan when  $^{99m}\text{Tc}$  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  $^{99m}\text{Tc}$  are consistently compatible and meet the standards of Technetope II.

**SQUIBB**

Division of Nuclear Medicine  
New Brunswick, New Jersey 08903



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Behold the "mini-scan!" Makes possible whole body scans recorded 5-to-1, all on single, comprehensive, 14" x 17" sheets of film with no loss in diagnostic quality or detail, and a big gain in efficiency.

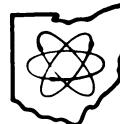
Ohio Nuclear series 84 radioisotope scanners equipped with this remarkable option, not only provide basic 1:1 scale recordings, but 2:1 and 5:1 minified recordings. This avoids serial scan examination and consolidates diagnosis in a compact, more perceptible and uniform visual field.

5:1 rectilinear field reduction capability is equivalent to increasing count rate by a factor of 25, which in turn, affords the possibility for corresponding increases in scan speed per unit area of examination.

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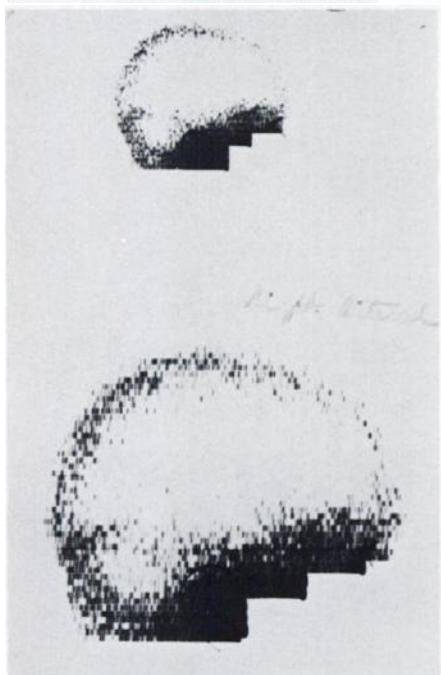
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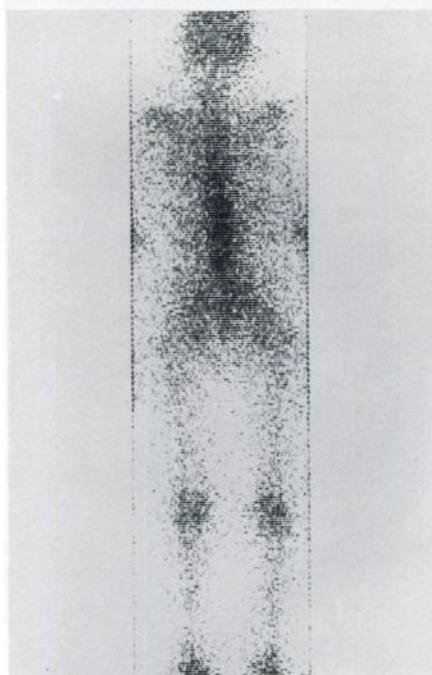


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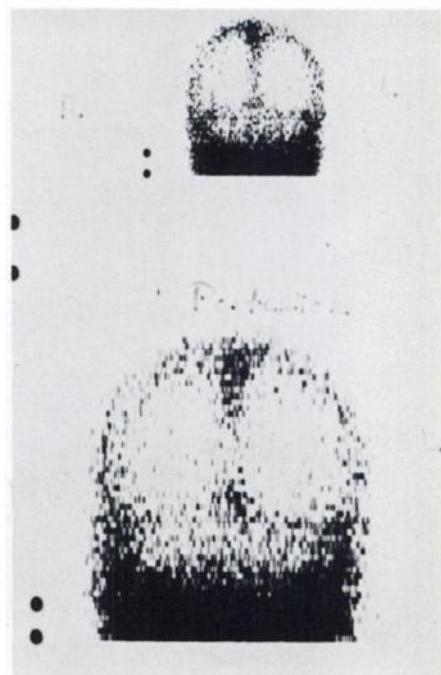
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Brain scan:  
1:1 and 2:1 right lateral.  
Contrast enhancement 60%.  
Typical speeds 250 to 350 cm/min.

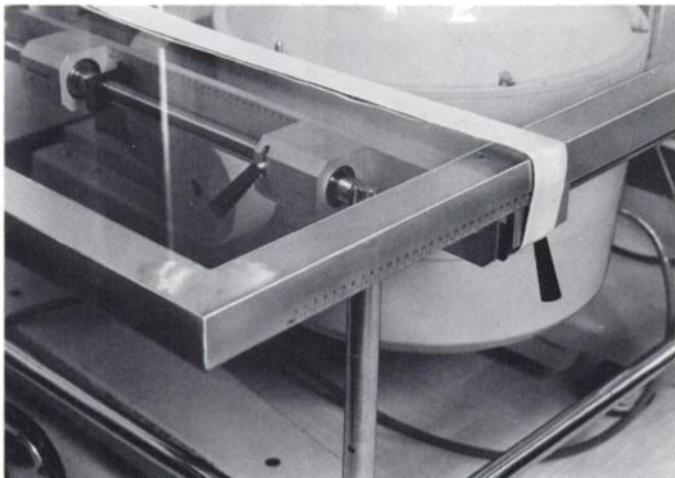


Whole-body bone scan:  
Typical speeds 400 to 700 cm/min.



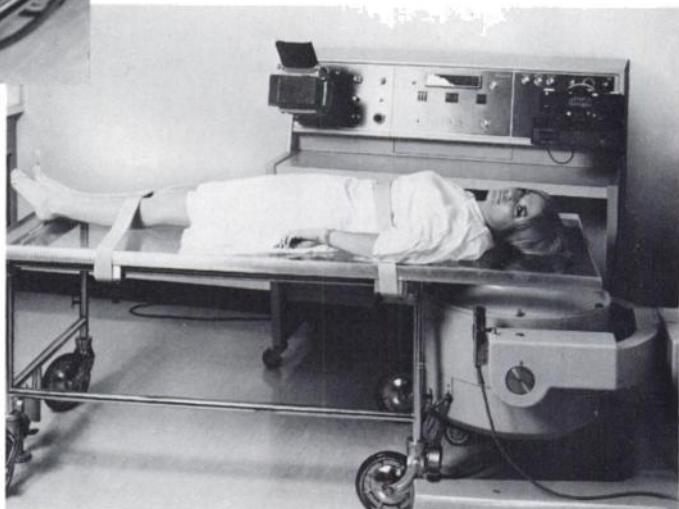
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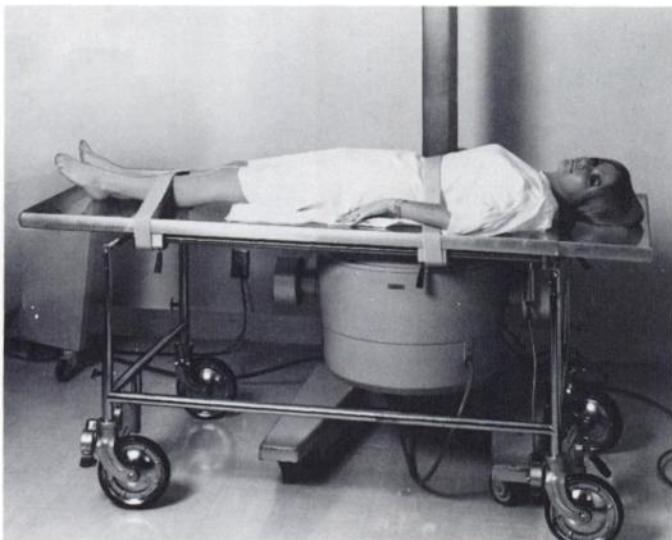


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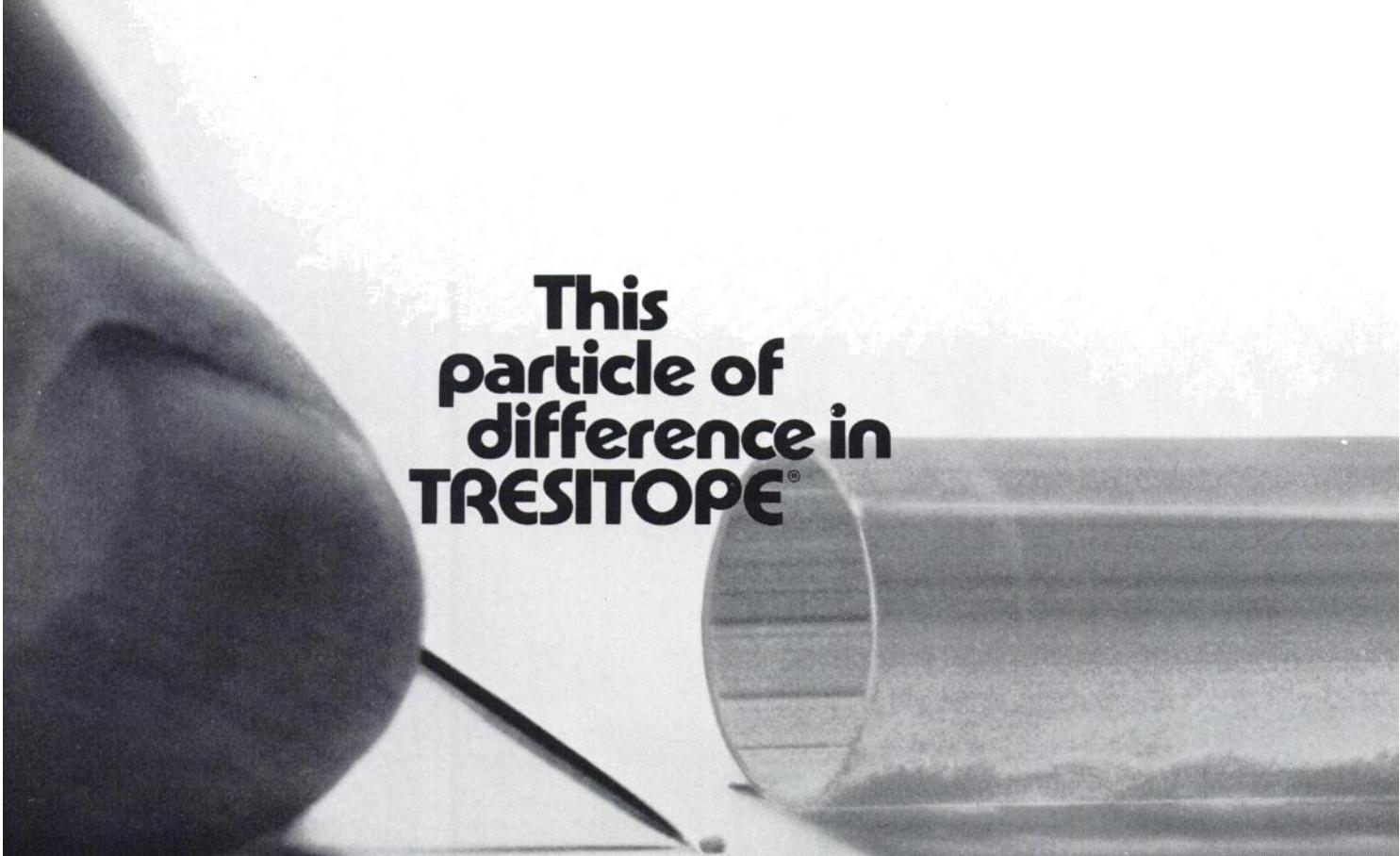
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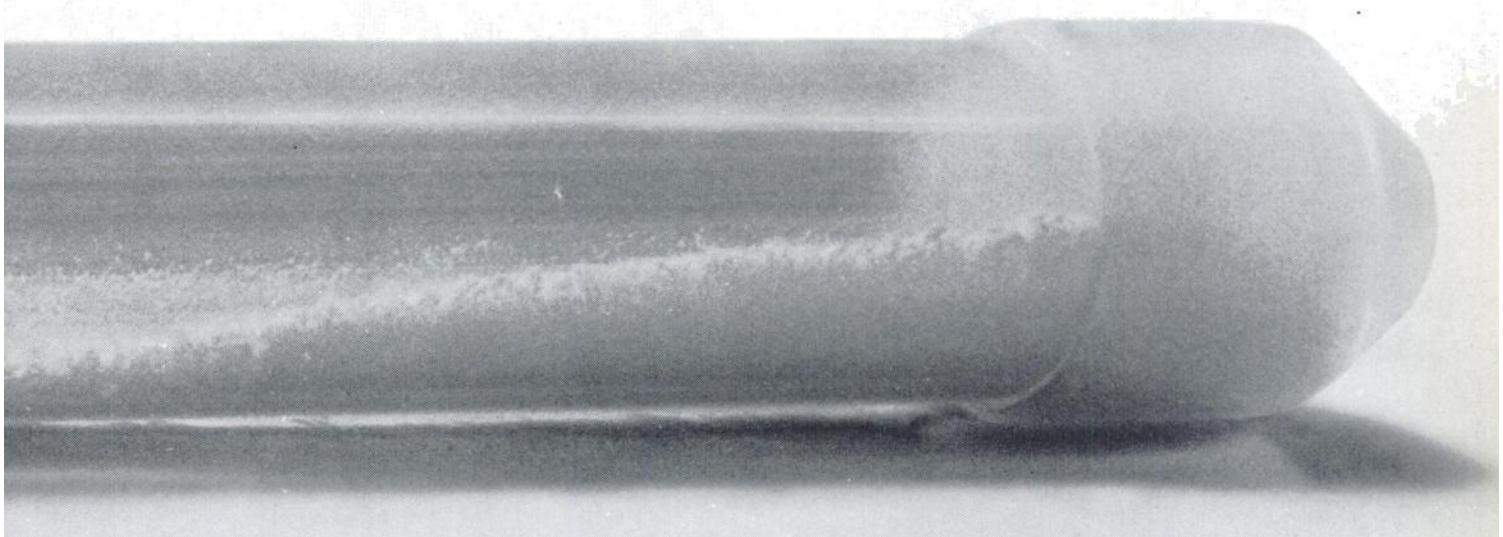
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tion, it should not be used as the sole basis for such an evaluation. In any patient, the clinical state is probably the best indication of thyroid status, and any laboratory test must be interpreted with caution when test results do not agree with clinical evidence.

There is a Tresitope Diagnostic Kit to meet your needs. The 12-test kit containing 10 light-resistant (amber) vials of solution for serum testing, plus 2 vials for use with reference samples, is designed to save refrigerator space. The vials of radioactive test solution are packaged separately and are the only parts requiring refrigeration. A handy sty-

rofoam platform holds the vials. One end of the platform is modified to facilitate suction washings of the resin powder.

The Tresitope Diagnostic Kit is also available as a 105-test kit and a bulk vial kit. The 105-test kit contains 100 light-resistant (amber) vials of solution for serum testing, plus 5 vials for use with reference samples. The vials of radioactive test solution are packaged separately with these two kits and are the only parts requiring refrigeration. Included is a sufficient supply of tubes of resin powder and individual droppers for each test.

The bulk vial kit contains a 60 ml. bottle of test so-

lution with a sufficient number of plastic tubes of resin powder to perform at least 105 tests.

#### IMPORTANT

Use appropriate radiation precautions in handling, identifying and discarding all radioactive material. Remember that minute amounts of radioactivity remain on components used in the test, including the styrofoam platform when it is used in performing the test, and particularly when the Tresitope Suction Method is used for a number of tests.

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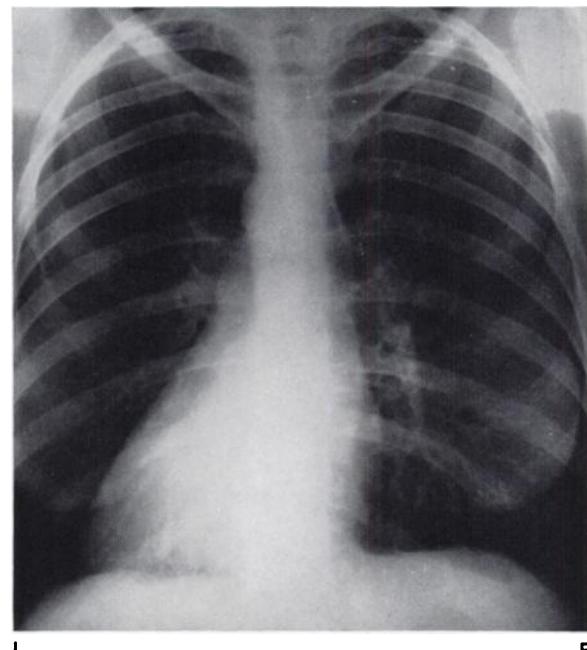
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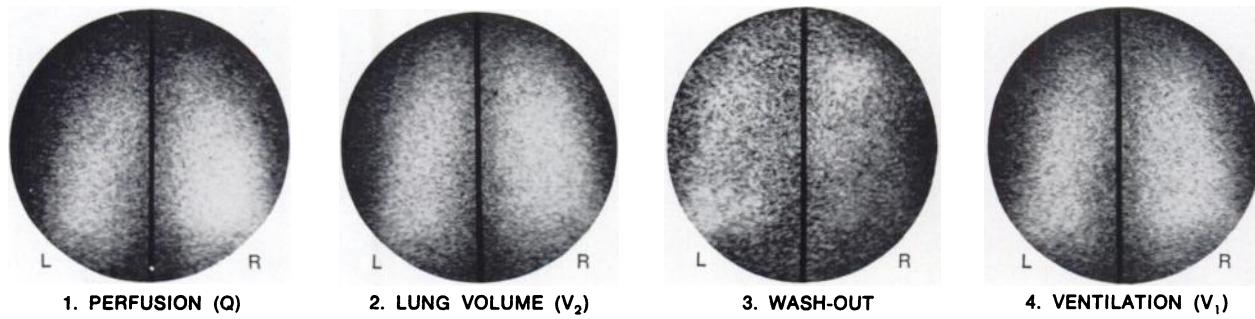
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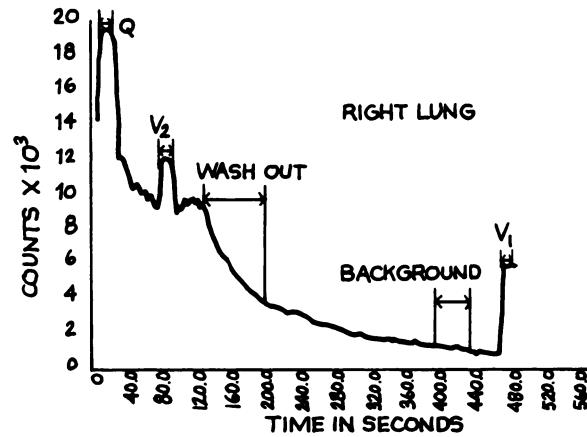
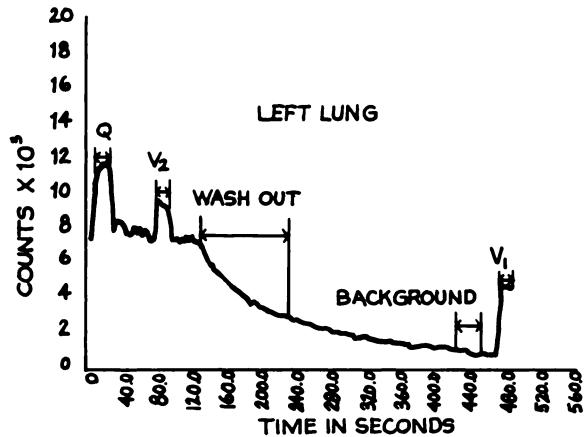
THE PHO/GAMMA SCINTILLATION CAMERA.



SERIAL SCINTIPHOTOS. POSTERIOR VIEW.



TIME-ACTIVITY HISTOGRAMS.



# The Pulmonary Study

## Evaluation of Pulmonary Perfusion and Ventilation with the Nuclear-Chicago Pho/Gamma® Scintillation Camera

This technique for dynamic regional pulmonary evaluation uses  $^{133}\text{Xenon}$  and the Pho/Gamma Scintillation Camera. The camera is equipped with the diverging hole collimator, allowing the entire lung field to be visualized.

**SETTING-UP.** The collimator is placed against the posterior thorax. Positioning flexibility of the Pho/Gamma detector permits this study to be performed with the patient in either the upright or supine position, thus accommodating even the patient with limited or no mobility.

**ISOTOPE AND DOSE.** The clinician administers 30 mC of  $^{133}\text{Xe}$  in sterile solution intravenously as a bolus injection to an antecubital vein. The patient exhales the xenon into a spirometer; he also rebreathes from the spirometer, thus providing data for determination of ventilation.

**DATA ACCUMULATION.** Serial scintiphotos are taken in the divided output mode, each representing approximately 60,000 counts in a 10-15 second period. (Note that Pho/Gamma can be operated on either a preset-time, preset-count, or preset-time/count basis as desired.) Also, as illustrated, time-activity histograms were made using a dual-channel ratemeter/dual-pen chart recorder.

If desired, this data could have been recorded in high-resolution digital form, on the Nuclear-Chicago Data-Store/Playback Accessory, or in digital form on the CDS-4096 Clinical Data System. Both of these system accessories allow stored patient data to be replayed, processed and manipulated in a variety of

ways to produce additional qualitative and quantitative data.

**EVALUATION.** For comparison purposes, the standard chest radiograph on the opposite page shows a patient presented with mild dyspnea. The four serial scintiphotos illustrate the various stages of the pulmonary study. Finally, the recorder plots of each lung constitute time-activity histograms of a complete 8-minute study.

In each histogram, the initial rise indicates passage of xenon into the lungs. Breath-holding at this time permits accumulation of data for determination of regional perfusion ( $Q$ , scintiphoto 1). Then, rebreathing from the spirometer to equilibrium is followed by a second deep breath to obtain data on lung volume ( $V_2$ , scintiphoto 2). Wash-out follows on expiration (scintiphoto 3), after which a final deep breath is taken to determine regional ventilation of a single breath ( $V_1$ , scintiphoto 4).

**CONCLUSIONS.** The several data presentations shown here demonstrate that in this case blood flow to the left lung is considerably less than to the right lung. The third scintiphoto shows an irregular pattern of delayed wash-out, characteristic of obstructive lung disease.

This Pho/Gamma  $^{133}\text{Xenon}$  technique has been routinely performed on a large number of patients with a variety of lung disorders. It is felt that this data, when augmented with other diagnostic information, will assist the physician in making more definitive diagnoses. The results illustrate the severity of the disease states to be evaluated as well as the effectiveness of treatments indicated for the specific disorder.

## Nuclear Reviews

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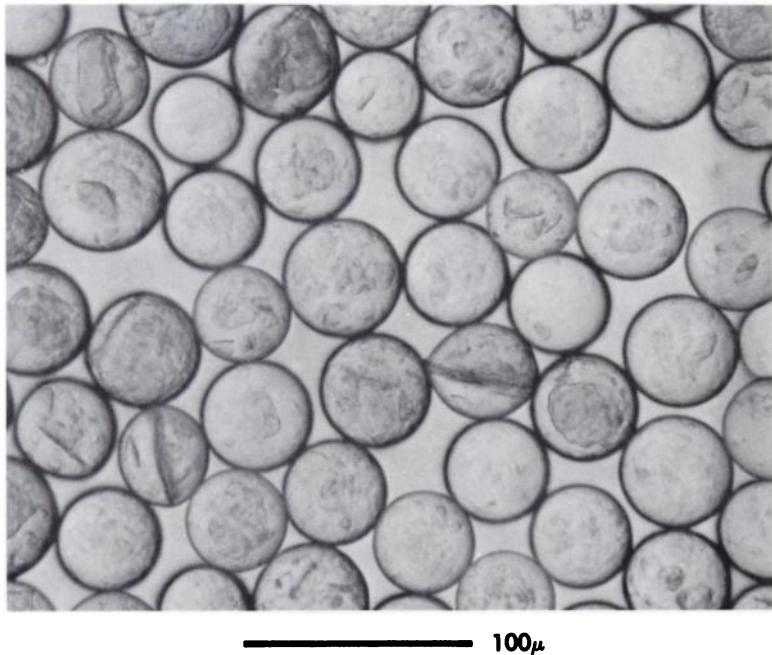


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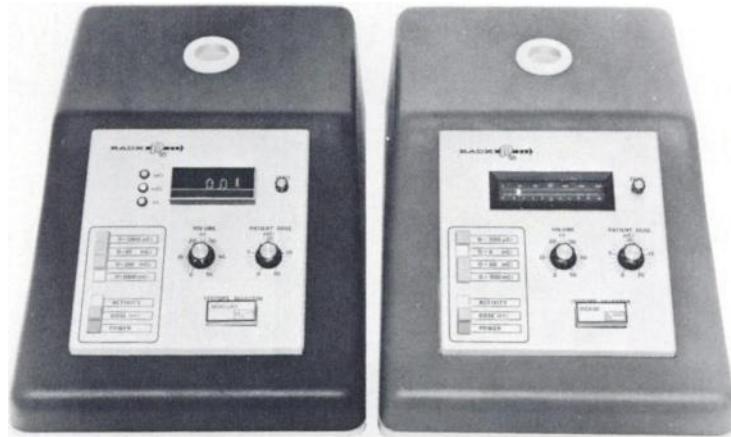
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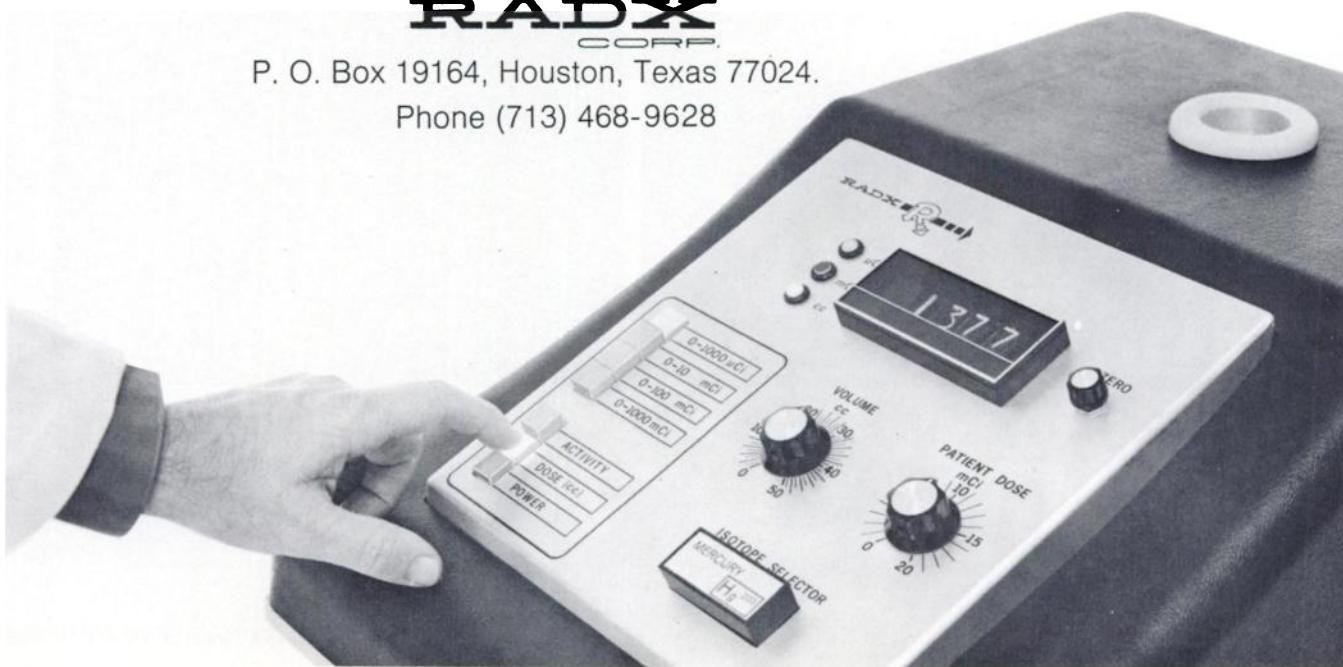
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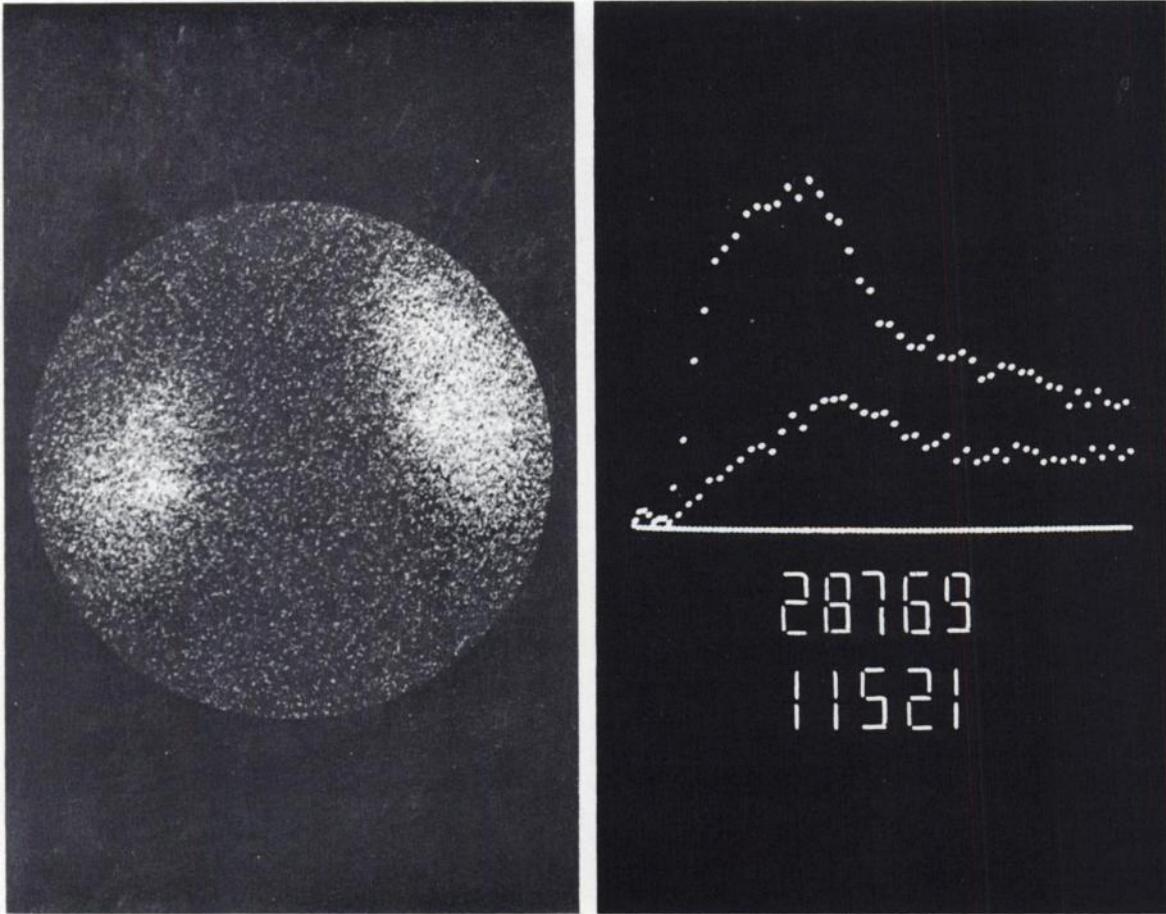
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**ACCEPTING APPLICATIONS FOR RESIDENCY** training in nuclear medicine at Homestead Hospital, Pittsburgh, Penna. Write to: Yen Wang, M.D., D.Sc. (Med.) Dept. of Radiology, Homestead Hospital, Homestead, Penna. 15120.

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**CHIEF NUCLEAR MEDICINE TECHNOLOGIST: ARRT-R.T.N.M.** Three years experience with active department affiliated with teaching institution. Reply to Box 1001, Society of Nuclear Medicine, 211 E. 43rd St., New York, N.Y. 10017.

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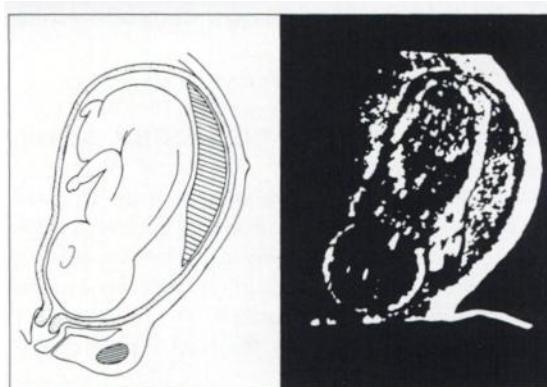
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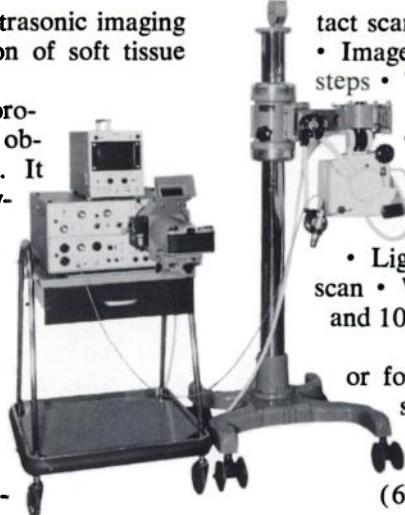


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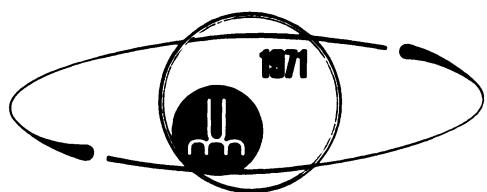
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# FIRST WORLD CONGRESS OF NUCLEAR MEDICINE AND BIOLOGY

## ANNOUNCEMENT

The First World Congress of Nuclear Medicine & Biology will take place in Montreal, Canada, between August 30 and September 4, 1971.

The Congress is sponsored by the WORLD FEDERATION OF NUCLEAR MEDICINE & BIOLOGY and by the SOCIETY OF NUCLEAR MEDICINE (U.S.A.) for all matters concerning the scientific program.

The WORLD FEDERATION OF NUCLEAR MEDICINE & BIOLOGY is a nonpolitical nonprofit organization of professional and academic nature, founded in 1967. Membership in the Federation comprises the national societies of nuclear medicine & biology, as well as technical affiliates, representatives of organizations involved in the technical developments of biomedical uses of radionuclides.

The scientific program of the Congress is expressed by its theme:

### "NUCLEAR MEDICINE—THE SECOND GENERATION"

The thematic program will attempt to evaluate the progress achieved by biomedical specialties during the past generation, as well as the contribution of nuclear sciences to this progress. There will be a number of panels covering the major clinical and fundamental aspects, as well as some timely topics, such as aerospace medicine, environmental medicine, etc. Other panels will be devoted to educational problems in the field of nuclear medicine. The conclusions of the panels will be discussed in a plenary session, where the broad lines of development will be sketched and the most urgent needs will be defined.

Other specialized subjects will be treated in symposia, where the broad lines of development analyzed in the thematic program will be replaced by analysis in depth of a well delimited technical subject. A number of topics are being examined by the Scientific Program Committee, such as computer problems in nuclear medicine, high resolution radioautography, trace elements, etc.

Free communications will be accepted, insofar as they report original contributions or new developments in radionuclidian procedures. Also, a limited number of films or video tapes could be accepted, when specific techniques are presented.

Technical and commercial exhibits are accepted; the administration of the Society of Nuclear Medicine (U.S.A.) is in charge of the arrangements with the organizations who contemplate such exhibits.

Persons interested in attending the Congress and in contributing to the scientific program are requested to apply for the information form, either at the Administrative Office of the Society of Nuclear Medicine, 211 E. 43rd St., New York, N.Y. 10017, or to the:

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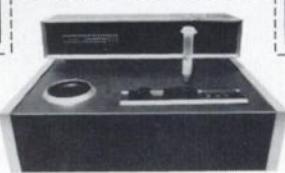
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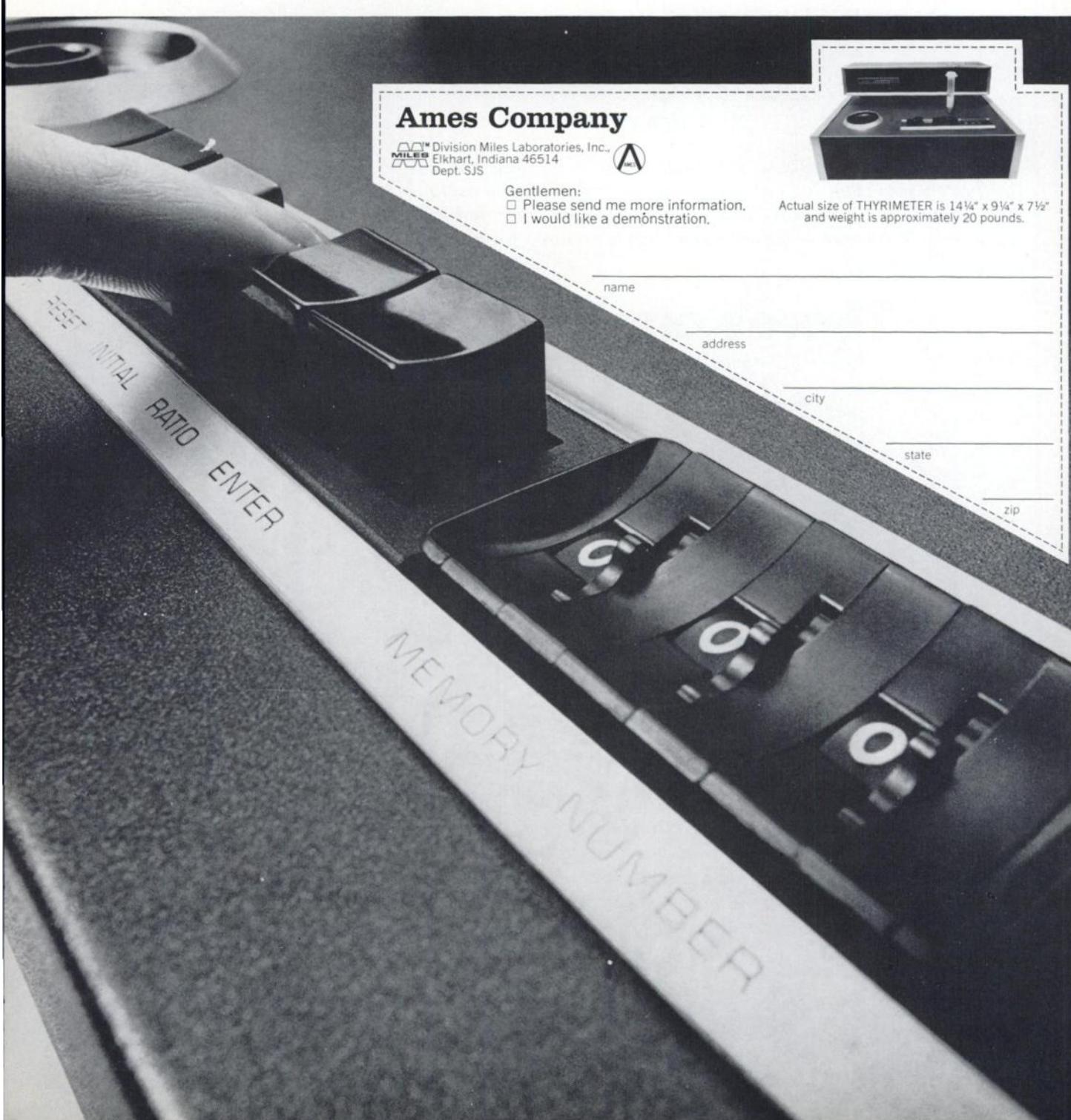
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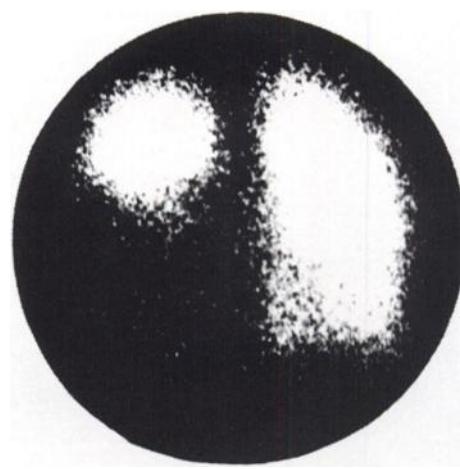
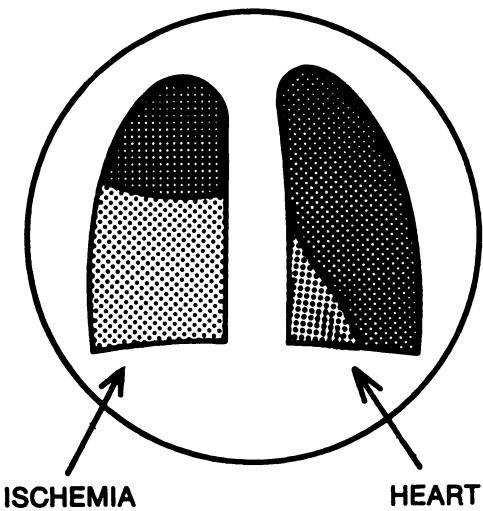
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# Pulmonary Embolism?

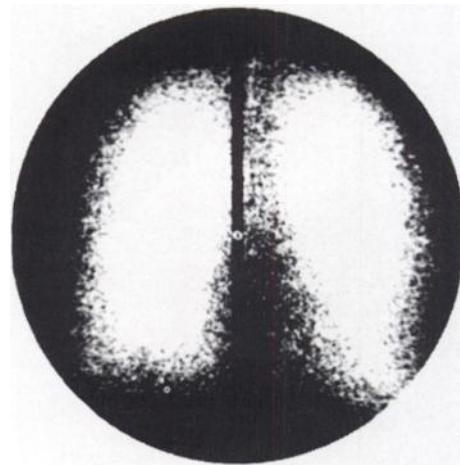
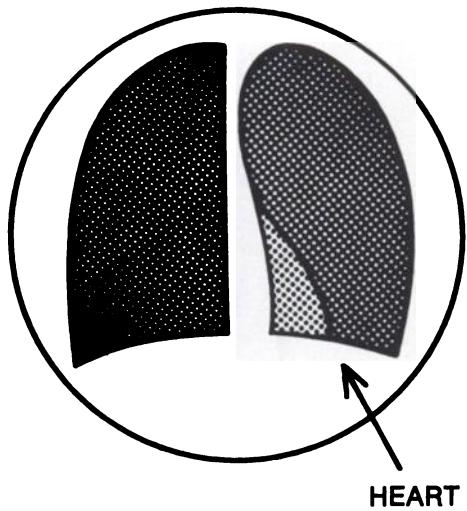


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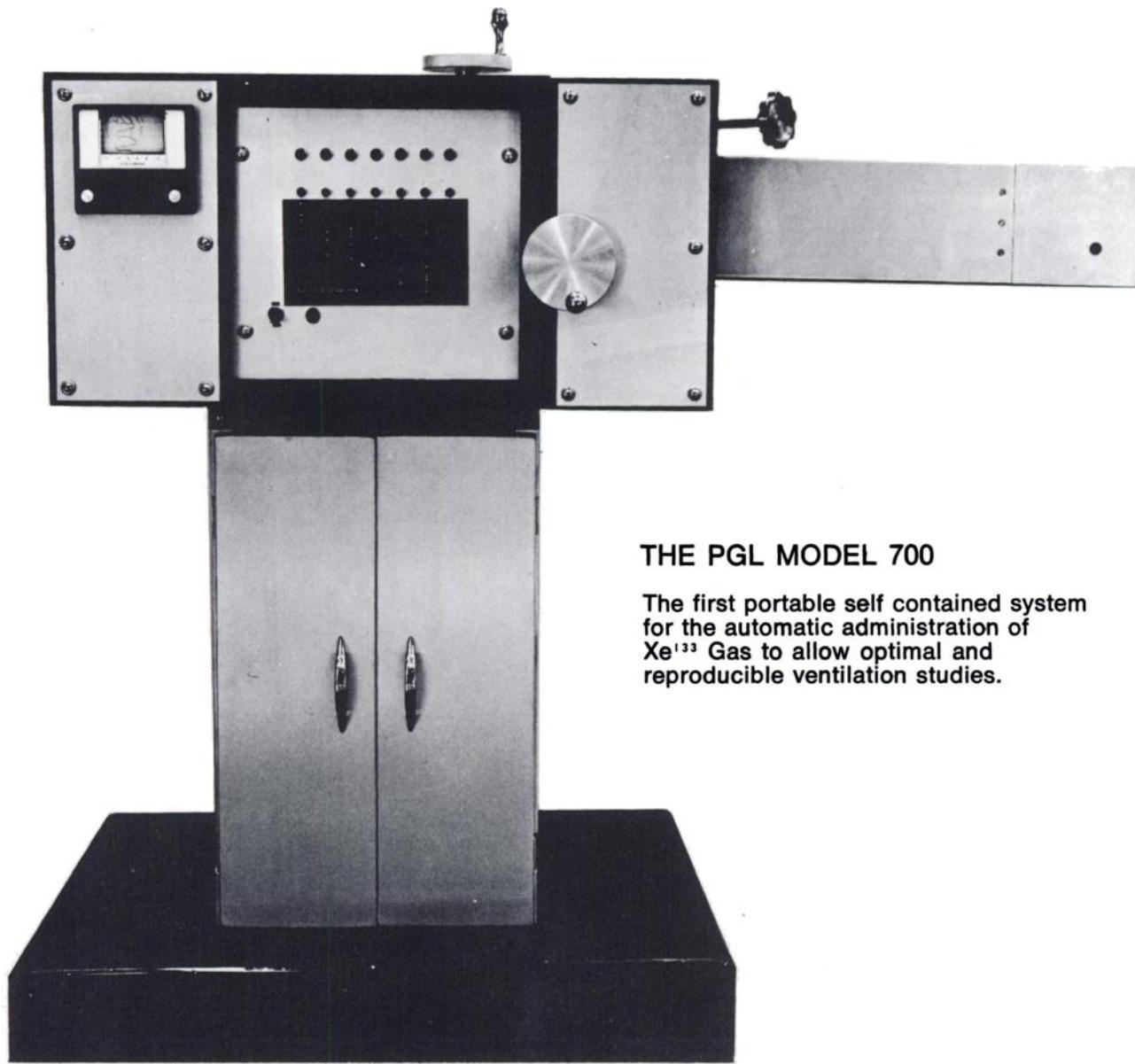


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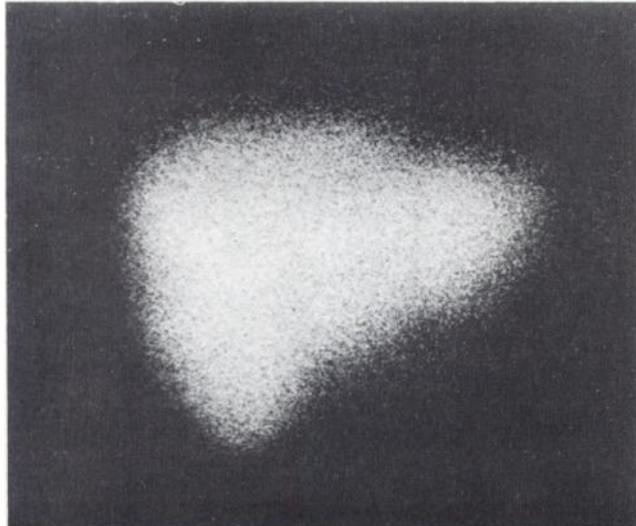
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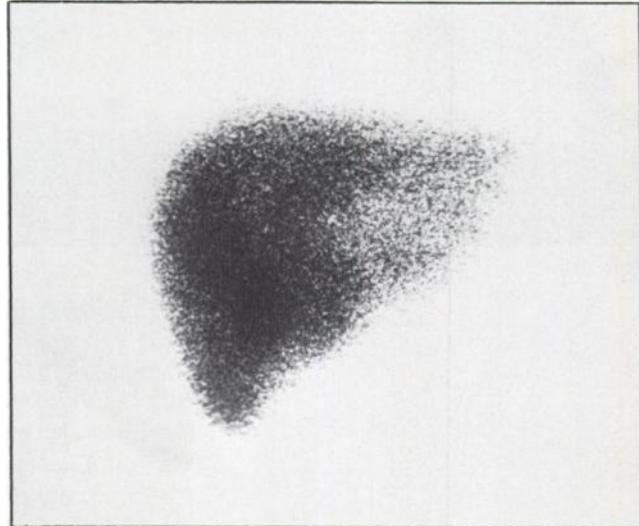
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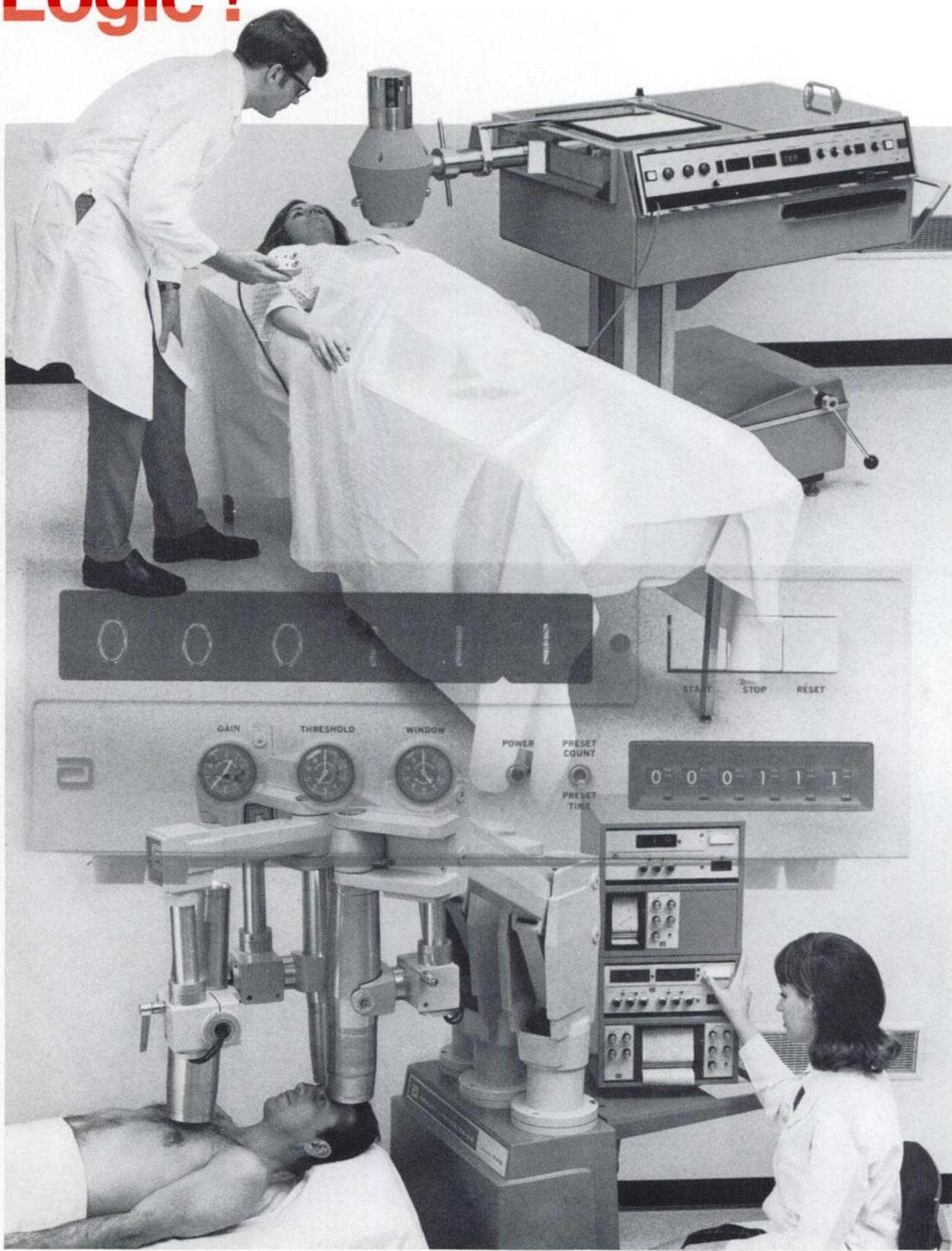
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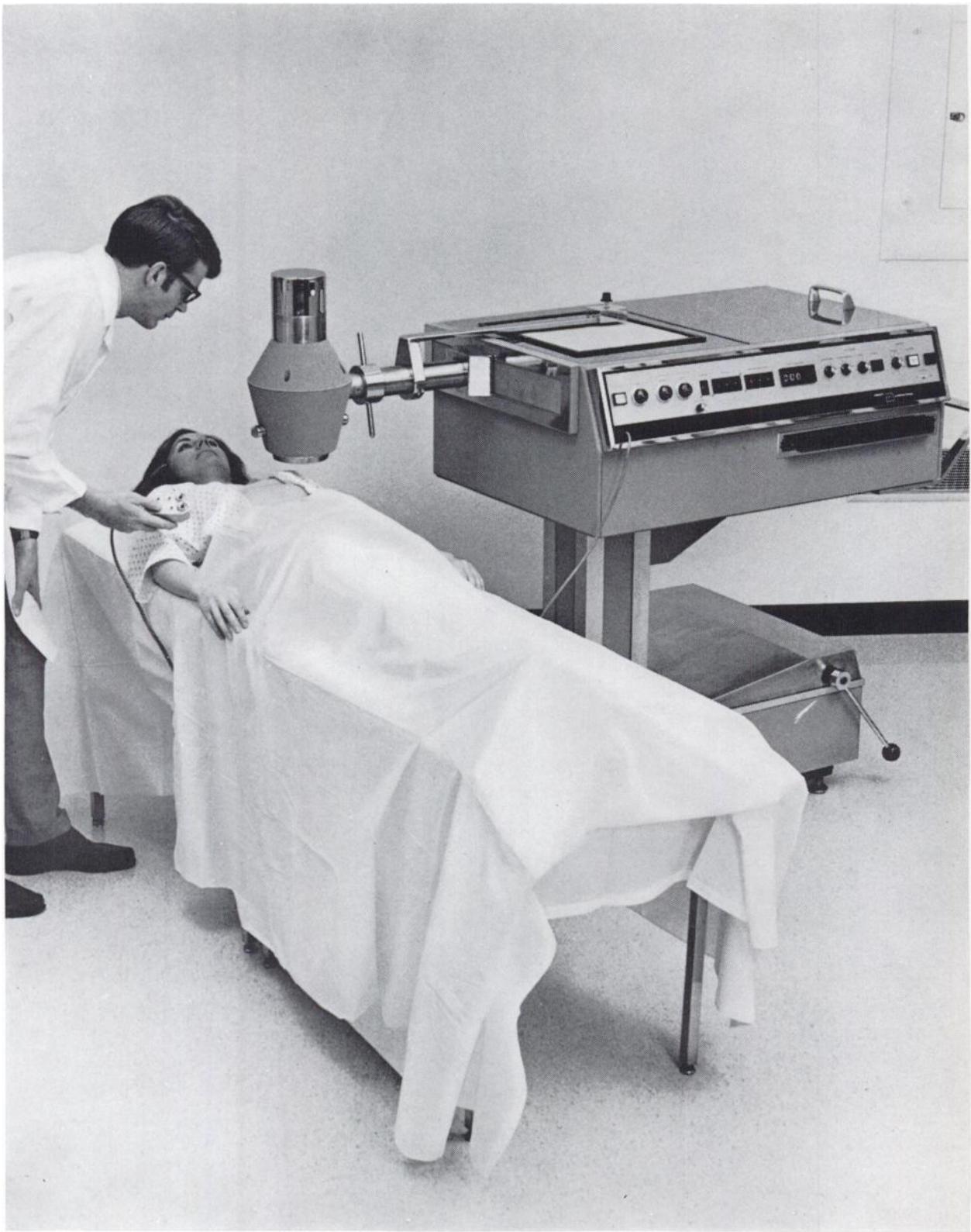
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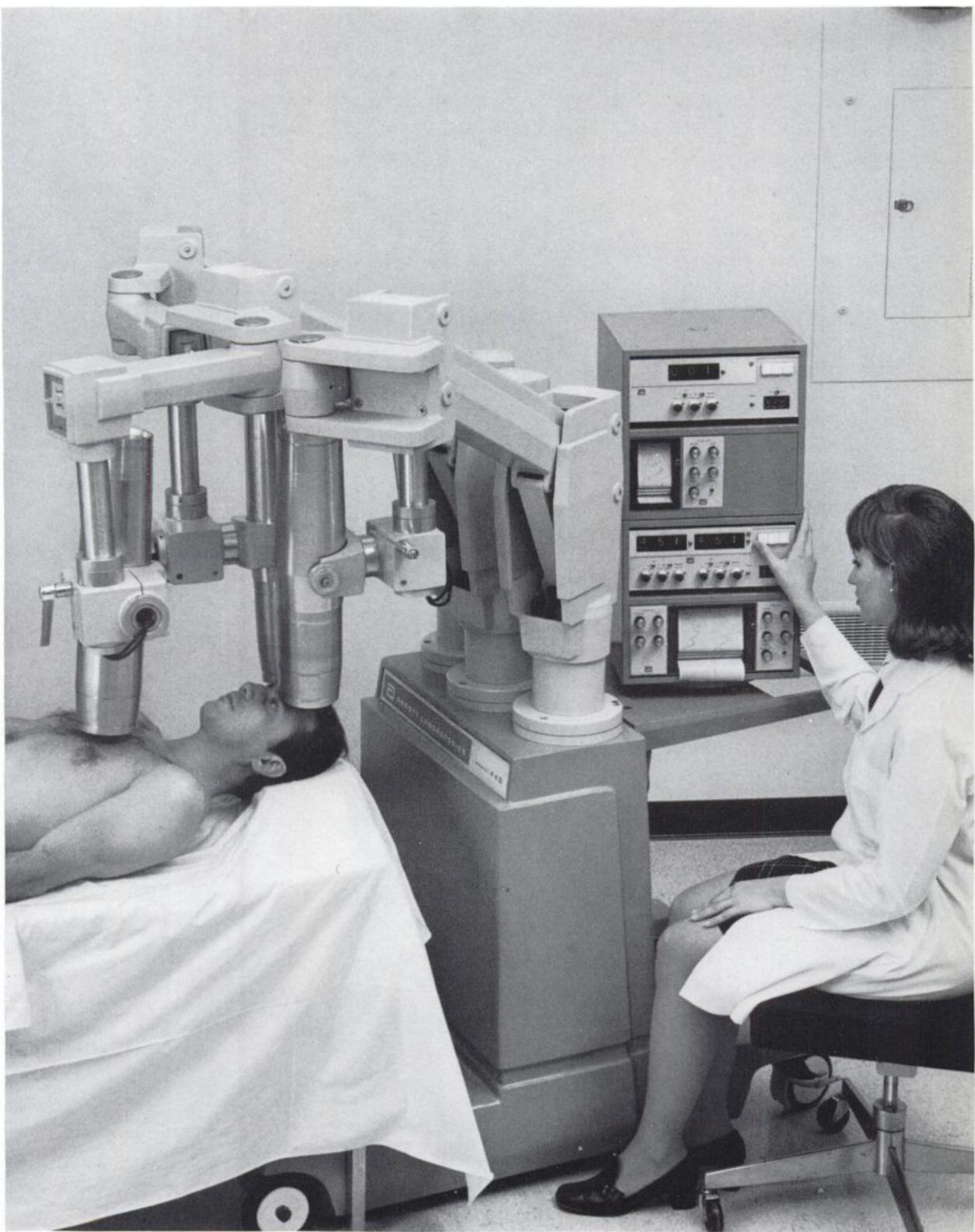
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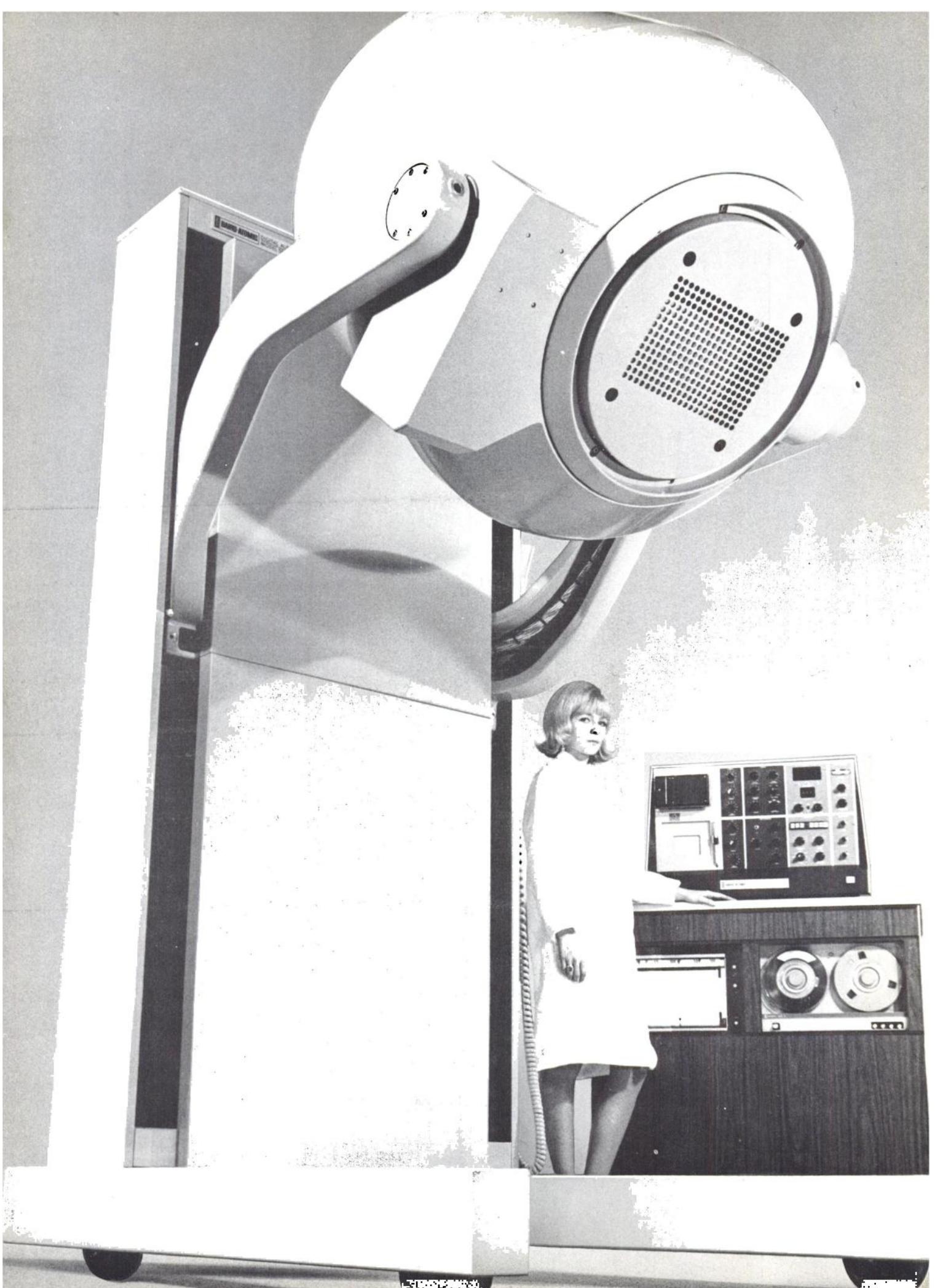
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