The T-7 Value minimizes misleading thyroid results

Pregnancy, oral contraceptives, estrogens, etc., can produce misleading results by falsely listing euthyroids in either the hypothyroid or hyperthyroid range if only one test is used to determine thyroid function.

"No single laboratory test of thyroid function is diagnostically perfect for all patients."*

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 x 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.

Millions of Triosorb tests have been performed over the past 7 years and today it is considered the standard of T-3 tests.

Tetrasorb is the first diagnostic kit offering a direct measurement of thyroid function by determining serum thyroxine.

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.

*Gold, A., Appl. Ther., 9:599, 1967.

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T-3 x T-4 = T-7 Value

TRIOSORB®-131 or TRIOSORB-125

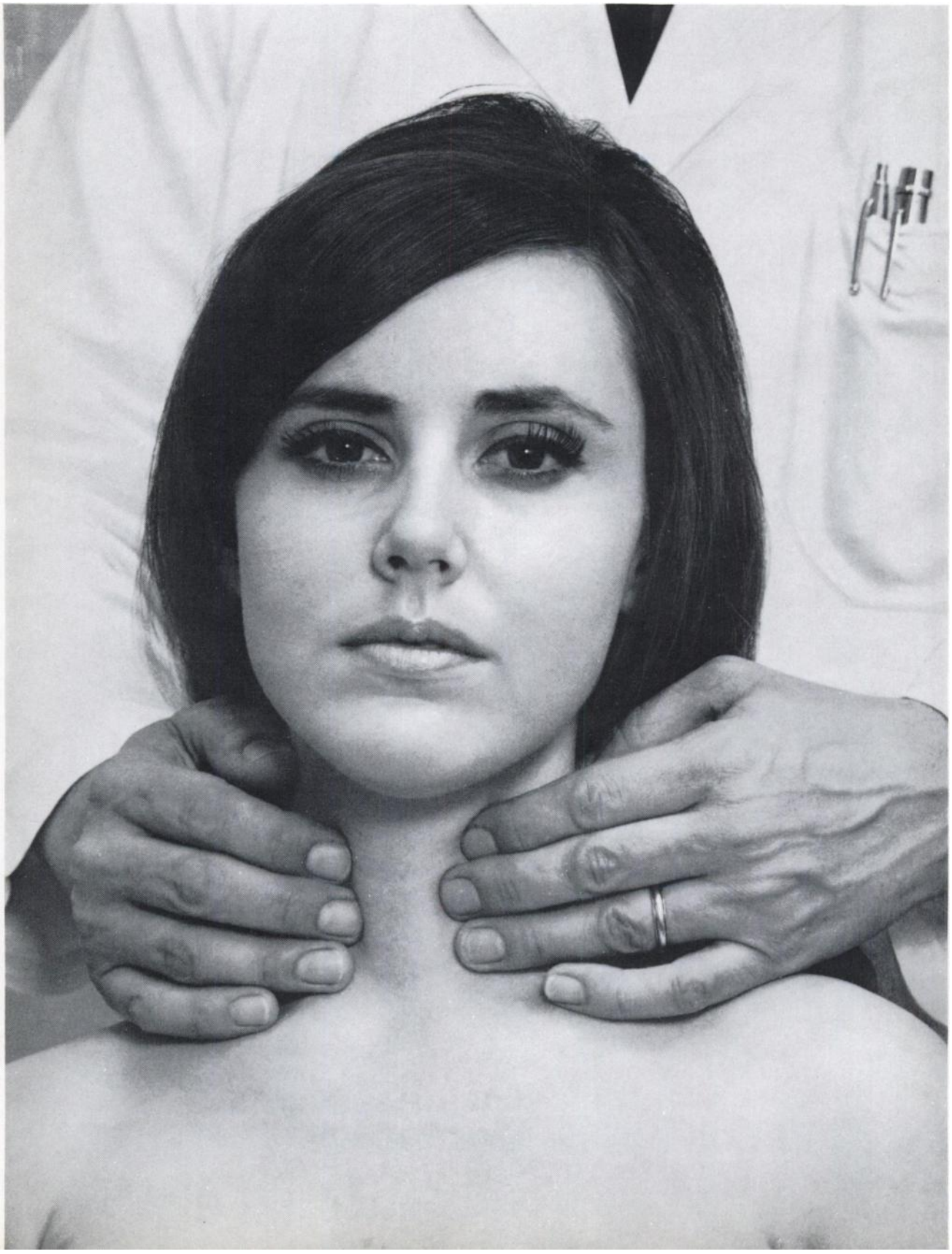
T-3 Diagnostic Kit

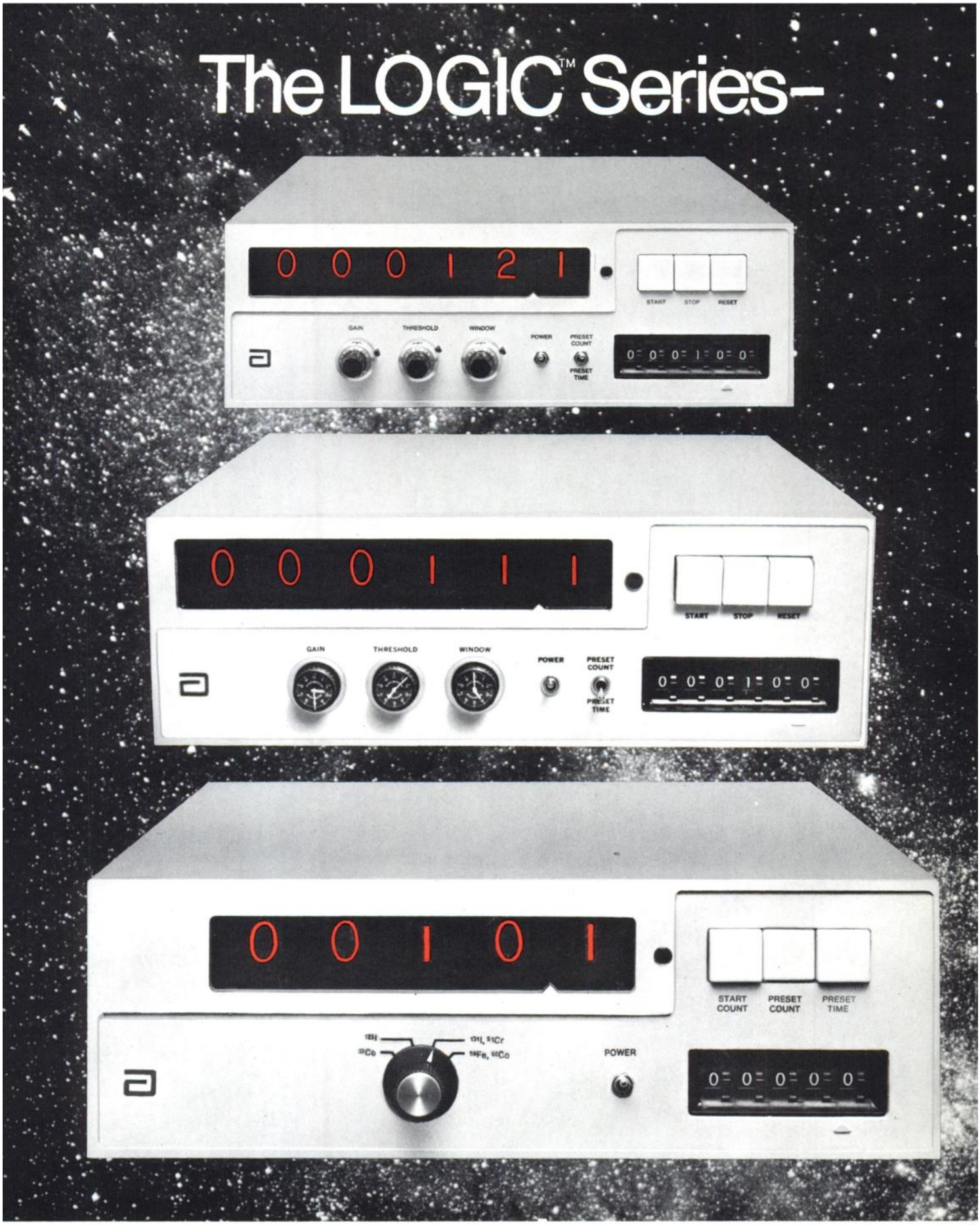
TETRASORB®-125

T-4 Diagnostic Kit

001187

Thyroid dysfunction? Pregnant? On the "pill"?





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products of the Space Age!

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Solid State Integrated Circuitry (highly reliable; less down time)

Simple to Operate (minimum of controls) with **Direct Ratio Readout** (in %)

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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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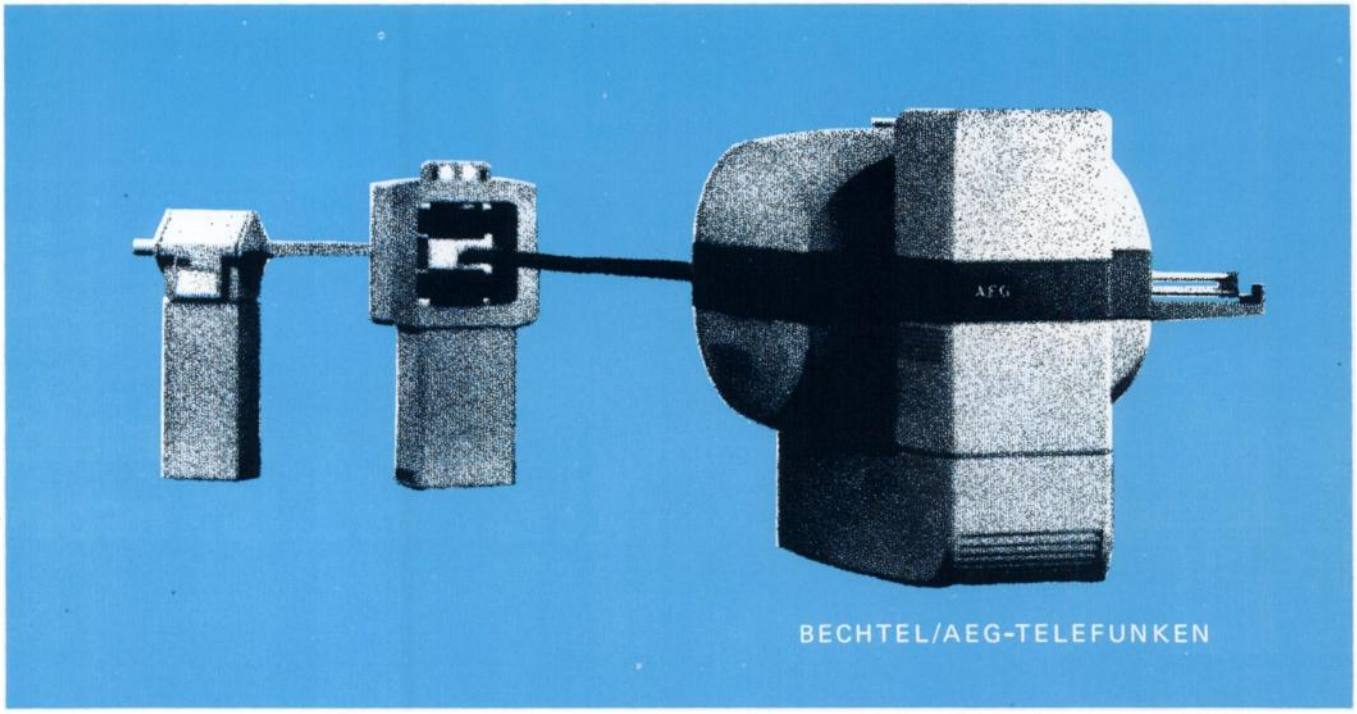

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Bechtel/AEG can provide clients with a total program capability for a design and construction of any type of nuclear medical facility.

In North America, contact Bechtel Corporation, Bechtel Laboratory, 435 Harbor Boulevard, Belmont, California 94002. Telephone 415-764-5220. In Europe and other countries: AEG-Telefunken 8752 Grosswelzheim, Seligen-städter Strasse, Germany.

Length	7'-5"
Width	8'-9"
Height	7'-0"
Total Weight	33 Short Tons
Connected Power	150 KVA

FIXED ENERGY CYCLOTRON—PERFORMANCE DATA*

Particles	INTERNAL BEAM		EXTERNAL BEAM	
	Energy [MeV]	Intensity [μA]	Energy [MeV]	Intensity [μA]
Protons	1 — 22	1000	22	100
Deuterons	0.5 — 11	1000	11	100
He^4	1 — 22	50(100)	22	25(50)
He^3	3 — 29	50(100)	29	25(50)

*Variable energy version is also available

WE DON'T BELIEVE IN BIRTH CONTROL

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When you have a good thing, you like to see it grow. That's why we've added three branch laboratories to the Hastings family.

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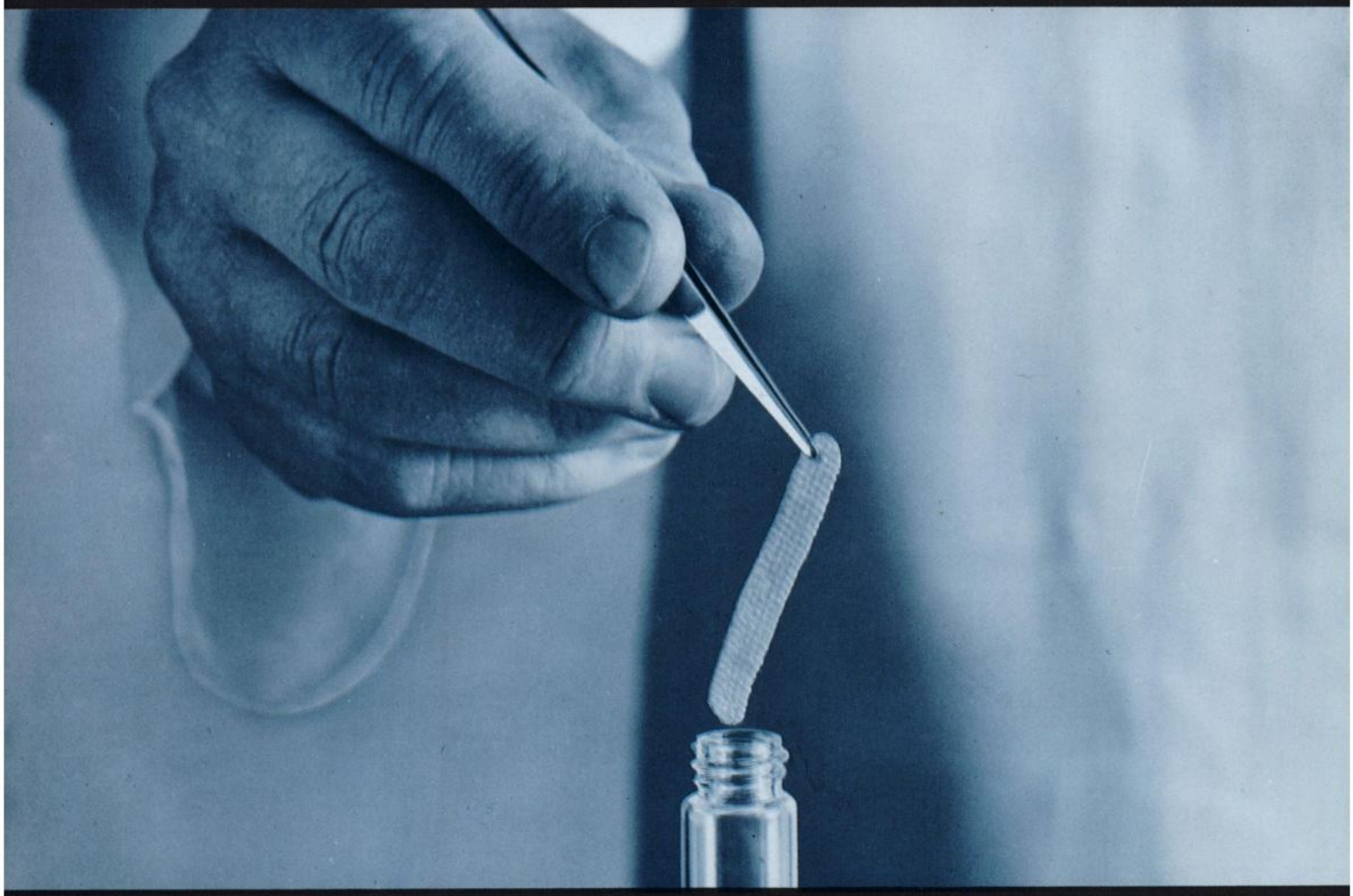

RES-O-MAT™ T-3 Test

New from Mallinckrodt

With this new test procedure you can perform T-3's faster than ever before. It's unlike all others. The Res-O-Mat test cuts down on the number of steps, drastically reduces technician time, and still maintains the high degree of reliability you need.

The key is the tiny Res-O-Mat strip... a little piece of sensitive plastic that does away with all pipetting except the initial transfer of serum to vial. Just drop a Res-O-Mat strip in each test vial and rotate. Then remove the strip and discard it. No critical timing, no washing, no cleaning; the vials are ready for direct counting of the serum.

MAIL COUPON. It will bring you complete information on this new T-3 test method. See how much more time it can save your staff in T-3 screening.

RES-O-MAT T-3 TEST KIT

Complete with 12 vials of premeasured radioactive liothyronine for patient serum, 2 control serum vials, forceps, and 12 Res-O-Mat strips... all in compact heat-protected kit.

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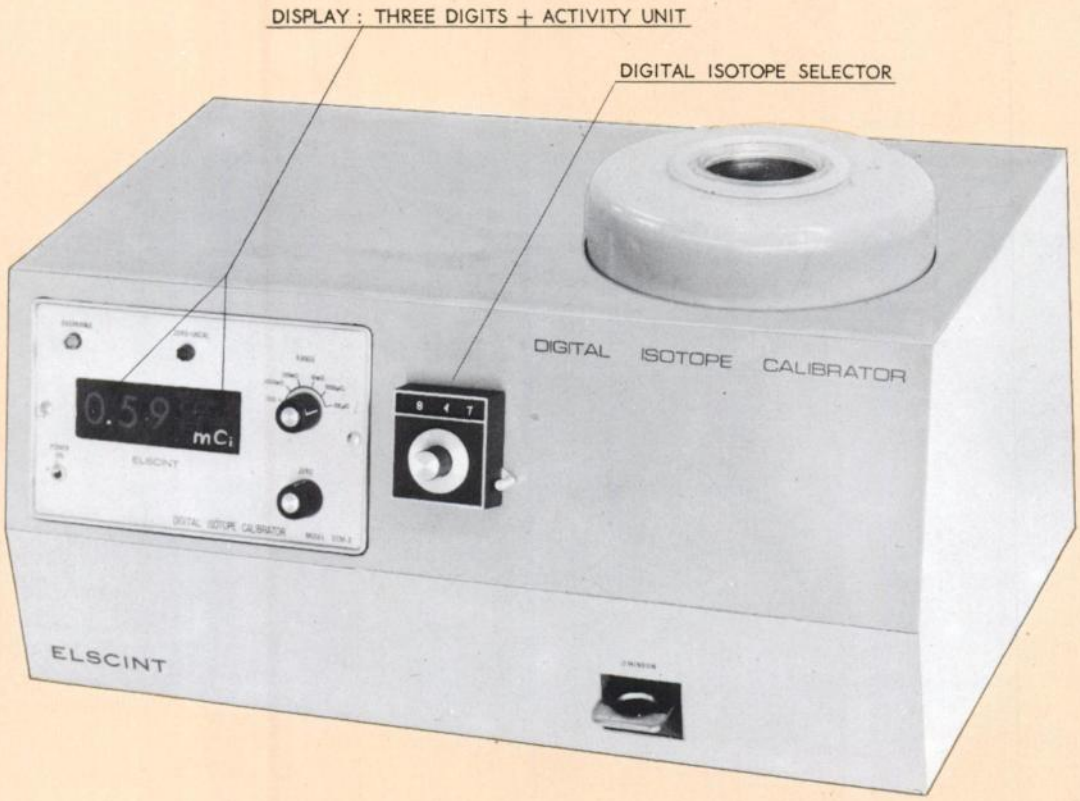

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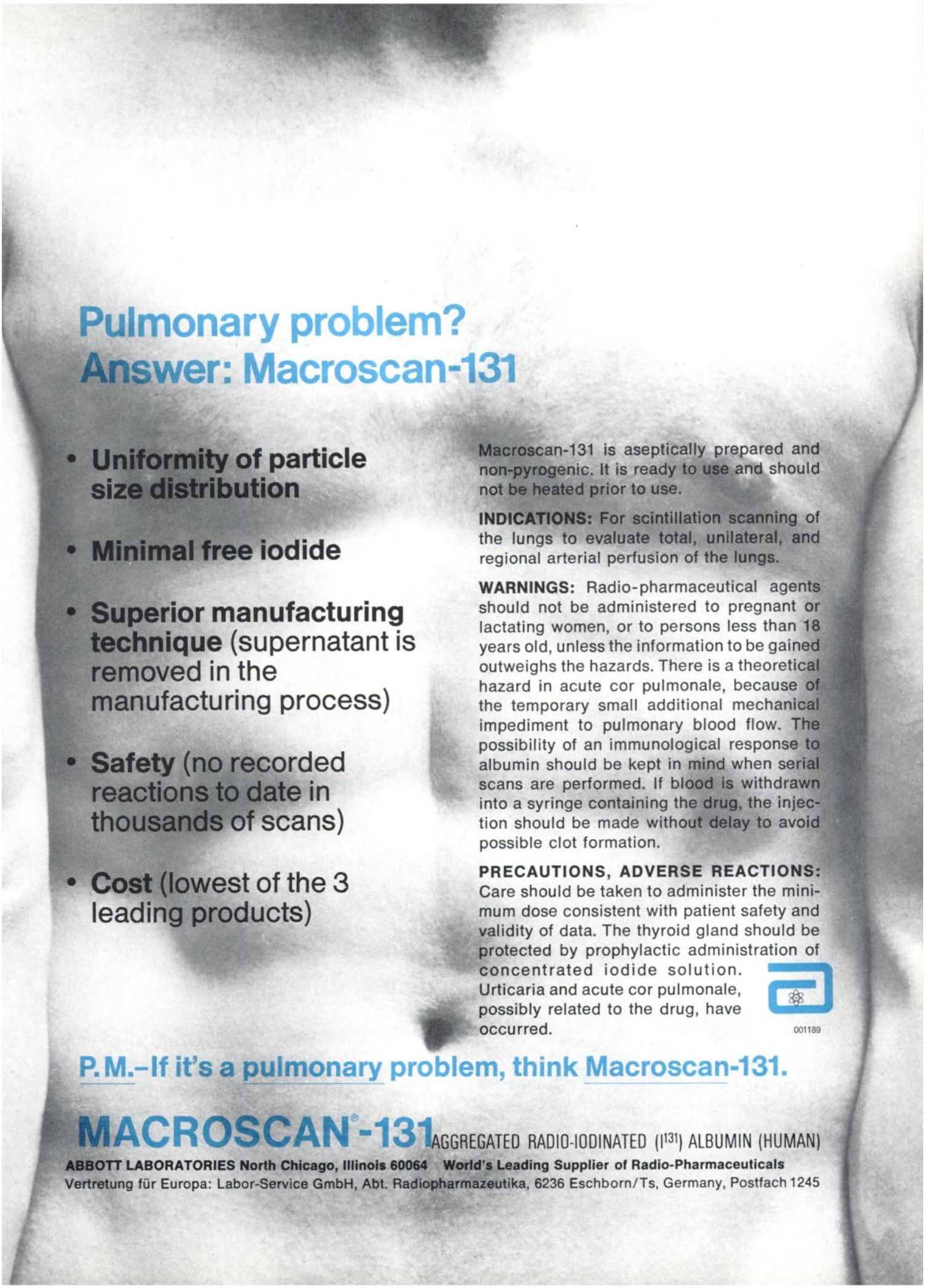

Pulmonary problem? Answer: Macroscan-131

- **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.

001189

P.M.–If it's a pulmonary problem, think Macroscan-131.

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(c.) It's easy: pipette 0.1 ml of serum, rotate 40 minutes, expel into a counting vial and count. No pipetting of radioactive material.

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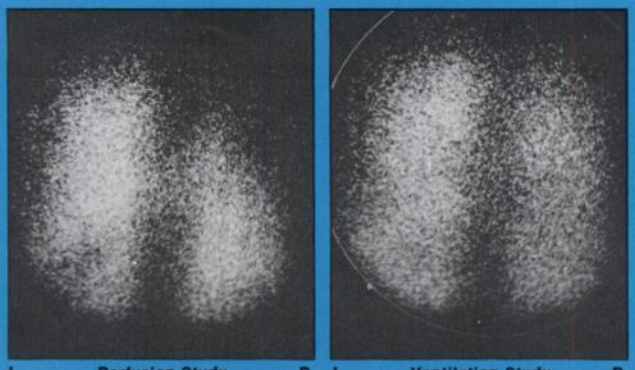
VENTILATION - PERFUSION STUDIES WITH XENON-133



L Perfusion Study R L Ventilation Study R

Xenon-133 in saline solution provides a method for a regional ventilation-perfusion study and is in a convenient form for both inhalation and injection techniques. The perfusion study scintiphotogram shows the filling defect in the base of the left lung and a decrease in perfusion in the right upper lung field. The ventilation study indicates some ventilatory imbalance. Localized defects shown in the perfusion study are indicative of pulmonary emboli.

CUSTOM DESIGNED GLASS AMPULE

Xenon-133 is supplied by the Radiopharmaceutical Division of NMC Corp. in specially designed glass ampules containing 1 (or more) Curie of ^{133}Xe, for $90 per Curie. The 5.27 day physical half-life allows for realistic delivery and storage and greatly facilitates your planning schedule. This radioactive gas may be administered only by physicians licensed to dispense Xenon-133. License information may be obtained from Nuclear Medical Computer Corp. together with a descriptive brochure on the Xenon Transfer Vessel. Merely fill in the coupon or write on your institution letterhead.

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Please send complete information on the NMC Xenon Transfer Vessel and information on licensing procedures.

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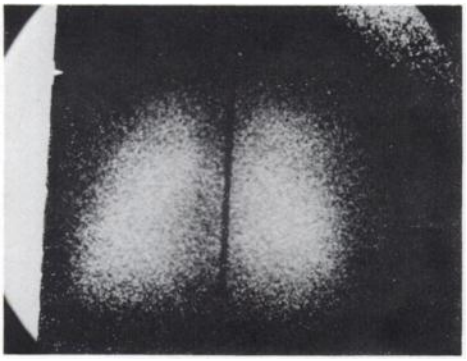
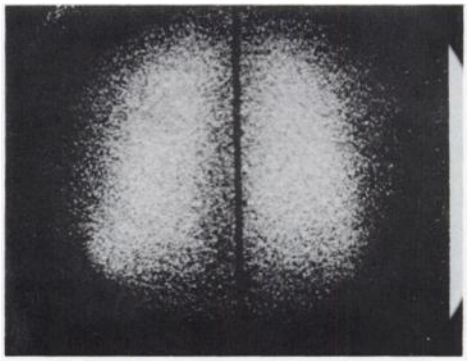
The Xenon Lung Study Given Here is a Typical Presentation Obtained Using the NMC Computer with Your Camera.



Perfusion Study



Equilibrium Study

The above gamma camera scintiphotos are from an Xenon lung study done on a patient who received radiation therapy to the area of the mediastinum. The perfusion part of the study was done by injecting intravenously a bolus of ^{133}Xe (30 mCi) dissolved in saline and by having the patient hold his breath for several seconds. The distribution of ^{133}Xe indicates which alveoli are perfused. The equilibrium part of the study was performed by having the patient breathe into a spirometer containing Xenon in air. When the patient was in equilibrium with the spirometer, he was instructed to hold his breath for several seconds while the picture was obtained. The scintiphoto from the perfusion study shows a normal distribution of radioactive Xenon.

During the study, the data (counts as a function of time) were stored by the computer on magnetic tape. This allowed an immediate in-lab computer analysis giving regional indices of perfusion. In addition, the washout of Xenon from the lung was evaluated on a regional basis.

The computer determined the perfusion index (P.I.) by normalizing the counts collected during the perfusion and equilibrium portions of the study. The perfusion index in a given region is the ratio of normalized perfusion counts to normalized equilibrium counts. Regional washout times were calculated by the computer using special curve fitting techniques.

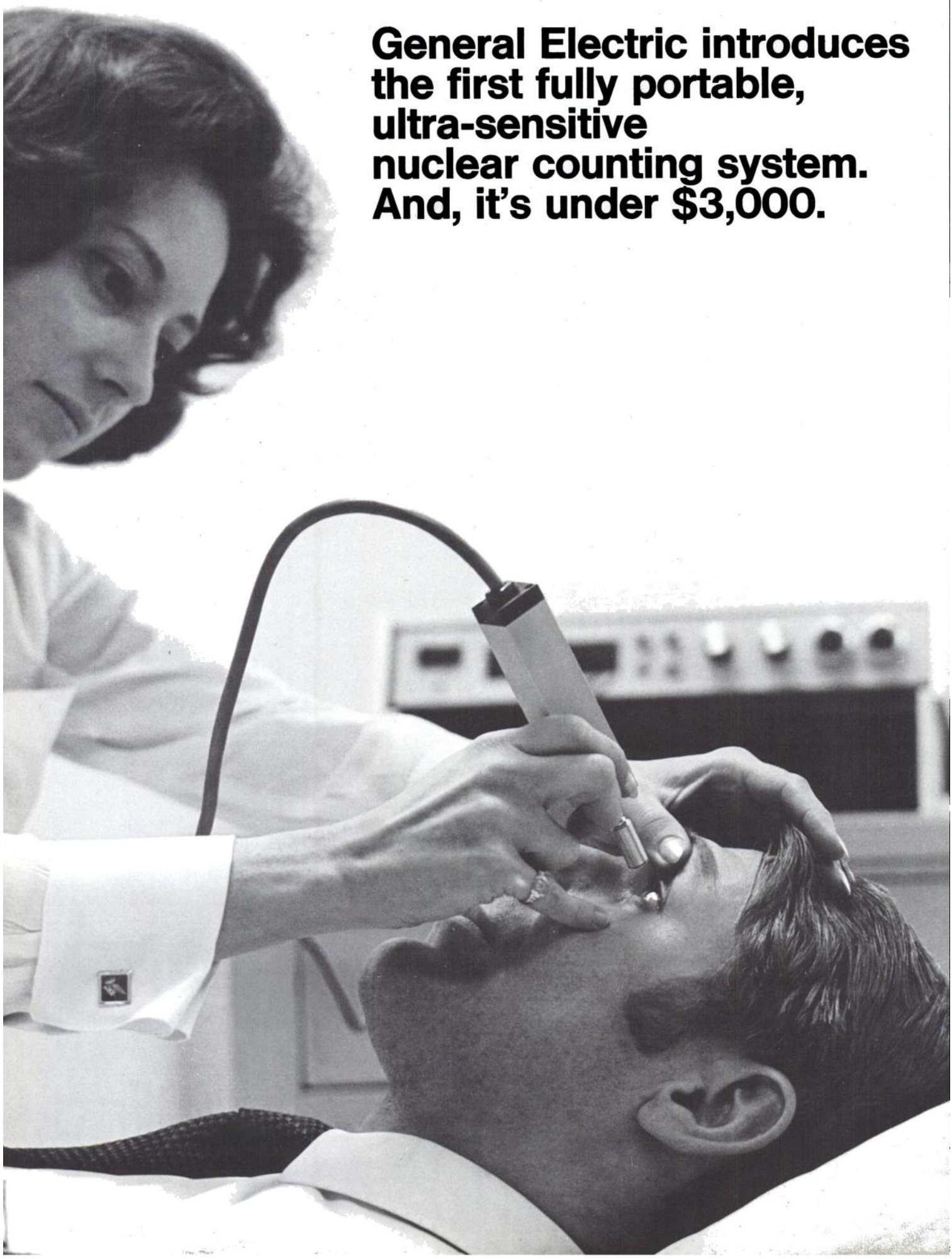
The following perfusion indices and washout times for 10 areas of each lung were derived from the computer:

P.I. = .81	P.I. = .49	P.I. = .53	P.I. = .65
$T_{1/2}$ = 18	$T_{1/2}$ = 24	$T_{1/2}$ = 23	$T_{1/2}$ = 24
P.I. = 1.10	P.I. = .52	P.I. = .55	P.I. = 1.24
$T_{1/2}$ = 19	$T_{1/2}$ = 16	$T_{1/2}$ = 26	$T_{1/2}$ = 26
P.I. = 1.44	P.I. = .76	P.I. = .91	P.I. = 1.63
$T_{1/2}$ = 24	$T_{1/2}$ = 22	$T_{1/2}$ = 22	$T_{1/2}$ = 22
P.I. = 1.72	P.I. = .95	P.I. = 1.02	P.I. = 1.55
$T_{1/2}$ = 19	$T_{1/2}$ = 23	$T_{1/2}$ = 18	$T_{1/2}$ = 26
P.I. = 1.71	P.I. = .92	P.I. = 1.03	P.I. = 1.51
$T_{1/2}$ = 21	$T_{1/2}$ = 20	$T_{1/2}$ = 26	$T_{1/2}$ = 27
LEFT LUNG		RIGHT LUNG	

It can be seen from the computer analysis that perfusions to the inner margins of the lungs is decreased. The washout half-times ($T_{1/2}$) are within the normal range indicating normal ventilation to all areas of the lung. This information was not evident prior to computer analysis.

The subjective quality of medicine entails the application of knowledge and experience to produce a decision. The Digital Computer can be a significant tool in developing the facts and the quantitative relationships of scintillation data.

General Electric introduces the first fully portable, ultra-sensitive nuclear counting system. And, it's under $3,000.



A brand new system with advanced capabilities . . . that's General Electric's NUCLE EYE(TM) Monitor.

You can use this amazing system for in-vivo probing, x-ray fluorescence scanning and analysis, bone density scanning, carbon-14 research, tumor detection and many other applications.

Now you can count low-energy radiations over a wide range of temperatures. With extremely low background interference.

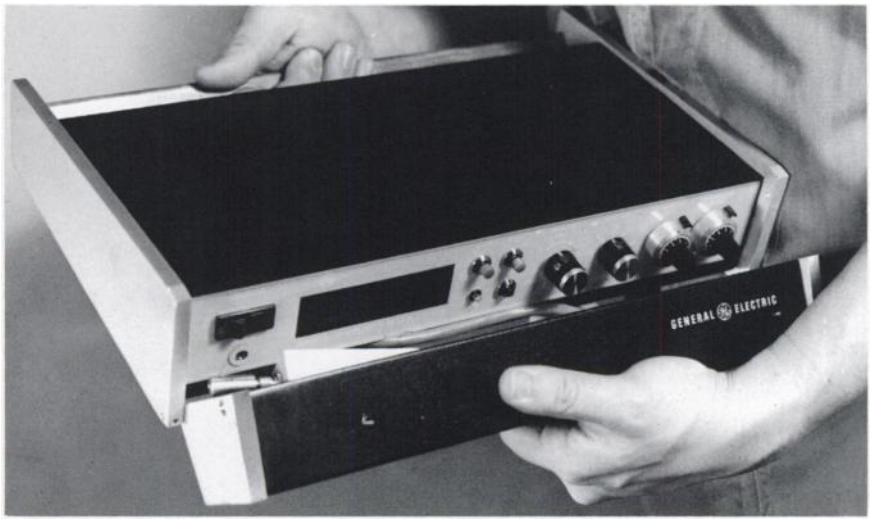
You can use ^{125}I for organ and bone density scanning . . . detect ^{55}Fe x-rays in blood measurements and ^{51}Cr x-rays in spleen scanning . . . detect low-energy contaminants before they become a major health hazard to the individual. ^{55}Fe and ^{90}S, for example. Are you involved in x-ray fluorescence? General Electric's NUCLE EYE Monitor allows thyroid examination by means of the excitation of a stable isotope localized in that gland.

With the Monitor, there's no problem with body heat. You can work close to the patient or even use an implantable detector. The system maintains its unique counting capability from room temperature to 100°C. Without cooling.

All of these capabilities, and many more, result from the Monitor's silicon avalanche diode and high-speed tunnel diode circuitry. The system detects radiation almost as fast as a nuclear particle creates a signal in a solid. The result? Background noise is virtually eliminated. Fact is, it can be held to a minimal four counts per hour.

For more information on this amazing new system, contact Space Technology Products, P.O. Box 8439, Philadelphia, Pa. 19101. Phone (215) 962-8300. 162-51

The eight-pound NUCLE EYE Monitor is fully portable —take it with you from laboratory to laboratory and even to patient bedside. Nickel-cadmium batteries give six hours of continuous operation before recharging.



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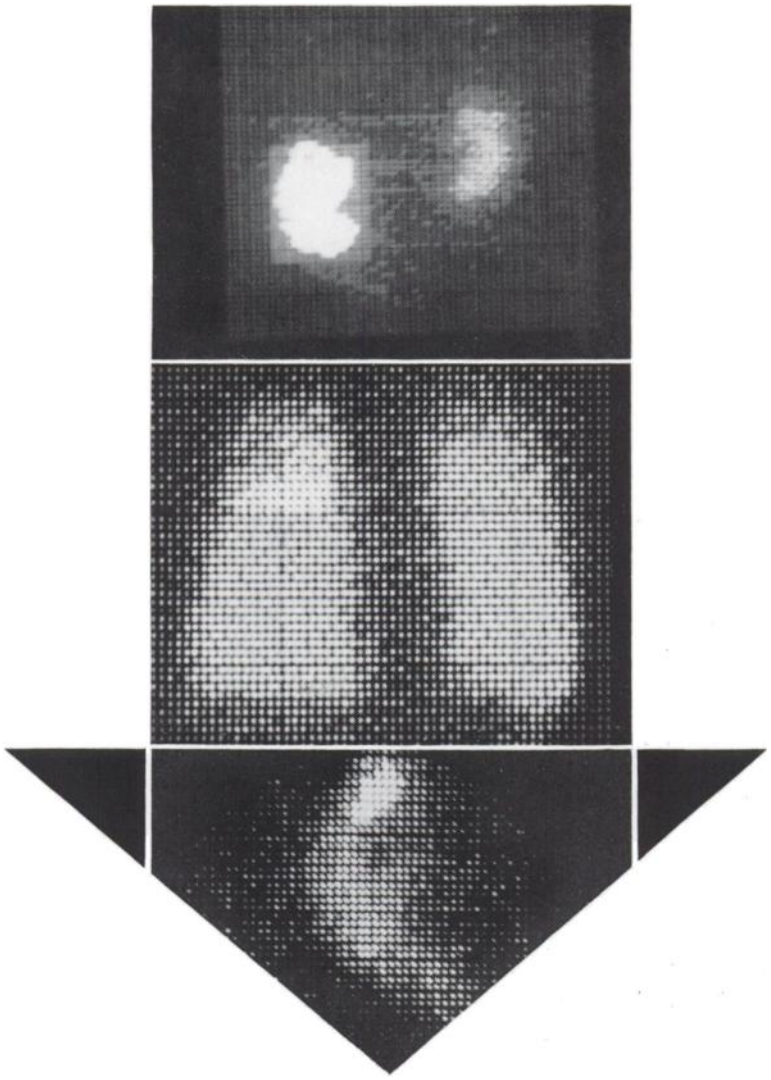

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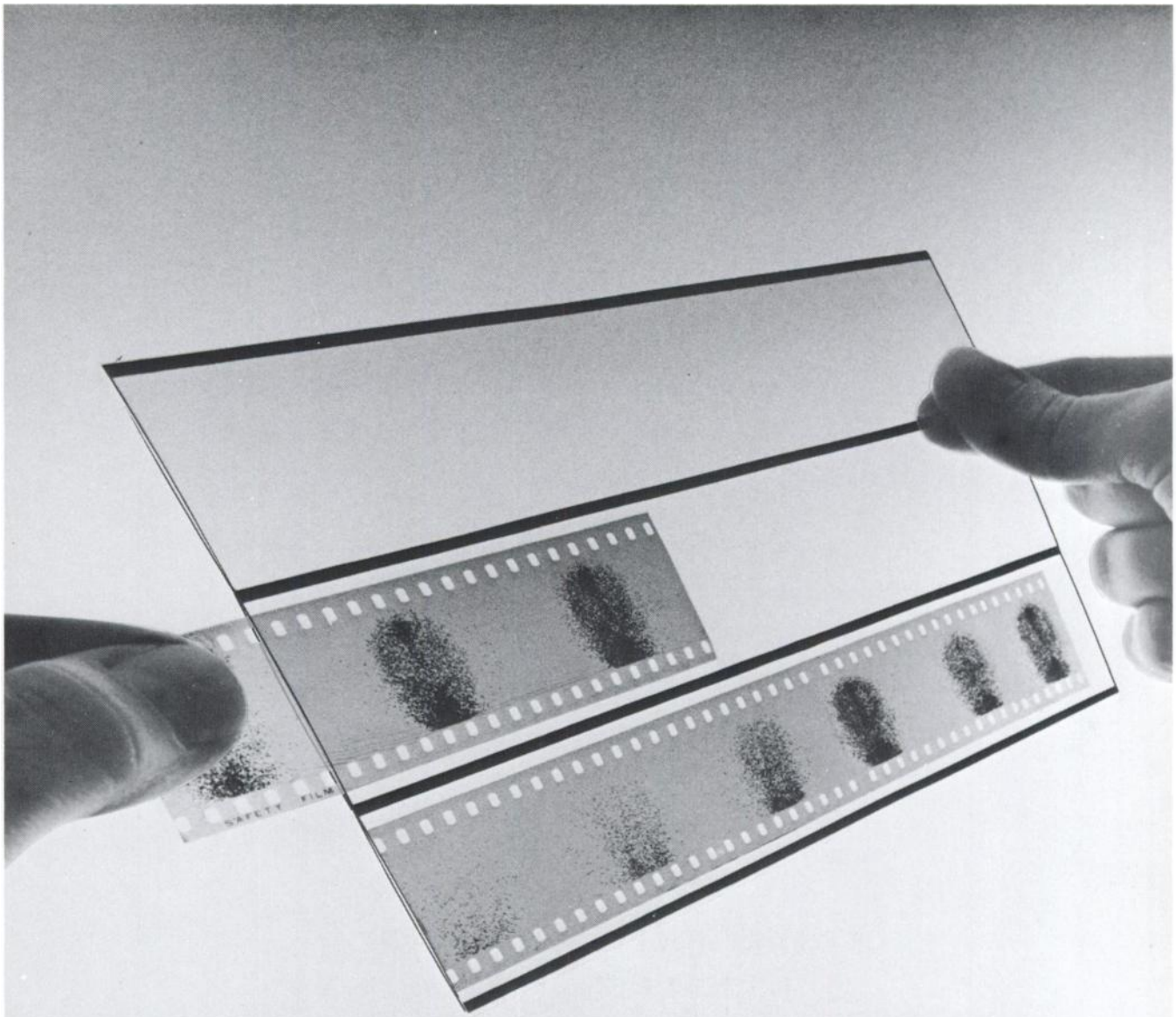

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SOLUTION: Our new two ply clear plastic holder capable of displaying three — 6 frame 35mm strips in a 5″ x 8″ holder.

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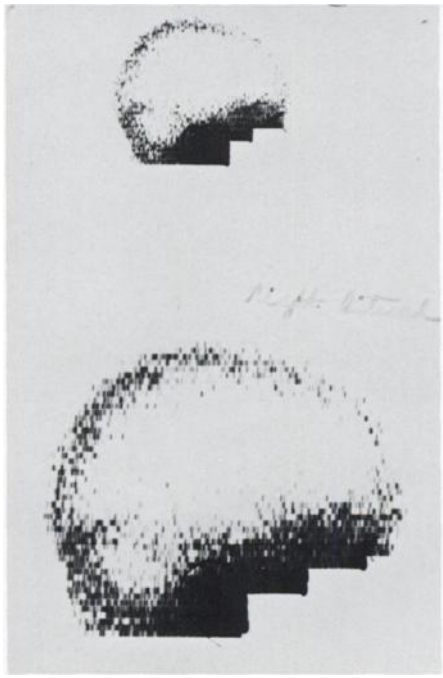
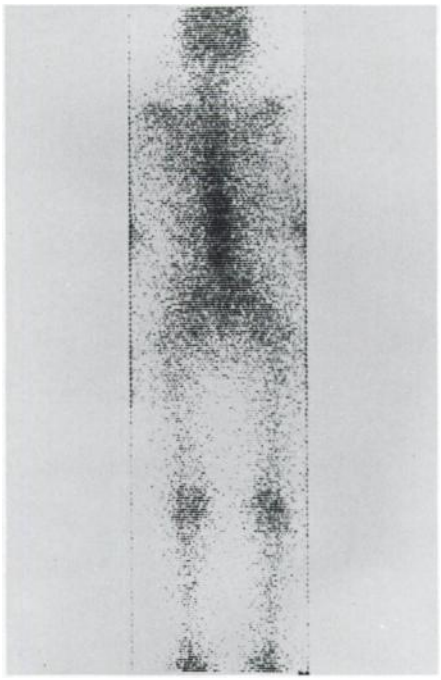
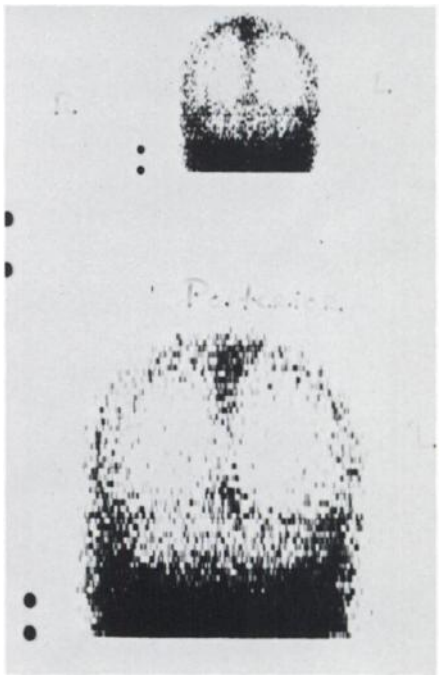


Brain scan:
1:1 and 2:1 right lateral.
Contrast enhancement 60%.
Typical speeds 250 to 350 cm/min.



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



Brain scan:
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Contrast enhancement 50%.
Typical speeds 280 to 350 cm/min.

T3 testing is all very well in theory

new Thyopac*-3 makes it simple in practice

Thyopac-3 has been designed to overcome the practical drawbacks of the T3 tests hitherto available – and reduce the cost of T3 testing as well. The Thyopac-3 test is uniquely quick and easy to perform. Just add 0.1ml serum to vial, mix for 10 minutes, allow to settle, withdraw 1ml supernate and count. That's all. No need for temperature control or washing; only one count per test; and the sample for counting is withdrawn at equilibrium. Since the sample is a liquid, a variety of conventional counters may be used.

Each Thyopac-3 kit consists of 12 vials (enough for 12 tests or 10 tests with 2 standards) containing adsorbent granules suspended in buffer containing liothyronine-I125. Full information will be supplied on request.

The latest word in T3 testing: the last word in T3 kits

Thyopac*-3

*trade mark

The Radiochemical Centre Amersham England

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☐ 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.

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Space will be provided in each issue of THE JOURNAL OF NUCLEAR MEDICINE to publish one case report.

The text of the manuscript should not exceed 1,200 words. Authors may submit (1) two illustrations, (2) two tables or (3) one illustration and one table. An additional 400 words of text may be submitted if no illustrations or tables are required.

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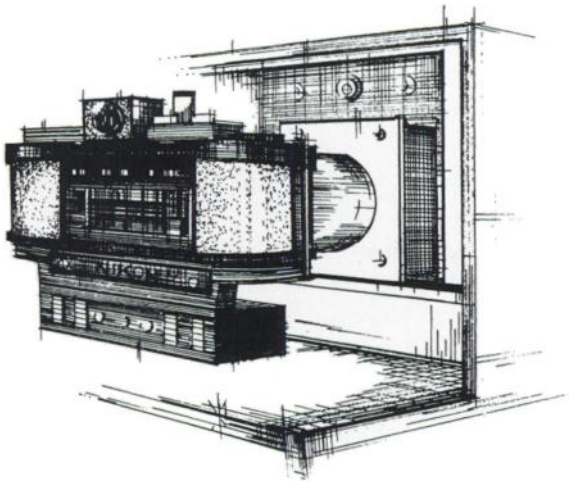

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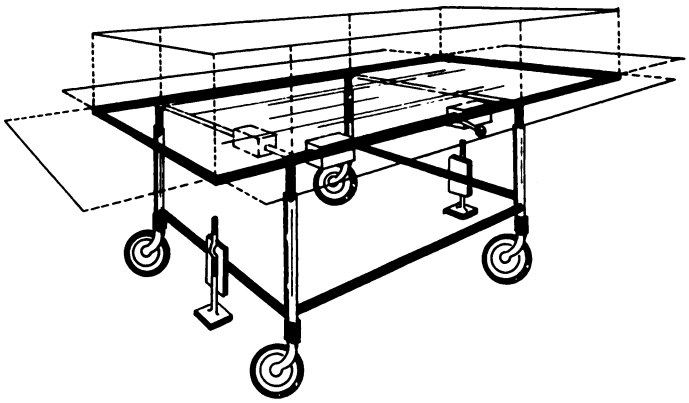

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1971

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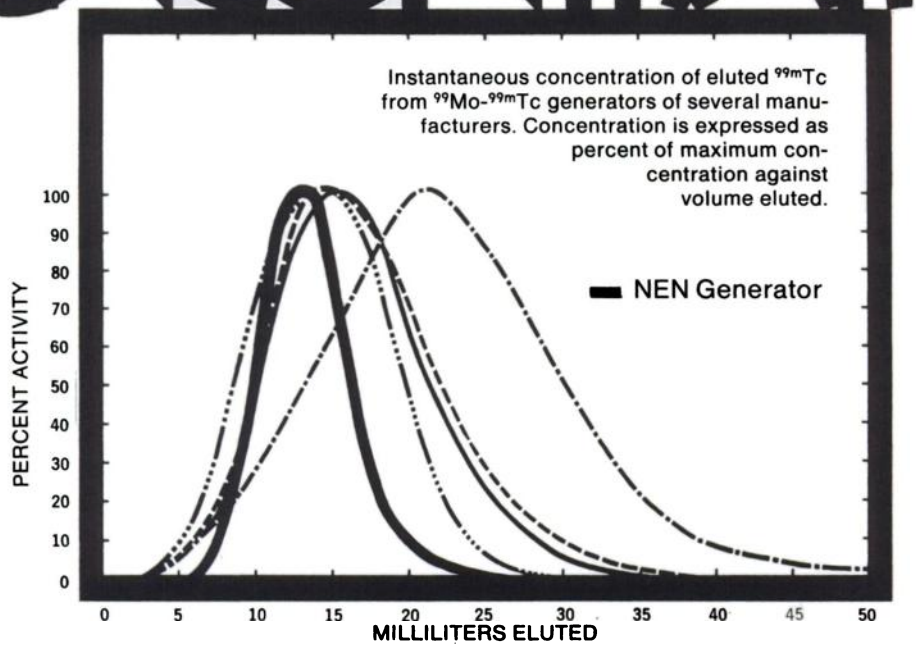

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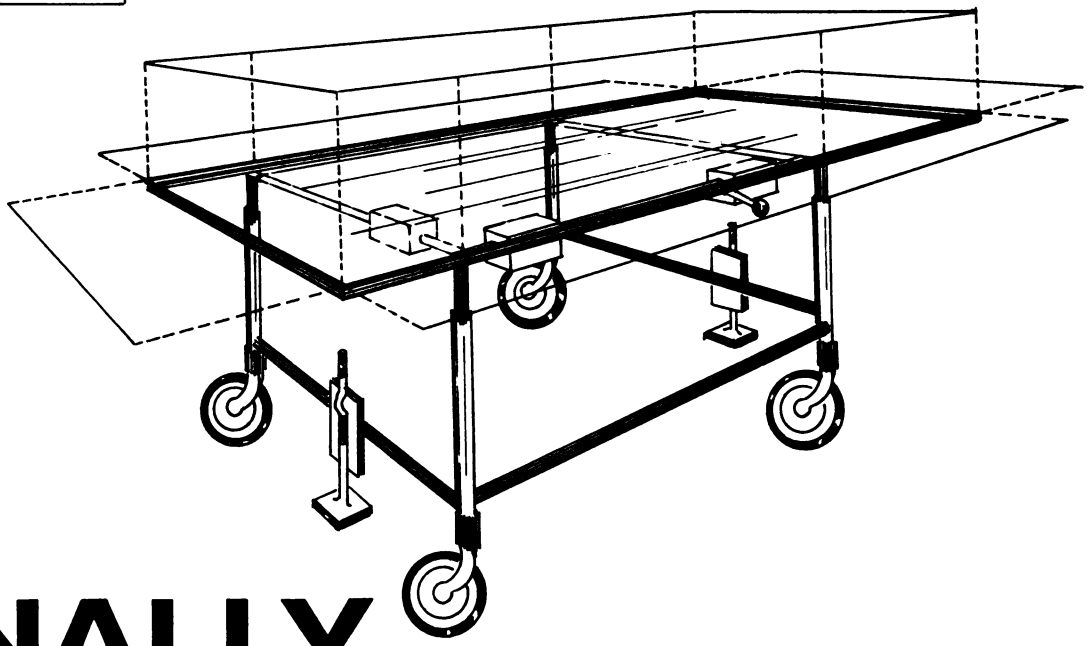

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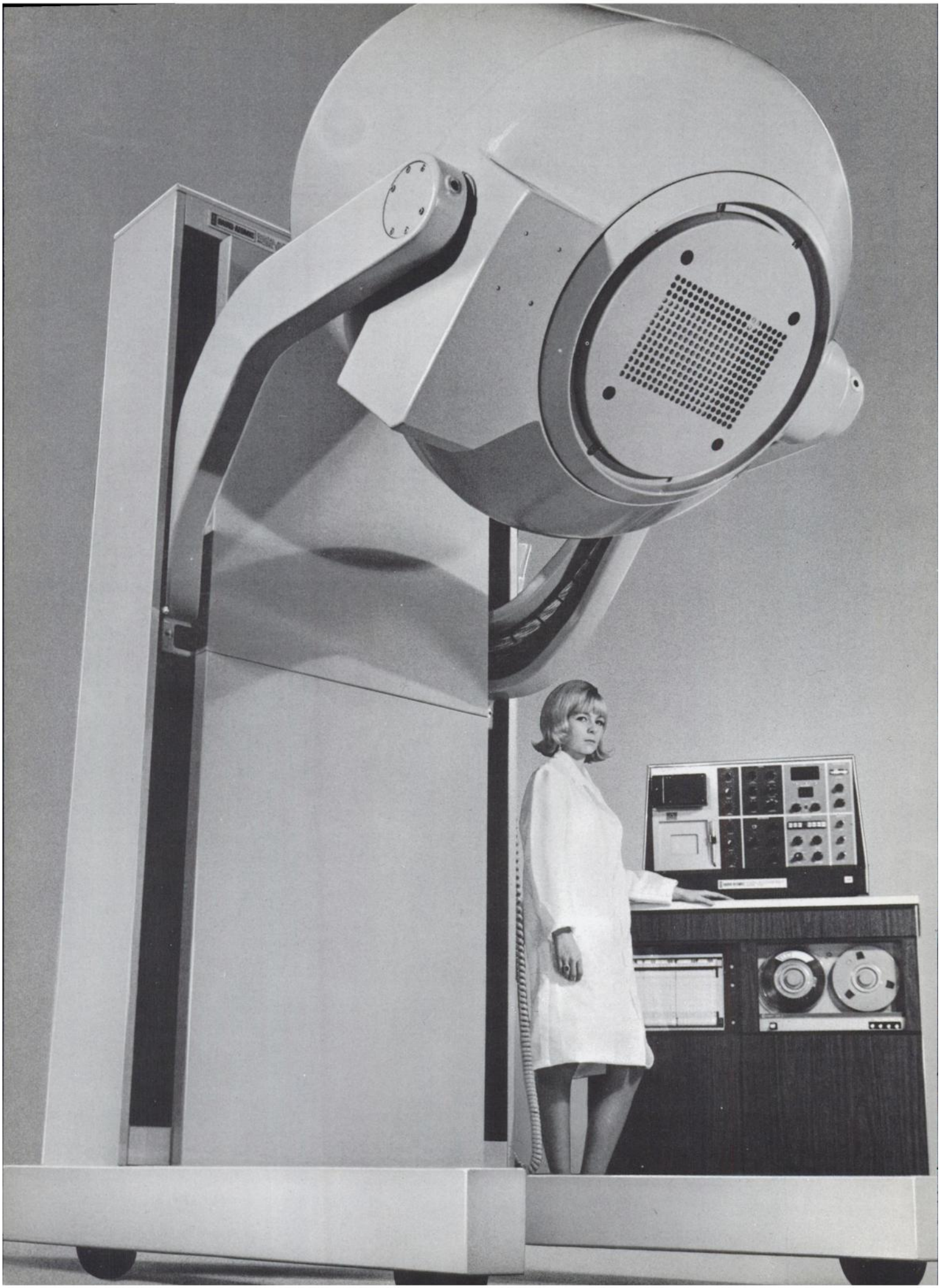

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