The best test of any test is your experience

There will always be claims, counter claims, and confusion in judging between T_3 and T_4 tests, but the best evaluation can only come from:

- years of clinical use
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You have this assurance with Triosorb, Tetrasorb, and their T_7 Value – the best known, most used tests in the field.

Early promises of accuracy and reproducibility have been *proven in use.*

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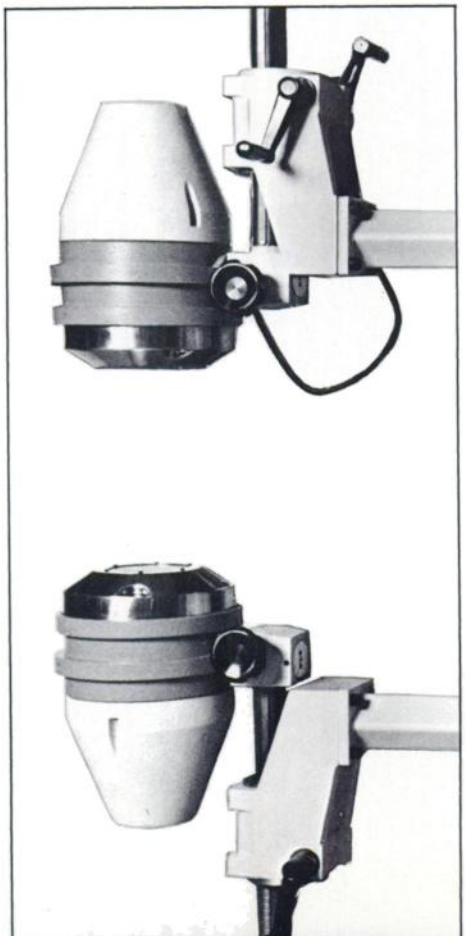

When you buy a Raytheon single-headed nuclear scanner you're most of the way toward having a dual-headed scanner. That's because Raytheon knows that your equipment desires often exceed your equipment budgets. And in the future you'll want the ultimate in speed and sophistication . . . a dual-headed scanner. So, we've come up with an inexpensive solution.

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Buy a single-headed scanner now, upgrade at your convenience. You can convert our single 5″ scanner to a dual 5″. Right in the hospital. In hours.

For complete information on this versatile nuclear scanner family, contact Raytheon Company, Medical Electronics, 190 Willow Street, Waltham, Mass. 02154. Telephone (617) 899-5949.

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In medical electronics . . . Raytheon makes things happen.

all this...and a generator too.

What you want is Technetium-99m. What you get from New England Nuclear is that and a lot more.

The can opener we supply for example. Other extras are more important. Like the fractional elution and assay kits and the MOLY-CODDLE™ radiation reducer.

Then there are things you don't see, like our testing of *every* generator we ship for sterility, non-pyrogenicity, Molybdenum-99, aluminum, and alumina and other particulates. And perhaps most important, the people at NEN, who are dedicated to getting your generator to you when you want it, and who are there when you need them.

New England Nuclear
Radiopharmaceutical Division
Atomlight Place, North Billerica, Mass. 01862
Telephone (617) 667-9531

The new DI 650 Automatic Film Processor: Clearly, an inside design job.

Nuclear Medicine is why the DI 650 exists. It's the only film processor conceived and dedicated to serving the specific needs of nuclear medicine. That makes the DI 650 unique. Because its design was an "inside" job. Only those intimately acquainted with your needs could understand the importance of daylight loading. (No more dark-room problems.) Or the flexibility and convenience of being used either as a desk model or a portable "on-the-floor." Or the fact that the DI 650 needs no plumbing hook-up. It may, but need not, be batched. This processor has its own built-in heater. It's also self-cleaning. With the DI 650 you will not have to depend on the developing facilities of other departments. All these DI 650 attributes point up to a new capability: you can choose the proper developer, regulate its temperature, and optimize film travel speed for maximum image quality. Clearly, the DI 650 Automatic Film Processor is an inside design job.

Dunn Instruments

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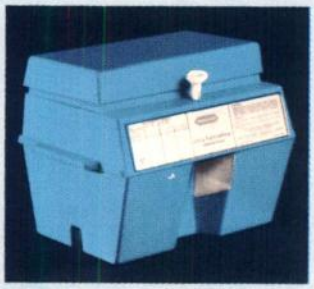

with 4 New Features

1. New enlarged lead shield reduces radiation exposure to the operator. With at least 1½ inches of lead all around the generator column this is **one of the best shielded generators available today.**

2. New "Ion Control" Process (patent applied for) reduces aluminum level to a point where it is virtually undetectable by normal laboratory test methods. The eluate may be used with any of the currently available sulfur colloid kits or with other tagging procedures requiring low aluminum levels.

3. New 500-ml saline supply allows as many as 15 or 16 elutions per week. The saline supply is built in and factory sealed, an exclusive feature of the new **Ultra-TechneKow.**

4. New self-aligning milking station makes the elution process simpler than ever. When the "Sight Glass" elution shield with evacuated vial is placed into the milking station, the needle is automatically centered over the evacuated vial. Press plunger down, turn slightly to lock into position, and elution proceeds automatically.

It's the most advanced concept in technetium-99m generators.

This **all-new, redesigned** version of our **Ultra-TechneKow** series is carefully engineered into an attractive, **pre-assembled,** completely self-contained **unit.** This model is the culmination of seven **years of experience** making technetium-99m generators. The **Ultra-TechneKow** Generator is shipped each week complete **with evacuated** elution vials, needle pack **with** labels, molybdenum-99 and technetium-99m reference tables, needle guard for operator safety, convenient carrying handles, and package insert with complete information.

Contact your Mallinckrodt/Nuclear representative now for detailed information on this unique new product of Mallinckrodt/Nuclear research.

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Sterility testing is *safety factor #1* in the preparation and use of Albumotope-LS. A full two-week sterility test period must expire before the material is released for shipment. *Safety factor #2* is the low radiation dose. Quick clearance of Albumotope-LS from the lungs after scanning and its rapid excretion make for a radiation dose reported to be only 1.9 rads to the lungs and 0.008 rads to the body as a whole from an administered dose of 300 microcuries. *Safety factor #3:* aggregated radio albumin is virtually nontoxic. This together with the low radiation dose permits lung scanning to be repeated in 24 hours—a useful advantage in following the course of the disease or evaluating therapy.

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For brief summary, see next page.

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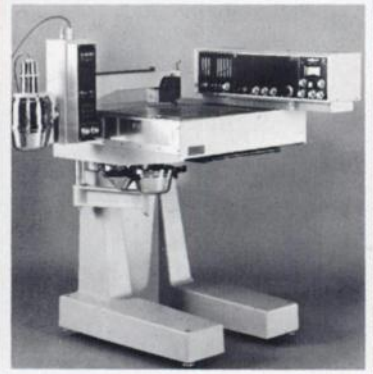

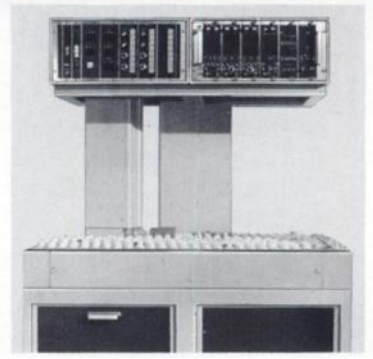

...the tools for getting there are here today.

The journey won't be easy. You'll have to travel past the limitations of your five senses. And be extra-familiar with the submolecular, as well as the intracellular, world.

We have the instrumentation to take you there. For instance, Nuclear-Chicago's Pho/Gamma Scintillation Camera. It's the choice of more than 95% of U.S. teaching hospitals and medical schools. They like its high resolution, ease of patient positioning, and its choice of 12 specialized collimators allowing one to switch from routine, "bread-and-butter" imaging to highly sophisticated procedures.

Our Pho/Dot is the world's most proven rectilinear scanner. Our Liquid Scintillation and Automatic Gamma Counters embody the newest ideas in capability-expansion for radioimmunoassay and competitive binding tests. And we could say equally good things about our Pho/Gamma Tomocamera, Data/Store Playback System, and similar products. But that wouldn't be modest.

When the last of the Great Plagues that afflict humanity has been wiped out, it will be because dedicated people have pin-pointed the method of attack. With instruments like these.

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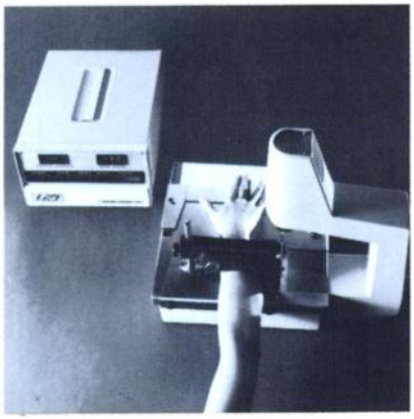


Bone Mineral Analyzer:

Provides information for diagnosing bone diseases without biopsy or radiographs.

A non-invasive scanning system, for diagnosing present and potential victims of osteoporosis and a variety of other metabolic bone diseases, is being marketed by General Electric Medical Systems.

Called the Norland-Cameron Bone Mineral Analyzer, the system permits precise measurement of changes and/or losses in bone mineral content and bone width. This indicates an increasing susceptibility to painful fractures, a problem which affects millions of persons, particularly the middle aged and elderly.

Now, with this system, potential victims can be identified in minutes; and, identified problems can be quantitatively assessed at various stages of progress.

The Bone Mineral Analyzer includes a scanner, which automatically transports a closely collimated beam of monoenergetic gamma rays (^{125}I) across the limb in a programmed pattern. The generated data is transmitted to a computer which then calculates the mineral content and bone width and displays measurements in digital readouts.

The system is compact, readily portable and easy to operate. Following its natural decaying process, the isotope used can be purchased from General Electric.

Whole Body Digital Scanner:

Demonstration at Boston meeting showed how to get patient count information, head to toe, with push button control.

The General Electric Whole Body Scanner, introduced at the recent meeting of the Society of Nuclear Medicine, provides a way to obtain maximum patient count data for diagnosis with a minimum of technic error.

To accomplish this, the scanner combines new technic versatility, easy patient make-ready and a number of automatic features controlled with push button and dial settings.

Two probes; three scanning directions.

For whole body scans, the unit travels up to 80 inches longitudinally, 24 inches laterally. Push button settings permit selection of a minified image of 2:1, 3:1, 4:1 or 5:1. In addition to whole body scans, up to four images can be displayed on one 14 x 17 inch film. The precise location of the image can be preset with the push of a button.

The scanner's two probes permit scans of the entire lung, top and bottom, to cover the total isoresponse area without turning the patient. The top probe angulates 270°, and has a powered 12 inch vertical travel. With optional vertical plane scanning, the patient can be seated upright; or, for larger patients, scan a 12 x 24 inch chest area while the patient lies on his side. These probe angulations also permit a vertex scan of the brain while the patient reclines normally, without propping up his head.

The whole body scanner can also perform any other scanning technic possible with a single-probe unit; provides the option of starting with one probe then upgrading to two as departmental needs and budget dictate.

Mobile table; easy positioning.

GE's mobile table, an accessory to the whole body scanner, adds procedural flexibility. The patient can be placed on the table out in the hall while controls are set at the electronics console. This also permits easy collimator interchange before the table is smoothly rolled into position for the scanning procedure. A pliable table top adds to the patient's comfort and permits counting and locating vertebrae without first rolling the patient on his side. The top also raises and lowers without adjusting bottom probe.

With the patient in position, the PHA button is pressed, the hot spot located, the line spacing set and the desired information density button pressed. Result: scanning speed is displayed automatically. No calculations. Patient count information, during the procedure, can be read at the gantry face without leaving the patient's side.

Full-color, full-count Videodisplay.

To view scans in full-count, fully functional color, the scanner is combined with GE's Videodisplay and Processing Unit. Images, in eight distinct colors (or shades of gray if desired), are displayed on a TV monitor; can be manipulated, long after the patient leaves the department, to enhance desired details and aid diagnosis.

Complete information about all GE nuclear instrumentation and services is available from GE medical systems representatives.

Videodisplay of Digital Scans:

Extends the diagnostic value of any scanner.

Accurate patient count information, recorded at every point of every scan, can now be displayed and viewed on a TV monitor in full-count, fully-functional color.

The General Electric Videodisplay and Processing Unit provides this new electronic visualization capability, aiding in the interpretation and diagnosis of scans.

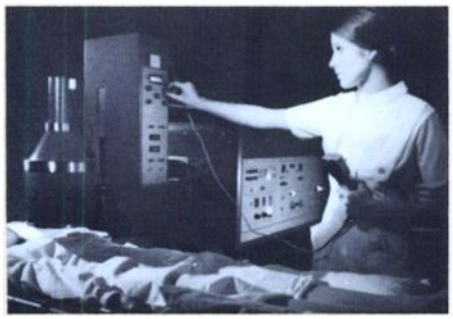
It can be used on line with the GE single- or three-probe digital scanners; and, can interface with virtually any analogue or digital scanner in use today to extend its diagnostic information capability.

The Videodisplay records and stores, in its memory, all of the patient count data from each scan. With the push of a button, this data is instantly displayed on the monitor in eight vivid colors, each of which represents a specific number of counts at that point on the scan.

Any scan data in the unit's memory can be instantly manipulated, with push button and thumbwheel controls, to enhance desired details. Eliminate colors to display isocount areas. Change from color to shades of gray. Determine the count at any point, along any X or Y line, within rectangular areas. And more. Yet, all information remains in the unit's memory, fully and immediately recoverable.

Any scan can be photographed, directly from the monitor, for patient records. And, any scan in the memory can be recorded on cassette tape, in only 40 seconds, for future use. It can be fed back into the memory of any Videodisplay unit just as fast.

In addition, any Videodisplay image, whether taped or a direct scan, can be transmitted to any other Videodisplay unit over regular telephone lines. The same scan can be viewed simultaneously by doctors at both locations; and, can then be independently manipulated and/or recorded at each Videodisplay unit.



Single Probe Digital Scanner:

Makes more diagnostic information easier to get.

The automatic touch has been added to digital scanning procedures with the General Electric single probe scanner.

Simple thumbwheel and push button settings, for the combination of automatic features, facilitate operation of the unit while providing less opportunity for technic errors. Scanning speed, for example, is automatically selected by setting the desired line spacing and information density, then finding the hot spot. No calculations are needed. Other automatic advantages include film exposure slit length changes with line spacing, to prevent scan gaps or overlaps; scalloping corrections to align the photoscan display; and, photorecording density settings, between preset minimum/maximum values.

The GE scanner also provides a built-in scaler; push button probe positioning; easy-to-read light-emitting diodes; and four collimators as standard equipment.

Scan information is available by the standard mechanical dot or photorecording technics or by adding GE's unique electronic color Videodisplay unit. The latter allows you to view, on a TV monitor, the scan image in full-count, fully-functional color. Also, permits push button scan manipulation, without loss of data, to enhance desired details. The result is new capability for the interpretation and diagnosis of scan displays.

GE Service:

Helps maintain procedure schedules.

General Electric's medical service force is the largest in North America. With service technicians strategically located in virtually every major city, we can quickly respond to your needs.

Specialists have been trained in nuclear instrumentation at GE's Medical Systems Institute.
Ask about a service program matched to your needs.

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

GENERAL ELECTRIC

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INTRODUCING ICON 380

"No, 'tis not so deep as a well, nor so wide as a church-door; but 'tis enough, 'twill serve." —SHAKESPEARE

Mr. Shakespeare was obviously not thinking of our new ICON 380 Scintillation Camera when he wrote those words. But compared to other Cameras, the ICON 380 is a very deep well and a very wide church-door indeed. (We agree that wells and church-doors are hardly accurate units of measure, but we like the quotation). For those who insist on more exact terms, here is what the new ICON 380 offers:

A useful field of view of **38 cm.** (15 inches) diameter.

Delay line arithmetic.

Resolution better than 6 mm (¼") as measured with ^{99m}Tc and bar phantom.

Two Zones-of-Interest, each capable of independent size, shape and position adjustment.

A unique "field of view" control which selects 38 cm., 28 cm., or 19 cm. circular concentric fields, rejecting all counts outside the selected field size, but maintaining the displayed image size.

A unique control (IRIS POSITION) to shift the 19 cm. field from its normal central position to the outer edge of the crystal. The 19 cm. field may then be positioned in any of four quadrants. This is an invaluable aid to patient positioning, especially in brain imaging.

14,000 hole low-energy collimator.

Dual channel ratemeter for display of Zones-of-Interest data.

Seven-digit scaler for digital quantification and display.

Both "fast" and variable persistence scope displays, with Polaroid camera.

Push-button energy selection with over-riding manual control.

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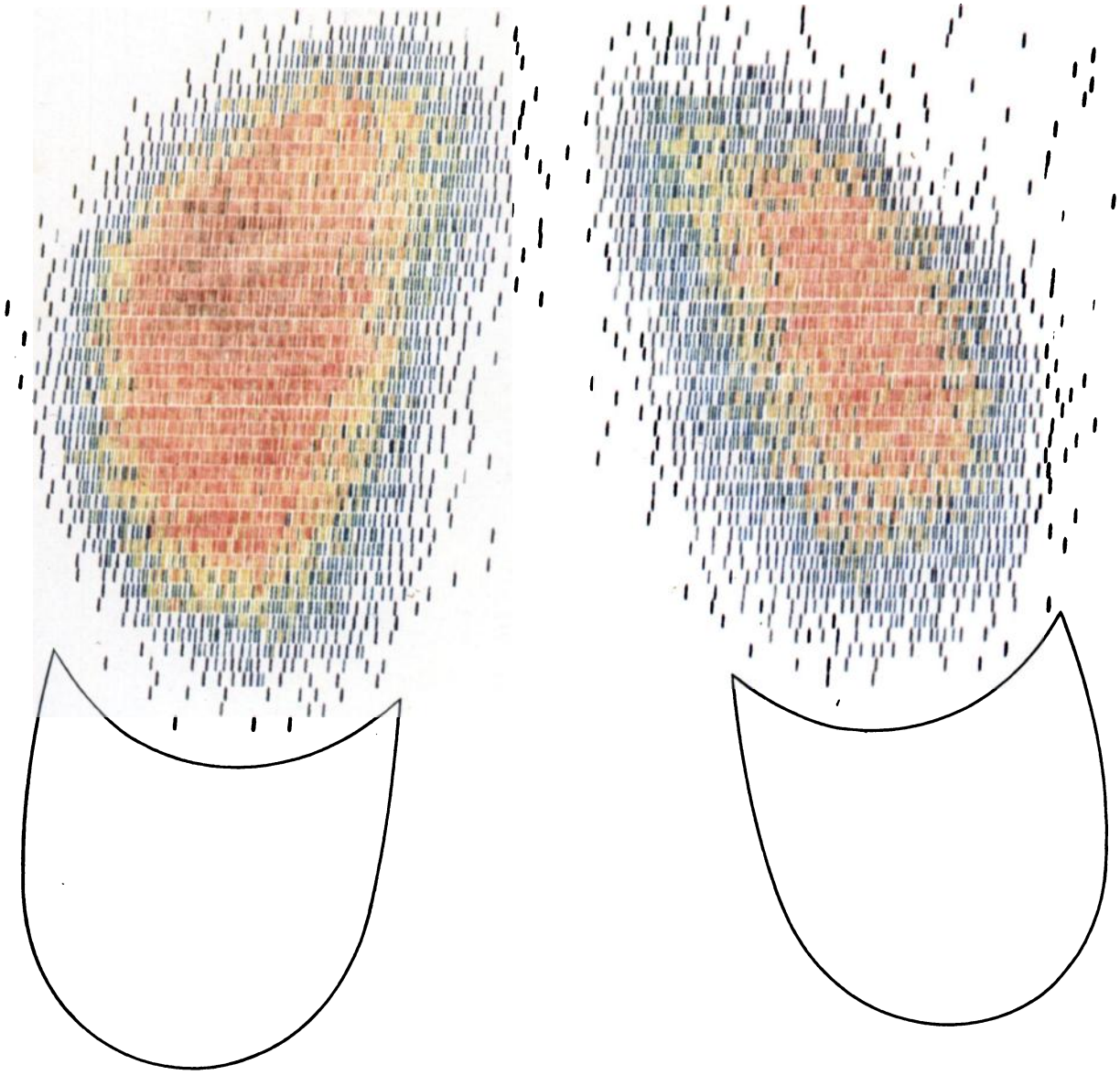

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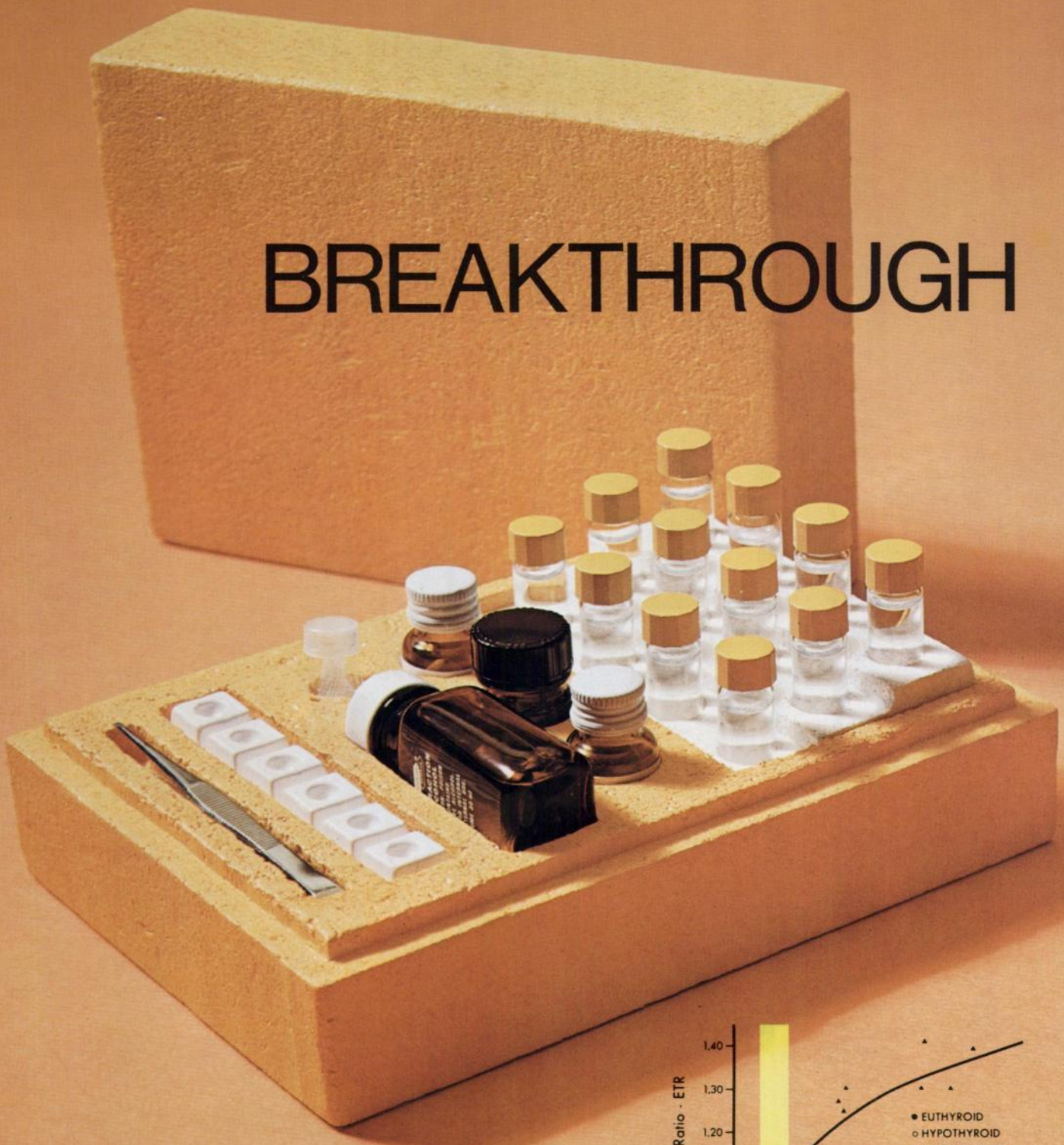

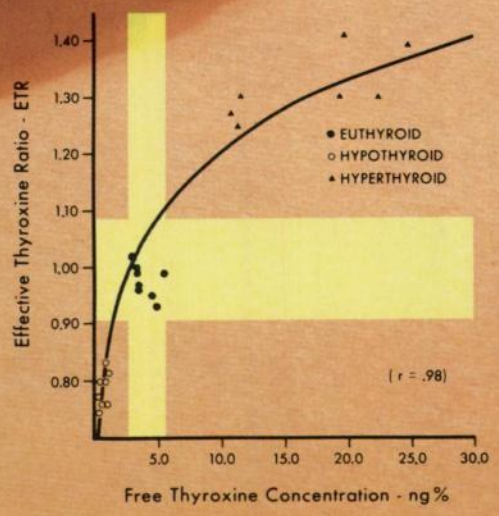

Graph showing (1) distinct separation between hypothyroid, euthyroid, and hyperthyroid states, and (2) correlation between effective thyroxine ratio and free thyroxine concentration. Shaded horizontal area shows euthyroid range for effective thyroxine ratio. Vertical shaded area shows euthyroid range for free thyroxine concentration. *S. C. Thorson, M.D., private communication.*

Mallinckrodt announces...

Res-O-Mat® ETR™ Test

indicates metabolically active thyroxine IN A SINGLE PROCEDURE*

With the **Res-O-Mat ETR** test you can now assess the level of metabolically active thyroxine in a single test. Separate determinations of serum T3 uptake and T4 are no longer necessary.

The new **Res-O-Mat ETR** test is a direct means of determining Effective Thyroxine Ratio, a reliable indication of thyroid function.[1] It effectively compensates for the effect of estrogen medication, pregnancy, and other factors affecting the level of thyroxine binding globulin.

The **Res-O-Mat ETR** test procedure is straightforward and reproducible. Pipettings are fewer. Time and temperature control are not critical. After simple processing and incubation on the rotator, the Effective Thyroxine Ratio is obtained by dividing the count rate of the standard (supplied in the kit) by the count rate of the patient serum. There is no curve to draw, no ice baths, no precount-postcount determination.

Effective Thyroxine Ratio is the first direct, single-test measurement having a clinically proven[2] correlation with the level of metabolically active ("free") thyroxine. Send in the coupon for detailed supporting information about the new test of choice for determination of thyroid function.

Availability

Res-O-Mat ETR Test Kits are available in 12- and 60-test sizes.

1 Mincey, E. K. and Brown, J. L., Thyroid Function Testing: a New Approach. *Submitted for publication.*

2 Mincey, E. K. and Thorson, S. C., et al.: A New Parameter of Thyroid Function—the Effective Thyroxine Ratio. *Submitted for publication.*

*Patent applied for.

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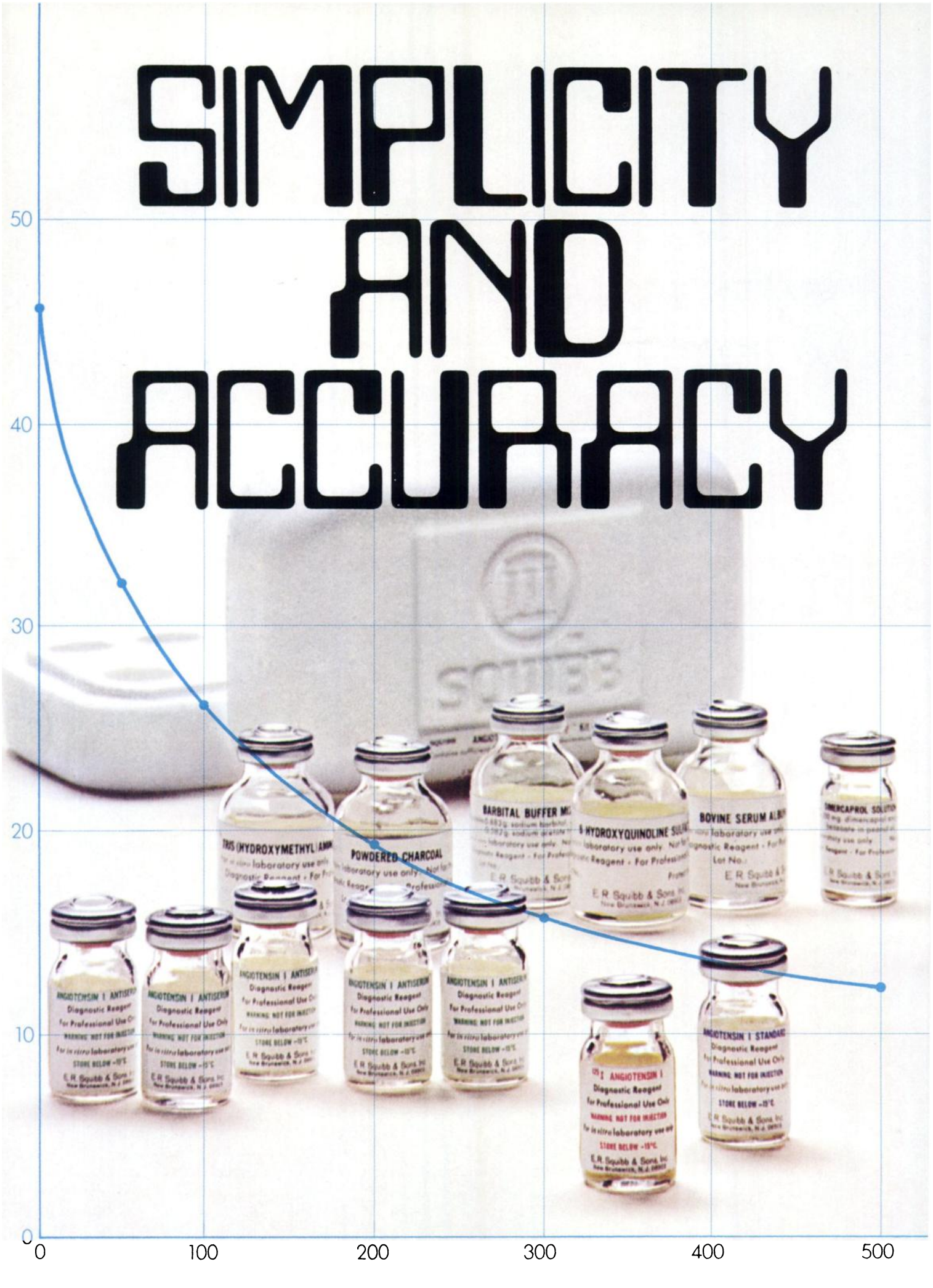
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Designed for precision and accuracy

Three important features of the Immutope Kit assure reliable, reproducible results in determination after determination. First, a special formulation makes the Angiotensin I Standard stable. Second, standardization is protected by a built-in iodine scavenger. Third, *all* the reagents in the Immutope Kit are stable (when properly stored) and all are matched—specifically formulated and tested to assure compatibility.

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Usual work time is significantly reduced because the reagents are premeasured. Because there's no need to run repeat blanks. No ice baths required as with another similar kit...all Angiotensin I Immutope procedures, except for incubations, are done at room temperature. No need to make up fresh reagents every time a series is run...properly stored, the diluted ^{125}I Angiotensin I solution lasts for a week, the Tris Acetate Buffer with BSA for a month, and the remaining reagents for three months.

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CAMERA SYSTEM	Format	Film Capacity	Framing Rate	"Dead Time"	Data Loss at 1.0 sec.	Capability to Preset number of exposures	Lens Speed	Time for changing Takeup cassette	Built-in film cutter	Automatic synchronization with Gamma Camera	Remote foot control
RADX MODEL 600	70 mm	150 feet	10 frames per sec	30 milli-seconds	3%	Yes	f2.8	Approx 10 sec	Yes	Yes	Yes
Hasselblad Model 500 EL	70 mm	16 feet	1.3 frames per sec	750 milli seconds	75%	Yes	f3.5	Approx 1 min	No	Yes	Yes
RADX Model 250 Nikon 35 mm	35 mm	33 feet	2.5 frames per sec	300 milli-seconds	30%	No	f3.5	Approx 3 min	No	No	No

Film advance and shutter time of 30 milli-seconds. Direct film viewing with no projection required.

A view port lets you view the CRT directly, and a data card records patient information on the film. The Model 600 is also 10 times faster than the 35mm Nikon; 25 times faster than the Hasselblad. Check the comparison chart. Then check with us.

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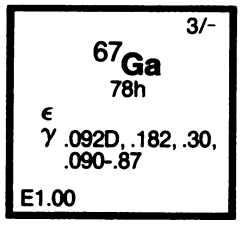

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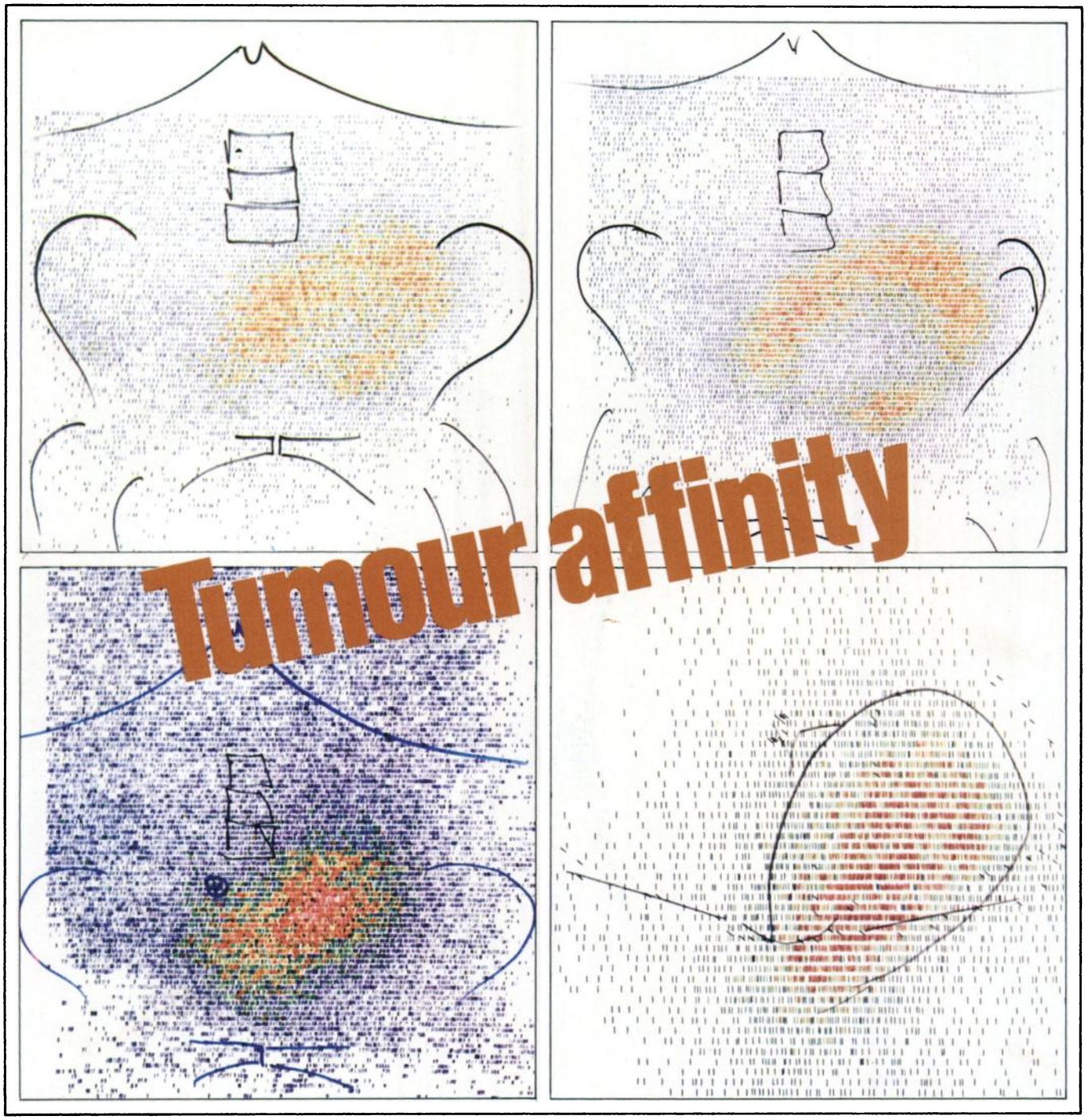

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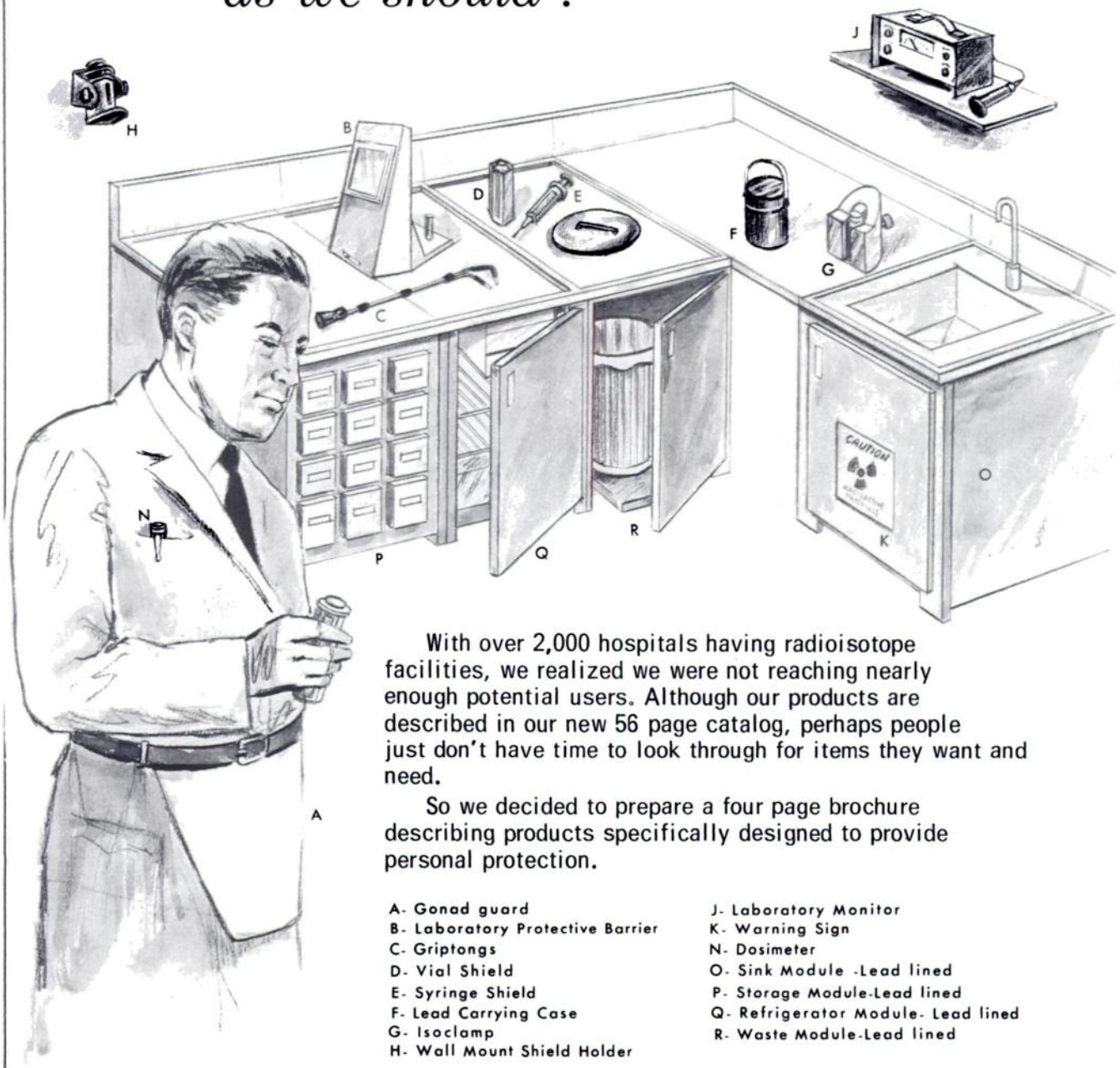
But not nearly as much as we should !



With over 2,000 hospitals having radioisotope facilities, we realized we were not reaching nearly enough potential users. Although our products are described in our new 56 page catalog, perhaps people just don't have time to look through for items they want and need.

So we decided to prepare a four page brochure describing products specifically designed to provide personal protection.

A- Gonad guard
B- Laboratory Protective Barrier
C- Griptongs
D- Vial Shield
E- Syringe Shield
F- Lead Carrying Case
G- Isoclamp
H- Wall Mount Shield Holder
J- Laboratory Monitor
K- Warning Sign
N- Dosimeter
O- Sink Module -Lead lined
P- Storage Module-Lead lined
Q- Refrigerator Module- Lead lined
R- Waste Module-Lead lined

For your copy write or call:

ATOMIC DEVELOPMENT CORP.

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

Introducing...

the nms MODULAR 1000

...the most revolutionary new camera for nuclear medicine!

Now . . . for the first time a photographic system that can accept any size film you require — 35 mm, 70 mm, or Polaroid! Can even be adapted for 90 mm and 105 mm.

This is in addition to the superiority that made NMS's reputation in the field — the best picture quality and definition available!

On the opposite page you will find a detailed, feature-by-feature comparison of the new NMS Modular 1000 with its closest competitor.

In the important field of nuclear medicine, superior equipment can make an enormous difference in diagnosis and scientific investigation.

SEE US AT THE NUCLEAR MEDICINE CONVENTION
We'll have booths 7 & 8
and we'll be there for
demonstration and information.

NUCLEAR MEDICAL SYSTEMS, INC. • 144 ROUTE 59 •

Compare the revolutionary **NMS MODULAR 1000** with currently available systems.

Features	NMS Modular 1000	Current competitive systems
Film acceptance		
70mm	yes	yes
35mm	yes	no
Polaroid	yes	no
Adaptability to large film		
90mm	yes	no
105mm	yes	no
Image size	variable	fixed
Threading of film	automatic self-threading	automatic self-threading
Take-up cassette	light-tight . . . accepts 1-600 frames	light-tight . . . accepts 1-100 frames
Oscilloscope control	yes	no
Pre-set count	yes	no
Automatic film cut-off	yes	yes
Oscilloscope viewing	direct	direct
Remote control	yes	yes
Installation	manufacturer installed, calibrated and tested in each laboratory	user installed
Display of operating modes	full display	ready light only
Dead time	4/100 sec.	3-4/100 sec.
Frames per second	10 plus	10
Film Identification	Electronic & automatic	manual

For more information, call or write:

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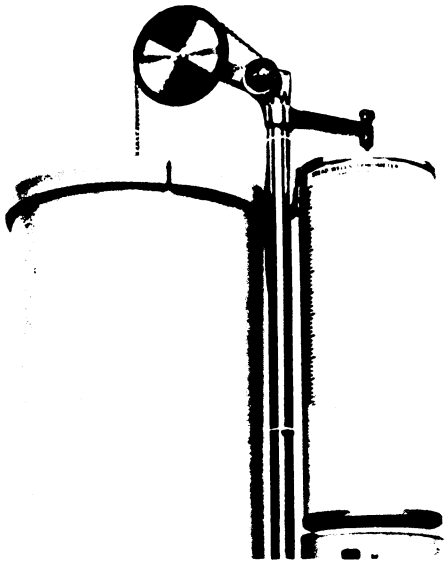
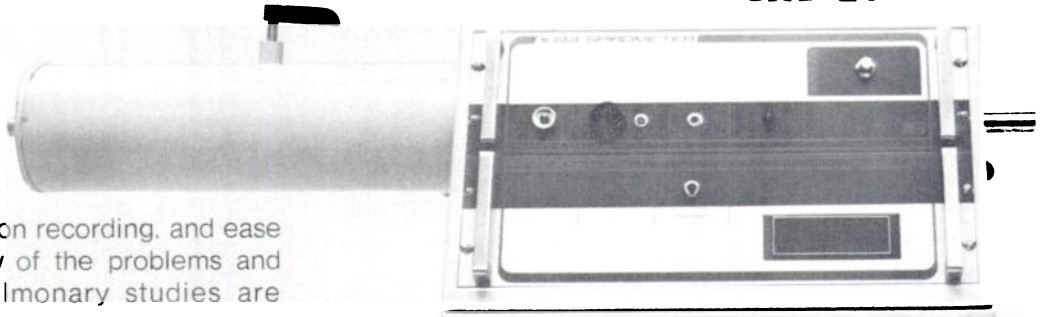
nms

From... the Innovators

X-133 SPIRO-METER



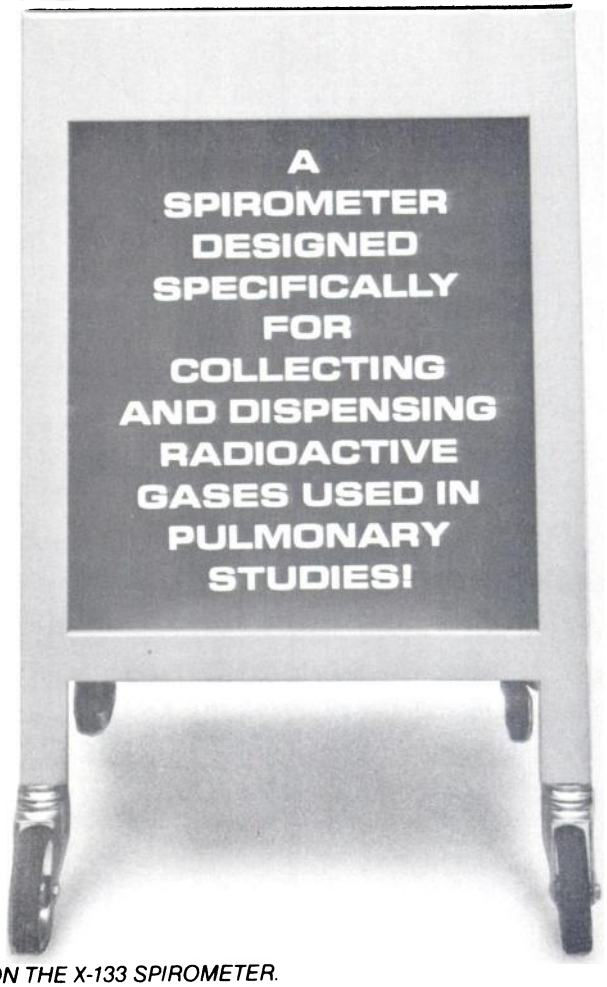


Operator safety, extraneous radiation recording, and ease of admitting Xenon are just a few of the problems and considerations when Xenon pulmonary studies are contemplated.

Collins offers a Spirometer designed totally and specifically for the use of Xenon or other radioactive gases in pulmonary function studies. Single Breath ventilation, perfusion, and Steady State ventilation studies are easily and accurately performed on the X-133 Spirometer.

A combination of important safety and operational features make the X-133 Spirometer unique in its field:

- **Lead shielding to Underwriters Laboratories, Inc. subject 544 requirements.**
- **Less than .2MLR/Hr at a distance of 5 cm. with a 2.0MLC/Liter concentration.**
- **Petcock for admitting radioactive gas by syringe.**
- **Motor blower for complete mixing..**
- **Solenoid operated valve for safety and ease of operation.**
- **Permits patient and spirometer flushing.**
- **Safety alarm signals upper limit of spirometer bell.**
- **Easy to clean and sterilize.**
- **CO_2 Absorber.**
- **Optional digital display volume readout.**
- **Foot controls for both solenoid operated valve and kymograph operation.**
- **7 liter capacity spirometer.**
- **Internally occluded for minimum gas requirements.**



WRITE FOR COMPLETE SPECIFICATIONS ON THE X-133 SPIROMETER.

wec inc.

WARREN E. COLLINS, INC.

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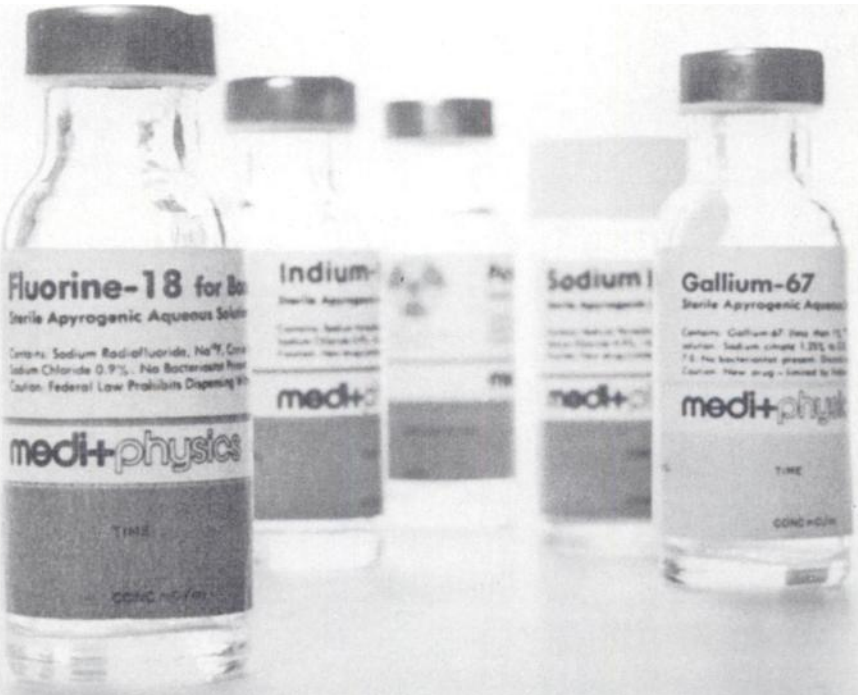
First
Fluorine-18
now
Iodine-123
Gallium-67
Indium-111
Potassium-43



These cyclotron produced products are now available daily, Monday thru Friday from Medi+Physics. For further information, please contact the Medi+Physics Laboratory nearest you. In San Francisco our main office is at 5855 Christie Ave., Emeryville, California (415) 658-2184. In Los Angeles phone (213) 245-5751, in Chicago (312) 671-5444, or in New York/New Jersey (201) 757-0500.

medi+physics

Can you describe ten clinical benefits of Image Data Processing Systems?

Several hundred articles dealing with clinical applications of nuclear medicine image processing have now been published. Tens of progressive nuclear medicine departments rely upon image processing on a daily basis. And with good reason.

Here are a few of the important protocols being done. And some unique capabilities.

Flood Correction

Eliminates field artifacts and reduces the possibility of false negatives and false positives (due to gamma camera sensitivity non-uniformity) to a minimum. Many hospitals accustomed to the value of flood correction won't look at a study until it has been corrected.

Increased Resolution

Increased resolution is a natural offshoot of field uniformity or flood correction. Most gamma cameras are detuned off the photopeak to avoid the phototube rosette pattern artifact. In other words, the cameras are "compromise tuned" for concomitant optimization of field uniformity and resolution. However, some gamma cameras, such as the Radicamera, can also be operator tuned right on the photopeak to ensure the highest possible resolution. Subsequent flood correction by the image data processing system can then be used to eliminate camera uniformity variations.

Residual Isotope Subtraction

Permits you to subtract the data remaining from a previous study before you evaluate the followup.

Data Exponentiation

Allows you to substantially enhance subtle contrast differences by squaring, cubing or raising the data in each image channel to a given power.

Image Frame Condensation

Lets you add image data in successive frames to optimize statistics in subsequent time-activity histograms.

Automatic Study Sequencing

Permits you to automatically acquire a dynamic frame sequence followed by a static image. With a protocol such as this, you can automatically acquire half second sequential frames for a specified number of seconds—followed by a ten second static image—when doing dynamic cerebrovascular transit studies.

Exposure Optimization

Can be achieved by telling the system to continue data acquisition until one of the data points comprising the image contains a given number of counts. With this capability, different views of the liver, for example, all contain the same "brightest level." Much better (more uniform) image intensity/exposure control from view to view is obtained in this manner than is possible when taking views to preset time or total image field counts.

Quick Histogram Generation For Multiple Areas Of Interest

A particularly important capability of image processing systems. Since much of the work done with such systems is dynamic and involves histograms, speed is of the essence. Some image processing systems can generate separate time/activity curves for each area you've defined within a 25 minute renal function series in just seconds. When compared to conventional recording systems, over a period of a year an image processing system can save you a few hundred hours in histogram generation time alone.

Unexcelled Dynamic Scintigraphy

Another primary feature. You can not only store and replay a multi-frame study, but also show only the *change* from frame to frame, generate *isocontour plots* for successive frames, quickly define and view *profiles* across each image frame, and print out an activity map showing the *number of counts comprising each image data point*.

Ability To Do Several Clinical Routines Not Otherwise Possible

This is probably the most important capability of an image processing system. Because most such systems are programmable, everything from isotope inventory to fractional clearance rate calculations is possible. Image processing systems are being used for clinical protocols ranging from determination of hepatic phagocytic, metabolic and blood transit changes to verification of the existence and degree of septal defects. Cardiac ejection fraction studies are being made routinely in some hospitals as part of the serial evaluation of, for example, mitral valve disfunction characterized by valvular regurgitation, and left heart failure associated with myocardial infarction. While it is sometimes possible to obtain function indices using alternative nuclear medicine procedures, the speed, convenience, accuracy and replicability available with a good image data processing system cannot be duplicated.

Conclusion

There are literally dozens of procedures—vital ones—which are only possible with a programmable image processing system. Such systems have graduated from the research phase of their development. They belong in any up-to-date clinical nuclear medicine imaging laboratory. Image processing is no longer image obfuscation. It is better resolution. Organ function indices. Scintigraphs free of instrumentation artifacts. Region-of-interest analysis. Exposure optimization. Contrast enhancement. Activity maps. Tumor to non-tumor ratios. Pre- and post-operative comparisons. Improved pancreas visualization. And a host of other clinically valuable capabilities.

In short, sophisticated image processing is an idea whose time has come!

The MED II... It works for you.

The MED II can do any of the already described operations. And many more besides. But the best rationale for making your image processing system a MED II can be provided by a MED II user.

Many MED II users are research oriented, many clinical: most are both. The one thing they have in common is full MED II utilization. Visit some image processing system installations and you'll find their several thousand dollar system sitting idle. Visit a MED II installation, and you'll find the system hard at work . . . sometimes acquiring and processing data from three separate camera rooms. There are several reasons for this distinction.

The MED II Is Ready To Start Working For You The Day It's Installed

Flood uniformity correction, area-of-interest analysis, activity profiles . . . and a multitude of other capabilities are pre-programmed. Want to smooth a curve? Just type CS. Want to retrieve a frame? Type MR, specify the frame number, and in a few milliseconds yesterday's flood corrected right lateral brain view appears on the CRT. Dozens of other commands are executed with equal facility. It's great if you have a full- or part-time programmer. But with the MED II, plenty of important and helpful work can be done by the usual technologist-physician team just by using the extensive pre-programmed capabilities that are fully operational in every MED II shipped.

You'll Belong To The World's Largest Image Processing Club

More nuclear medicine physicians own Nuclear Data image processing systems than any other. That means you'll have plenty of company to share ideas and trade new protocols with. For example, while one of your colleagues develops a procedure for lesion characterization with extended time ^{67}Ga uptake and retention studies, you might be developing a protocol for the differential diagnosis of chronic myelocytic and acute leukemias using isocount contours and histograms for dynamic display of the time-varying distribution of ^{51}Cr labelled erythrocytes within the spleen. In your own clinical experience, you can undoubtedly think of several protocols for which the speed, accuracy and routinizing capabilities of the MED II would be ideal. Subsequent trading of routines is easy because MED II procedures and programs are fully compatible from system to system. Everyone saves time and an extensive library of clinical routines can be quickly accumulated.

MED II Is Backed By More Clinical Experience Than Any Other System

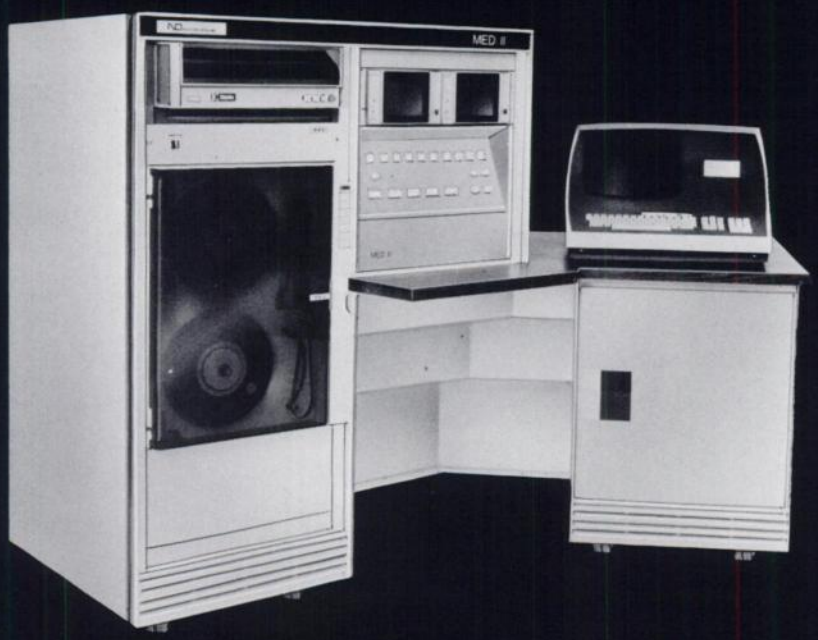
Nuclear Data pioneered the world's first image processing system. The MED II is a second generation system . . . backed by a great deal of interaction with clinicians. As a result, the MED II has been equipped with software and electronic features that render it unexcelled in both routine clinical and the most esoteric research environments. Seemingly trivial features, like having the compiler in core so that you can modify programs while working with them, become pretty important. Nuclear Data knows this. It has learned a lot of other things too. Most of them are reflected in the design and performance features of the MED II. That's why a number of clinicians with a wealth of image processing system experience have selected it.

MED II Service Is Fast And Competent

MED II service engineers have been working with disk and magnetic tape systems, the ND812 computer (present in every MED II system), analog-to-digital converters and system interface electronics for years. Even though the MED II has an established record of reliability, MED II service engineers are ready and able to get your system back on line, quickly, if a problem does arise.

A New MED II Brochure Tells All And Shows All

Clinical studies, system specifications and much additional information is available in the comprehensive new Nuclear Data MED II brochure. Write or call and it's yours.



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Potent combination of eight synergistic surfactants, diluted for use, is effective for all isotopes—whether inorganic or organic; in ionic or non-ionic form.

FOR GLASSWARE: Permits reuse of scintillation sample tubes and counting vials, beakers, pipettes, syringes, etc.
FOR METAL OBJECTS: Isoclean decontaminates syringe needles, forceps, shielded containers, and stainless steel trays.
FOR PLASTIC COMPOSITIONS: Isocleaned benchtops, floors, utensils, and rubber gloves are wipe-test activity-free.

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Request Isoclean product data folder.

ISOLAB INCORPORATED

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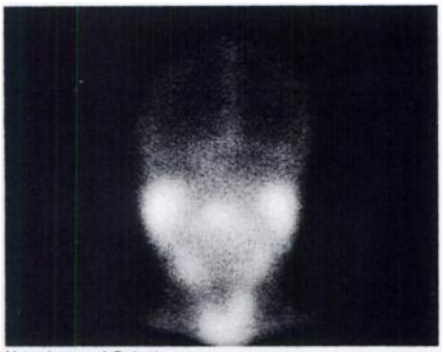
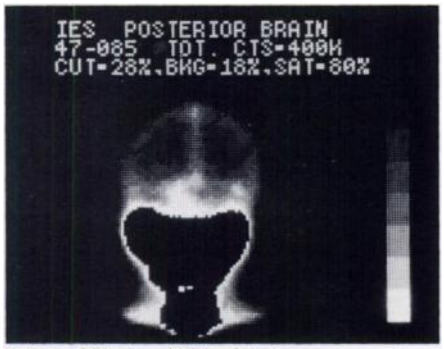
If you were the patient, you wouldn't want less.

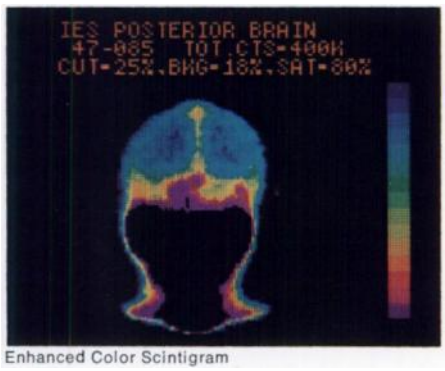
Study A



Unenhanced Scintigram



Enhanced Black and White Scintigram



Enhanced Color Scintigram

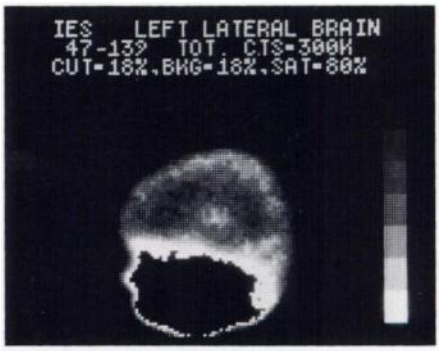
That is, you wouldn't want less than Picker's Image Enhancement System. This system, coupled to our Dynacamera™2, provides diagnostic information that just cannot be matched by any other nuclear medicine imaging system of any kind. Anywhere.

When the lesion is elusive, it is *this* system that provides the wherewithal for its confident visualization. What "couldn't quite be seen" with other gamma imaging systems, becomes discernible with this one. And certainly this is the ultimate challenge for any such system.

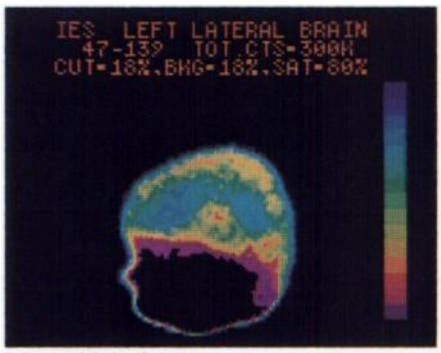
PICKER®

Study B

Unenhanced Scintigram



Enhanced Black and White Scintigram



Enhanced Color Scintigram

Study A (Posterior View)

Study Data: The patient was intravenously injected with 10mCi Tc^{99m}. 1000 counts/sq. cm. information density exposure was used.
Impression: Posterior fossa lesion. Surgically removed. Histologically confirmed as malignant meningioma.

Study B (Left Lateral View)

Study Data: The patient was intravenously injected with 10 mCi Tc^{99m}. 1000 counts/sq. cm. information density exposure was used.
Impression: A 6 cm. lesion, midline pinealoma was confirmed by angiography and pneumoventriculography techniques.
No surgery was performed.
Treatment: Cobalt teletherapy.

Studies courtesy of: Dr. E. S. Pederson, Clarkson Hospital, Omaha, Nebraska

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Picker's Image Enhancement System. How does it work?

Basically, the Image Enhancement System takes gamma image data from a Dynacamera 2 scintillation camera and stores the data in its built-in computer. The computer, acting on commands from the user, provides uniformity correction, contrast enhancement, background suppression, and a color or black and white enhanced scintigram. These features, functioning in concert, provide the mechanism for differentiating the frequently too subtle gradations between normal and pathologic tissue and for eliminating the false positives caused by instrument artifacts.

In effect, this computerized system improves the "target-to-nontarget ratio." Actually, by using two image views (e.g., AP and lateral), one can accurately locate the lesion while enhancement removes the interfering counts of nontarget tissue in order to permit clearer visualization of the target tissue.

A word about the computer part of this system. This is fiddle-free computerization because *we've* done all of the programming work. The clinician spends his time diagnosing, not engineering. And this system can be plugged in and used immediately because all the required programming and instruction is supplied. Further, user entry of essential data is simple because the programming format involves a logical sequential dialogue between the user and the instrument.

Image Enhancement System with Pulmonary Analysis Accessory

Enhanced Image on IES's Monitor Display

Finally, we offer two intriguing accessories for this Image Enhancement System. One is a Pulmonary Analysis Accessory that actually computes and anatomically relates xenon ventilation/perfusion indices automatically. Other applications of this accessory include time-compressed storage and playback of gamma images.

The second accessory is a Dynamic Function Study Accessory that achieves two things: it is the most flexible method for studying and quantitating organ dynamics; it also functions as an image bank capable of storing 2,000 images per tape (typically two months' work).

These are the highpoints. The complete story is available from your local Picker representative. Or write to Picker, 595 Miner Road, Cleveland, Ohio 44143. Or complete the attached Reply Card.

I would appreciate further information about your:

☐ Image Enhancement System. ☐ Pulmonary Analysis Accessory.
☐ Dynacamera 2. ☐ Dynamic Function Study Accessory.
☐ Please have your representative call for an appointment.

Name _____

Title _____

Department _____

Institution _____

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_____ Zip _____

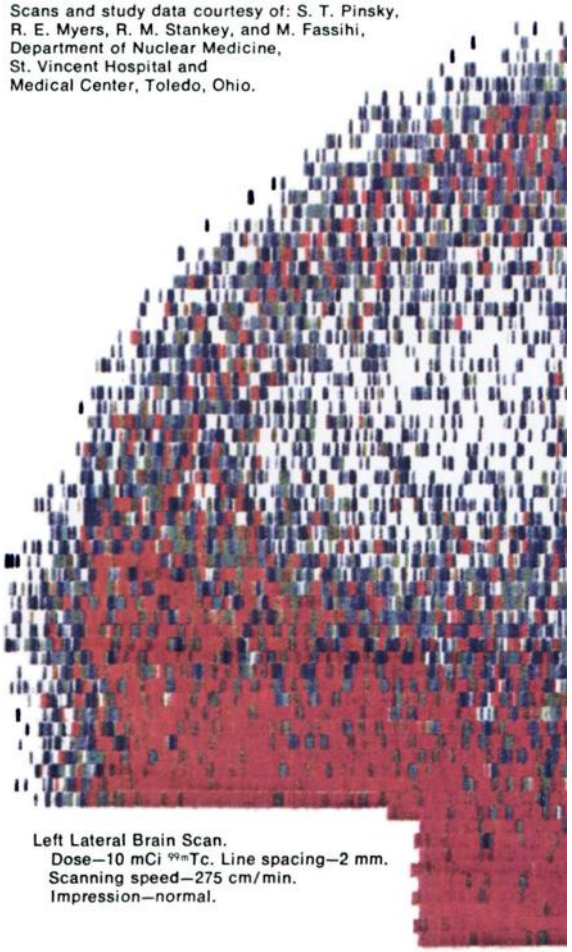
Phone _____
Area Code Number

PICKER®

World's Record Holder: Magna® Scanner was the choice in over 3000 hospitals!*

(What did all those customers know?)

Scans and study data courtesy of: S. T. Pinsky, R. E. Myers, R. M. Stankey, and M. Fassihi, Department of Nuclear Medicine, St. Vincent Hospital and Medical Center, Toledo, Ohio.



Left Lateral Brain Scan.
Dose—10 mCi ^{99m}Tc. Line spacing—2 mm.
Scanning speed—275 cm/min.
Impression—normal.

*Well over 3000 Magna Scanners are in use today. And our best estimate is that there are more Magna Scanners now in active use throughout the world than all the other gamma-imaging devices *combined*.

Presumably, these customers knew a *better* thing when they saw it. And, with every new Magna Scanner model, this "better thing" gets better and better.

Look at the newest Magna Scanners, for example, with their abundance of "better things."

Better Thing #1: Automated scan set-up.
Computerization simplifies and speeds the entire setting-up procedure. Calibration is virtually instantaneous: the instrument is ready to go in a matter of seconds. (But the computer doesn't limit flexibility.)

Better Thing #2: Consistent scans, minimal repeats.
Since scan parameters are automatically optimized by the computer, overall scan quality and consistency are superior and so interpretation is improved. Hence, the annoyance, time, and cost of retakes is minimized. Productivity goes up.

Better Thing #3: Training simplified.
With the task of calibration assigned to the computer, technologist training is simplified and speeded.

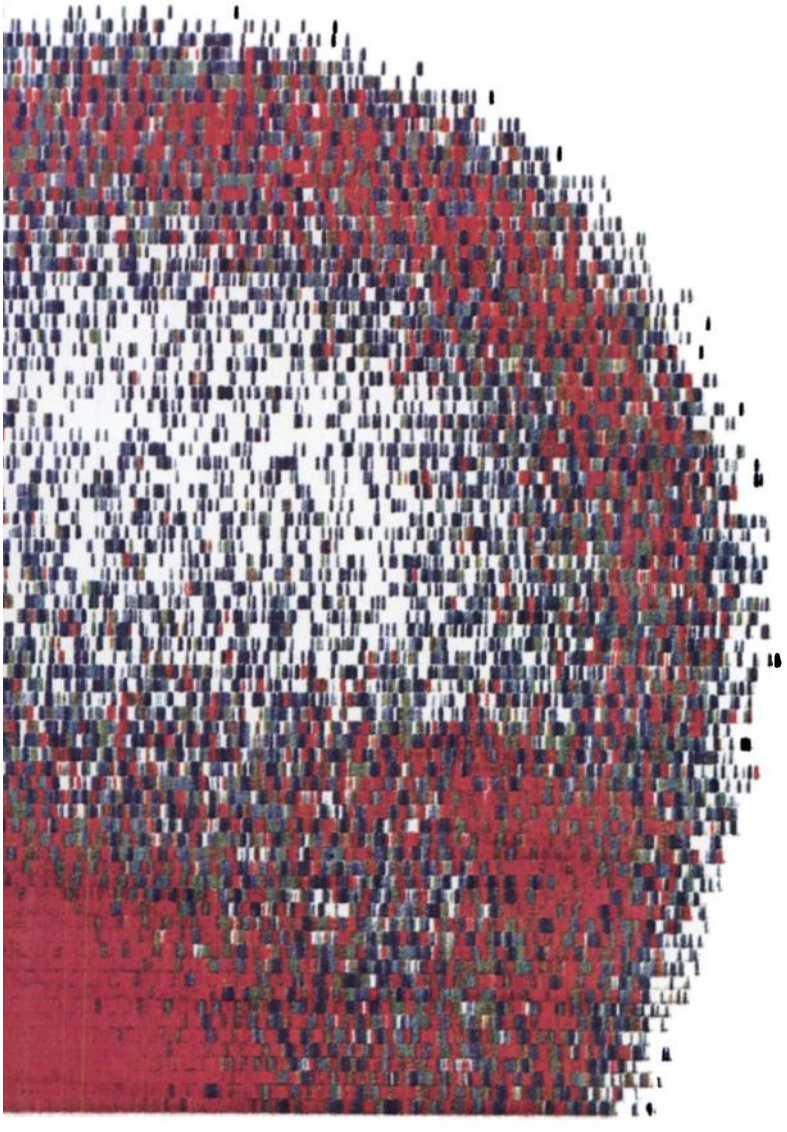
Better Thing #4: Improved color printer.
Result: the highest quality color scans available at any scanning speed. (And color ranges are set up automatically.)

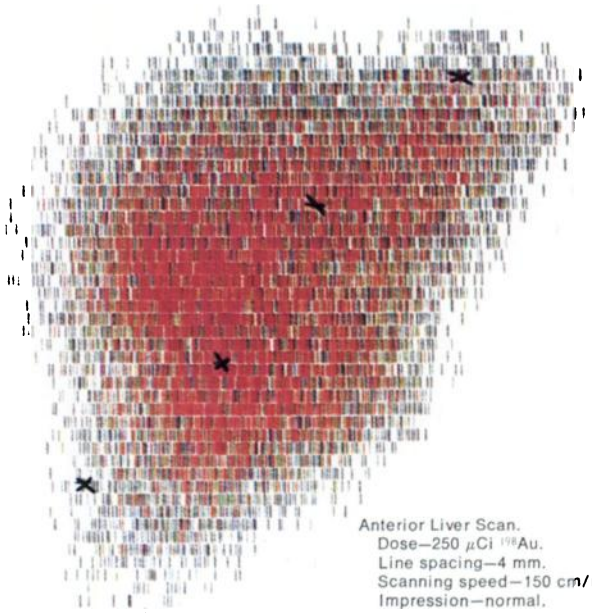
Note well: all of these better things are shared by both the new Magna Scanners and the new Dual Magna Scanner. And the Dual Magna Scanner also offers: dual isotope and subtraction modes, and matched scans from the lower and upper probes.

So, if you now contemplate the purchase of a scanner, find out what else those 3000 (plus) hospitals already know—and like—about their Magna Scanners.

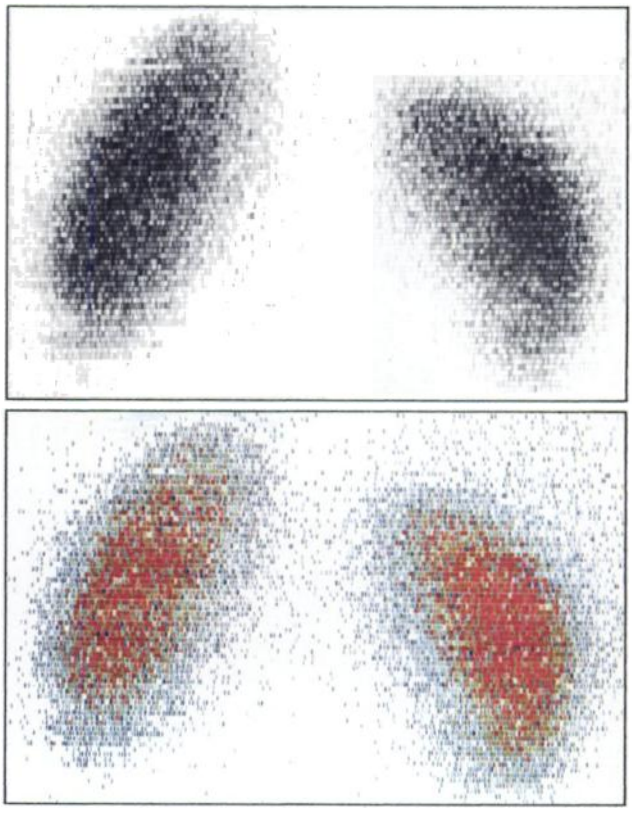
The easiest way to do this is to speak to a Magna Scanner user or your local Picker representative. They're both easy to find. (Ask us also about our flexible lease plans.) Or write Picker, 595 Miner Road, Cleveland, Ohio 44143.

PICKER®





Anterior Liver Scan.
Dose—250 μCi ^{198}Au.
Line spacing—4 mm.
Scanning speed—150 cm/min.
Impression—normal.



Posterior Kidney Scan.
Dose—300 μCi ^{197}Hg. Line spacing—2 mm.
Scanning speed—250 cm/min.
Impression—possible cysts in both kidneys. Small area of diminished activity seen in central portion of lower pole in right kidney and two areas of diminished uptake in both upper poles and mid-portion in left kidney.

Here are four ways to handle your in-vitro and in-vivo testing requirements.

IN-VITRO

LOGIC™ scintillation well counter

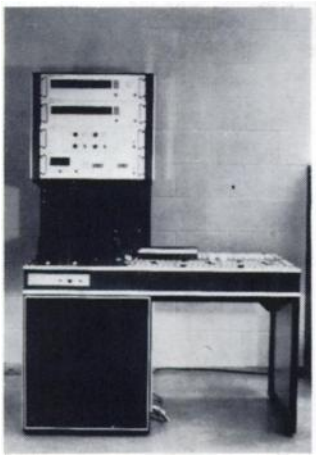
LOGIC™ is a simplified integrated spectrometer and well counter that's easy to operate. Most important is the LOGIC™ unique service commitment. When problems arise, a unique service program goes into action and your unit is back in operation fast. Every LOGIC is built with solid state and integrated circuitry to give greater reliability and less downtime.

The LOGIC™ symptom describing manual allows you to pinpoint most service problems in minutes. A call to our technical representative confirms or corrects your diagnosis immediately. The correct plug-in circuit board or a replacement LOGIC™ is air shipped to you the same day. You're back in operation within 24 hours. In short, if you have trouble with a LOGIC™, we'll repair or replace it with a service loaner in 24 hours or less.

Wallac automatic gamma sample changer

The Wallac LKB 80000 automatic sample changer handles a large capacity of samples to free your skilled staff for other duties. It allows long uninterrupted automatic runs with either uniform or intermixed samples.

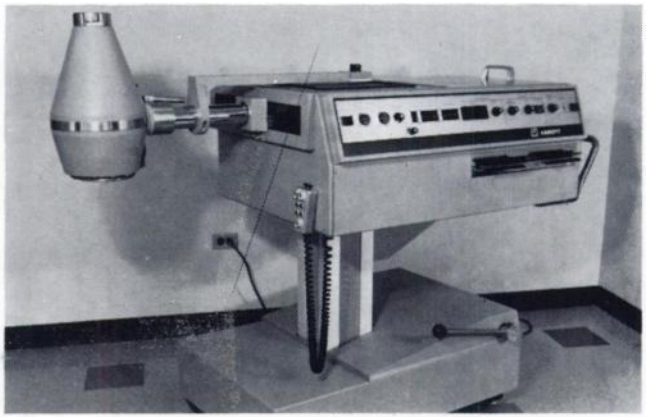
The sample conveyer operates as an endless belt giving you fast, safe and secure pneumatic handling of samples. There are two methods for positive sample identification before measurement, its position on the conveyer belt, and a binary coded cap. And, samples are changed in only 10 short seconds. Data readout is supplied in printed form or on punched tape. The Wallac automatic sample changers simple foolproof controls allow you to handle your needs efficiently and accurately.



IN-VIVO

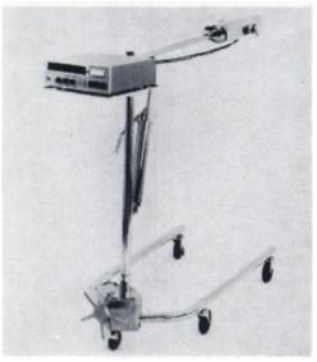
GRAPHIC™ Rectilinear scanner

GRAPHIC™ operation is simple. The control panel is designed for a logical left to right set-up procedure. Start at the left with Power On and work your way in a logical sequence to the right of the panel to Scan On. GRAPHIC™ two-position film cassette allows you to scan 14″ x 17″ in either direction, across the chest or lengthwise along the body. GRAPHIC™ will accomodate a variety of large scan field requirements with uniform ease. And, GRAPHIC™ is built to last requiring a minimum of service attention. It's so rugged that we warranty it for mobile operation. You have to be tough to work under these conditions.



LOGIC™ with uptake module

By simply adding a medical stand and probe with collimator to either of two LOGIC™ models, the 111 or 121, you're ready for thyroid uptake studies. The LOGIC™ modular concept provides add-on capabilities for you. Buy what you need when you need it. And, you still get the unique service commitment provided only by LOGIC™ . . . when problems arise, we'll repair or replace your instrument with a service loaner in 24 hours or less.



And, these instruments come from a full-line supplier who assures you of a continuing service commitment to train and assist your personnel in all their needs. It's our privilege to keep your Abbott instruments operational.

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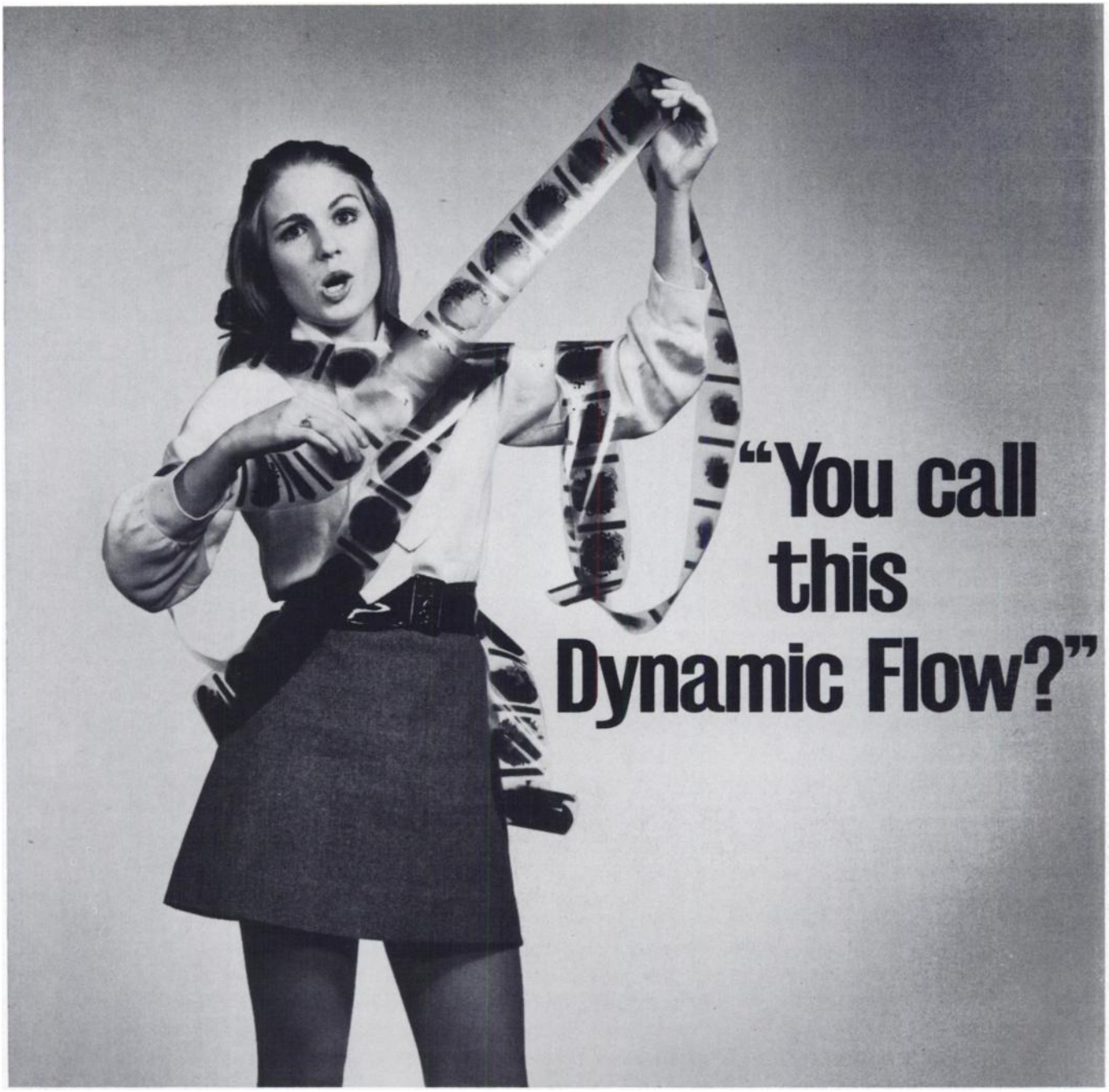

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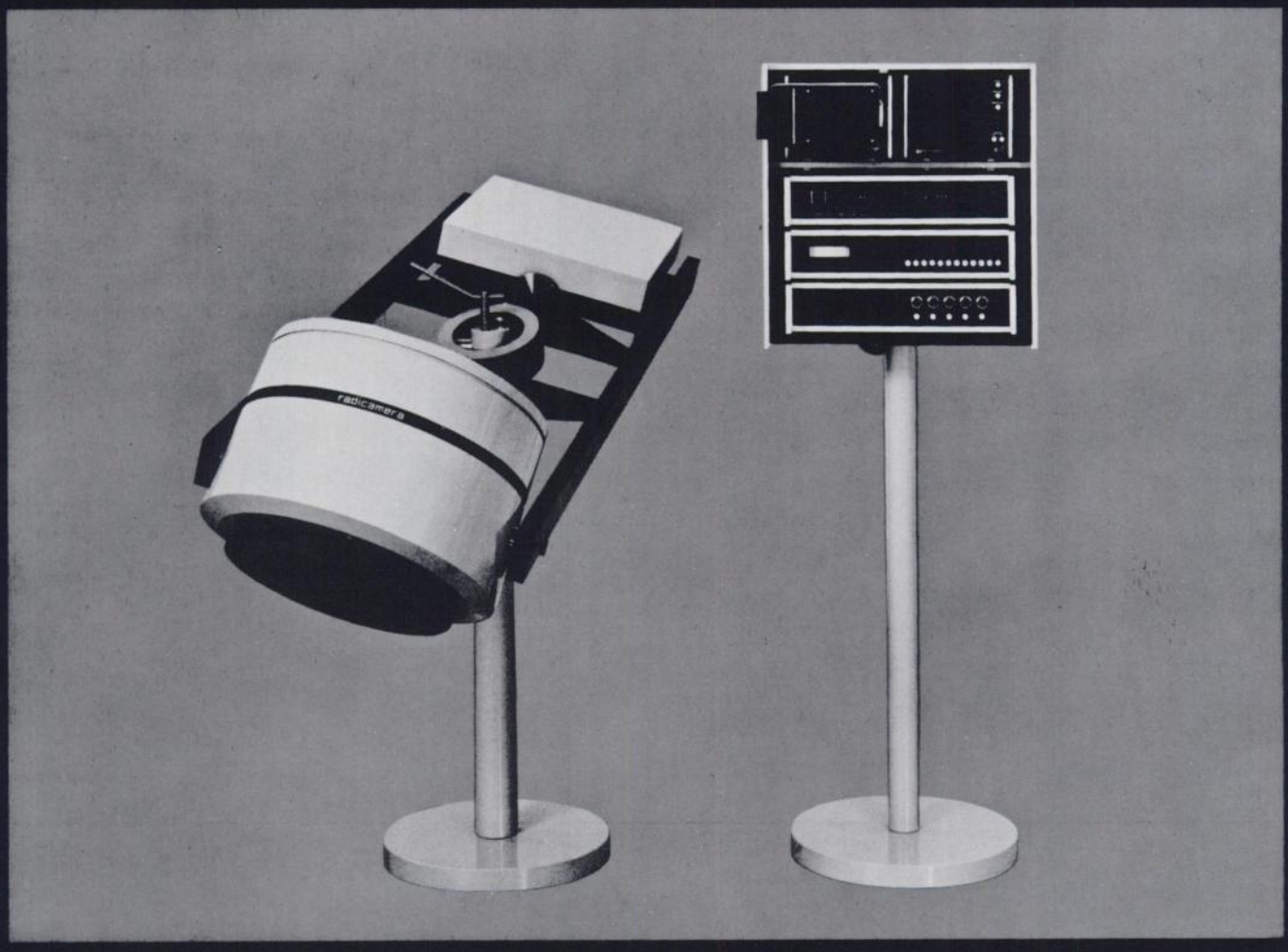

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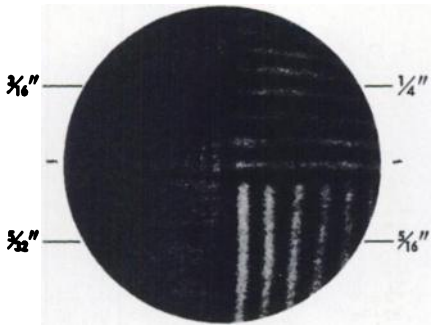
Compare resolution
Radicamera resolves 5/32-inch (less than 4 mm) phantom bars using a technetium source—a capability unparalleled by any other gamma camera. Images are clearer, sharper than ever before.

Field uniformity has been improved through more compact arrangement of detector phototubes.

A new 20,000-hole high sensitivity and high resolution technetium collimator has been developed to provide clinicians with the finest imaging system available for any clinical requirement.



Resolution

This bar phantom scintigraph was taken with the new Radicamera. The phantom was placed directly on the crystal, with a ^{99m}Tc source (140 keV) at a distance of six feet.

On conventional gamma cameras, the lower quadrant would appear blurred. But Radicamera easily provides clear separation between the 5/32-inch wide phantom bars—an improvement of almost 20% over any other gamma camera.*

Compare features
Counterbalanced detector permits unequalled speed and ease of positioning.

Greater range of motion and faster patient positioning are provided via the new gimbal stand assembly. Hand locks secure detector orientation if desired.

"Stereo" or three-dimensional images can be produced using the new Radicamera's ability to take pre-calibrated opposing scintigraphs. A special holder for these scintigraphs allows stereoscopic viewing.

Radicamera offers simultaneous readout of both counts and elapsed time. Either may be pre-set to yield greater flexibility in organ imaging.

Detector head shielding has been increased to virtually eliminate background activity.

A dot-shaped electronic marker has been provided to identify relevant anatomical landmarks. More than one dot can be generated to outline areas or define boundaries.

Operator controls have been simplified. Calibration, marker positioning, pre-set operations are all accomplished via pushbuttons.

Improved electronic design means reliable, consistent operation and quality scintigraphs.

Improved dual image Polaroid camera is standard.

Both normal and variable persistence oscilloscopes have been included to provide standard and cumulative display of radiopharmaceutical distribution.

Optional cart permits total mobility. System can be taken into intensive care units and to patients' bedsides.

Compare performance
Radicamera offers better resolution, easier operation, and faster positioning than any other gamma camera available. It takes up less laboratory space than any of its predecessors. And it offers a wide range of capabilities vital in the clinical evaluation of organ function and morphology. All at a price significantly below that of conventional gamma cameras.

Radicamera is sold worldwide. In the United States, it is available exclusively to government institutions and agencies, including all military, Veterans Administration and Public Health Service Hospitals.

For more information write or call:

*Since conventional printing processes tend to obscure fine detail, original scintigraphs clearly demonstrating Radicamera's ability to resolve 5/32-inch phantom bars are available on request.

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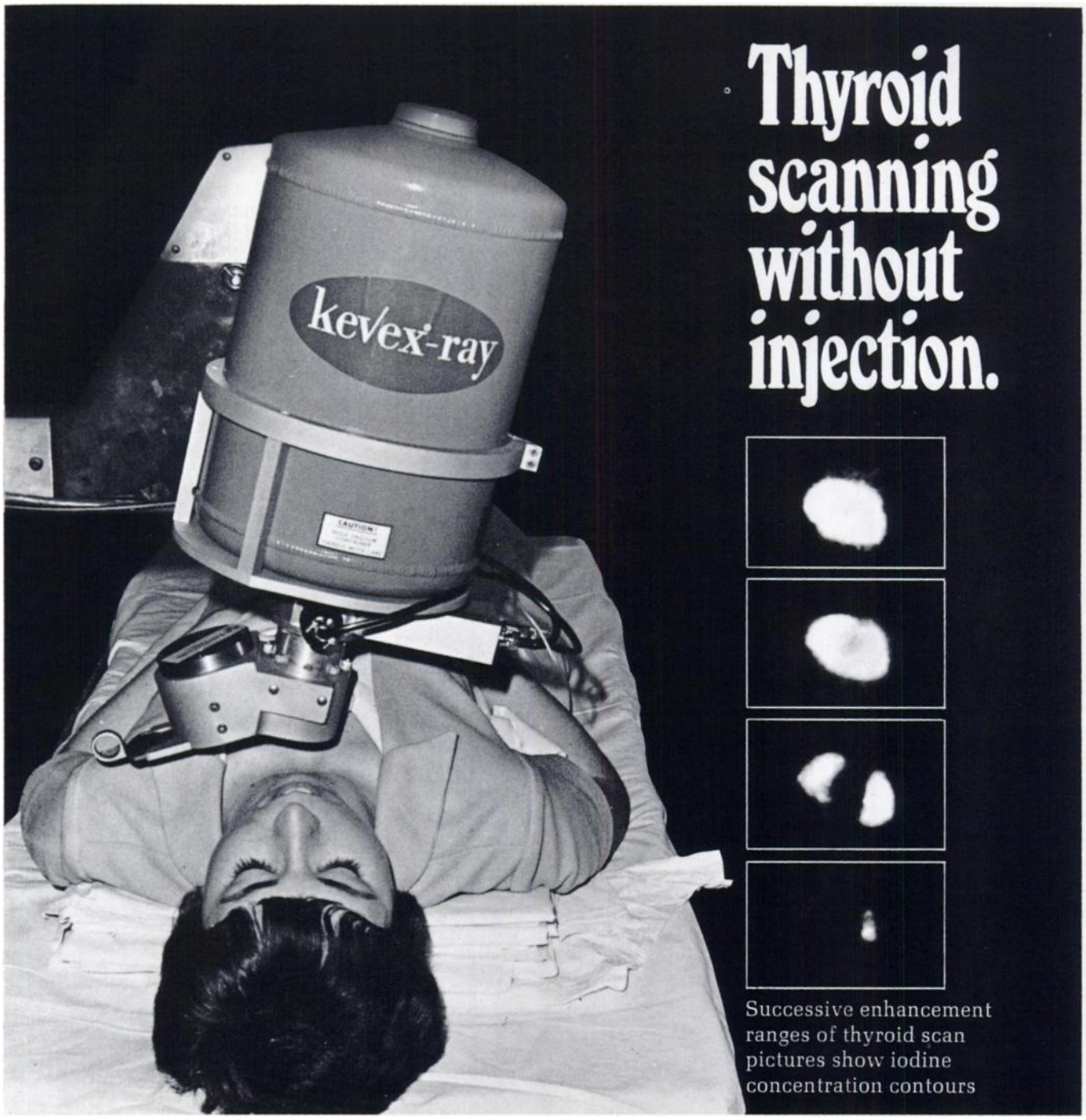

The Thyroid Analyzer shown here was developed by the Kevex Corporation, specialists in X-ray energy spectroscopy (XES). It measures the latent iodine distribution by scanning the gland region with a focused fluorescing source. The method has generated considerable interest because it eliminates the need for injecting radioactive iodine into the patient. Total radiation exposure from the Kevex system amounts to less than 1/100 of that produced by conventional methods.

The Kevex Thyroid Analyzer allows mapping of quantitative profiles of iodine distribution. It also provides a visual rendition of the scanned data. The visual is significantly improved by the Kevex X-ray Image Enhancer, as the photos show.

Write or call Dr. Rolf Woldseth for more details.

Reference:
Hoffer, P B., "Fluorescent thyroid scanning," *Amer. J. Roentgenology* CV (4), (April 1969).

Photograph courtesy of University of Alabama School of Medicine.

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Right now, some 20 RIA tests are routinely performed in clinical medicine. Many more tests have been developed in the research lab, and before long many of these will also become common clinical procedures. Can you read the handwriting on the wall?

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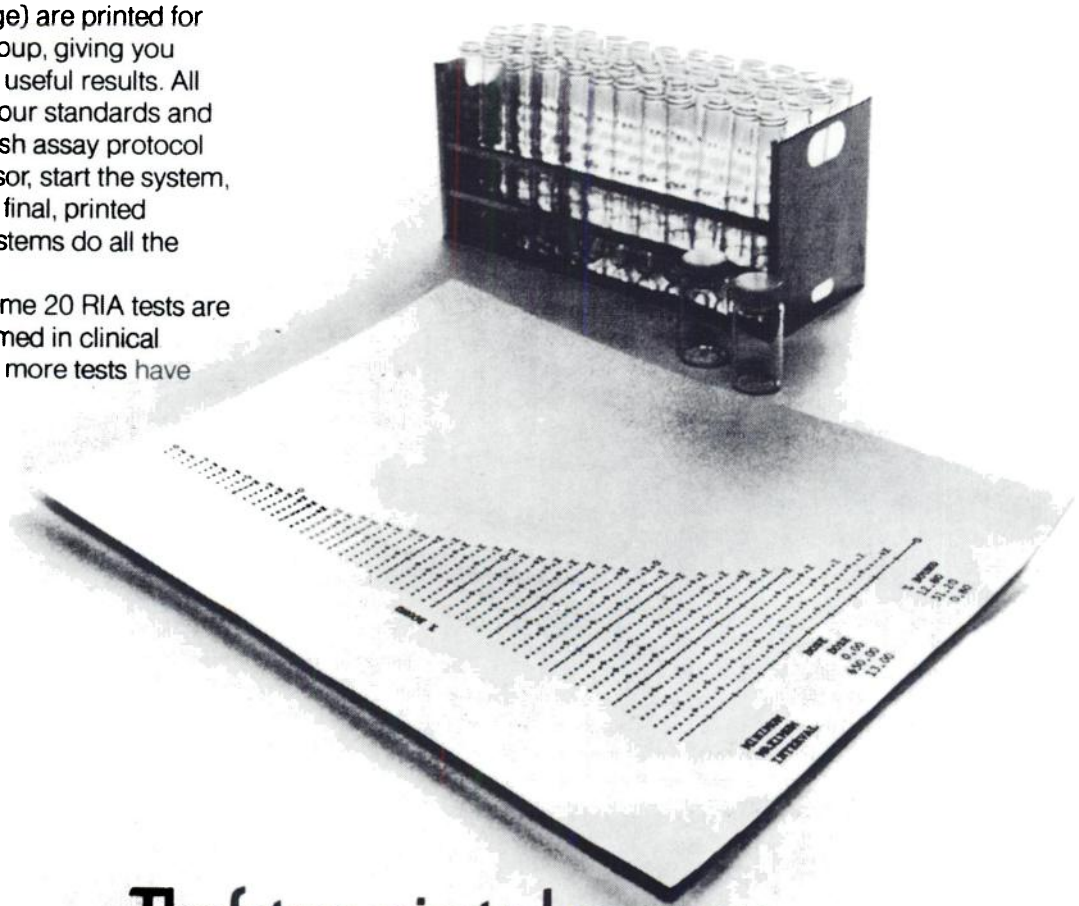

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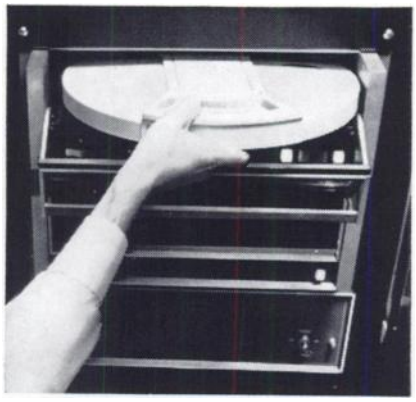

The disk retrieves stored information in milliseconds. To get any result from the disk quickly, simply tap two letters on the teletype keyboard.

You have comprehensive programmed control of the image on the scope. Divide any dynamic study into two-centimeter squares and order printouts of radioisotope uptake for any curve or curve point. Rotate image slices, specify iso-counts or isometric lines, and add or subtract frames to obtain a composite view.

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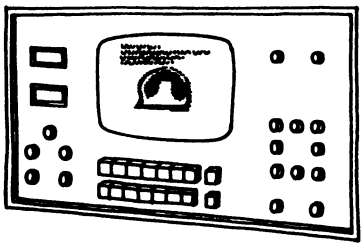

After three years clinical evaluation and thirty man-years of engineering, our Baird-Atomic nuclear teams have speeded up Static and Dynamic imaging procedures through computer computation and greatly improved human engineering, so that you can handle more patients, in less time. You gain more valid, more accurate information for faster, more precise interpretation.

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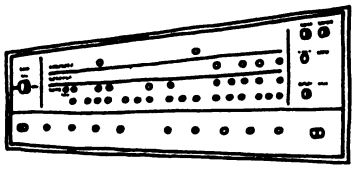

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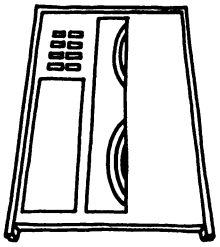

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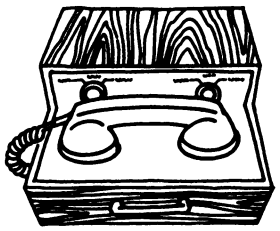

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