

MPI Indium DTPA In 111

(Pentetate Indium Disodium In 111)

In Cisternography

Cisternography presents the dynamics of CSF flow

When you need to know *function*—
cisternography is useful in the evaluation of:

- Patients who may need ventricular shunts
 - Shunt patency and/or site of blockage
- Patients with symptoms of "normal pressure" hydrocephalus
- Patients with symptoms of "communicating" hydrocephalus
 - CSF rhinorrhea patients

CLINICAL CRITERIA

"An ideal radiopharmaceutical for cisternography would satisfy the following criteria: (I) physiologically governed by CSF flow, (II) adequate half-life for desirable period of study, (III) photons suitable for scanning, (IV) low radiation dose, (V) least probable chemical toxicity, and (VI) controlled pharmaceutical quality. Chelated ^{111}In satisfies all these conditions."¹

COMPARISON OF TWO RADIOPHARMACEUTICALS USED IN EVALUATION OF CEREBROSPINAL FLUID PATHWAYS²

| | ^{169}Yb DTPA | ^{111}In DTPA |
|-----------------------------------|--------------------------|--------------------------|
| Physical Half-Life | 32 days | 2.8 days |
| Biological Half-Life | 12 hours | 10 hours |
| Useful Photons (energy MeV) | 0.177, 0.198 | 0.173, 0.247 |
| Useful Photons (% disintegration) | 0.57 | 1.85 |
| Whole Body Dose (rads) | 0.069/500 μCi | 0.039/500 μCi |
| Spinal Cord Surface Dose (rads) | 8.0/500 μCi * | 1.9/500 μCi * |

*Dose to spinal cord and brain surface

¹ Chelated ^{111}In : An ideal radiopharmaceutical for cisternography, F. Hosain, D. Phil., and P. Som, D.V.M.M.S. British Journal of Radiology, 45:677-679, Sept. 1972.

² Preparation, Physiology and Dosimetry of ^{111}In Labeled Radiopharmaceuticals for Cisternography, David Goodwin, M.D., Chung Hun Song, B.S., Roland Finston, Ph.D. and Philip Matin, M.D., Radiology, 109:91-98, July 1973.

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FOR COMPLETE PRESCRIBING INFORMATION PLEASE CONSULT PACKAGE INSERT, A SUMMARY OF WHICH FOLLOWS:

MPI Indium DTPA In 111

(Pentetate Indium Disodium In 111)

DESCRIPTION: MPI Indium DTPA In 111 is a diagnostic drug for intrathecal use. It is available as a sterile, apyrogenic, isotonic, aqueous solution, buffered to pH 7 to 8. At calibration time each milliliter contains 1 millicurie of Pentetate Indium Disodium In 111 (no-carrier-added), 20 to 50 micrograms of pentetic acid, and sodium bicarbonate for pH adjustment. *The drug is to be discarded after single use.* Radionuclidic purity at calibration time is at least 99.0% with less than 0.1% Indium In 114m and 0.1% Zinc Zn 65. The concentration of each radionuclidic contaminant changes with time.

INDICATIONS AND USAGE: Pentetate Indium Disodium In 111 is recommended for use in radionuclide cisternography.

CONTRAINDICATIONS: None known.

WARNINGS: The contents of the vial are radioactive. Adequate shielding of the preparation must be maintained at all times.

Since the drug is excreted by the kidneys, caution should be exercised in patients with severely impaired renal function.

PRECAUTIONS:

Pentetate Indium Disodium In 111, as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize external radiation exposure to clinical personnel, and to minimize radiation exposure to the patients consistent with proper patient management.

Do not use after the expiration time and date (7 days after calibration time) stated on the label.

Discard vial after a single use. Do not use if contents are turbid.

Carcinogenesis, Mutagenesis, Impairment of Fertility

No long-term animal studies have been performed to evaluate carcinogenic potential, or whether Pentetate Indium Disodium In 111 affects fertility in males or females.

Pregnancy Category C

Animal reproductive studies have not been conducted with MPI Indium DTPA In 111. It is also not known whether Pentetate Indium Disodium In 111 can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Pentetate Indium Disodium In 111 should be given to a pregnant woman only if clearly needed.

PRECAUTIONS: Ideally, examinations using radiopharmaceuticals, especially those elective in nature of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Nursing Mothers

It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when Pentetate Indium Disodium In 111 is administered to a nursing mother.

Pediatric Use

Safety and effectiveness in children have not been established.

Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides, and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

ADVERSE REACTIONS: Aseptic meningitis and pyrogenic reactions have been rarely (less than 0.4%) observed following cisternography with Pentetate Indium Disodium In 111.

HOW SUPPLIED: Pentetate Indium Disodium In 111 (no-carrier-added) is supplied in single dose glass vials, each containing 1.5 ml of solution with a concentration of 1 millicurie per ml and a total activity of 1.5 millicurie per vial at calibration time.

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THE PROBLEM:

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THE SOLUTION:

Xenon 127. *Its higher energies allow effective elimination of Tc 99m gammas from subsequent ventilation images.*

THE PROBLEM:

The short half-life of Xenon 133 makes availability a problem, increases shipping costs, and we lose much of it through decay.

THE SOLUTION:

Xenon 127. *Its 36 day half-life eliminates the inherent problems of short lived Xenon 133.*

THE PROBLEM:

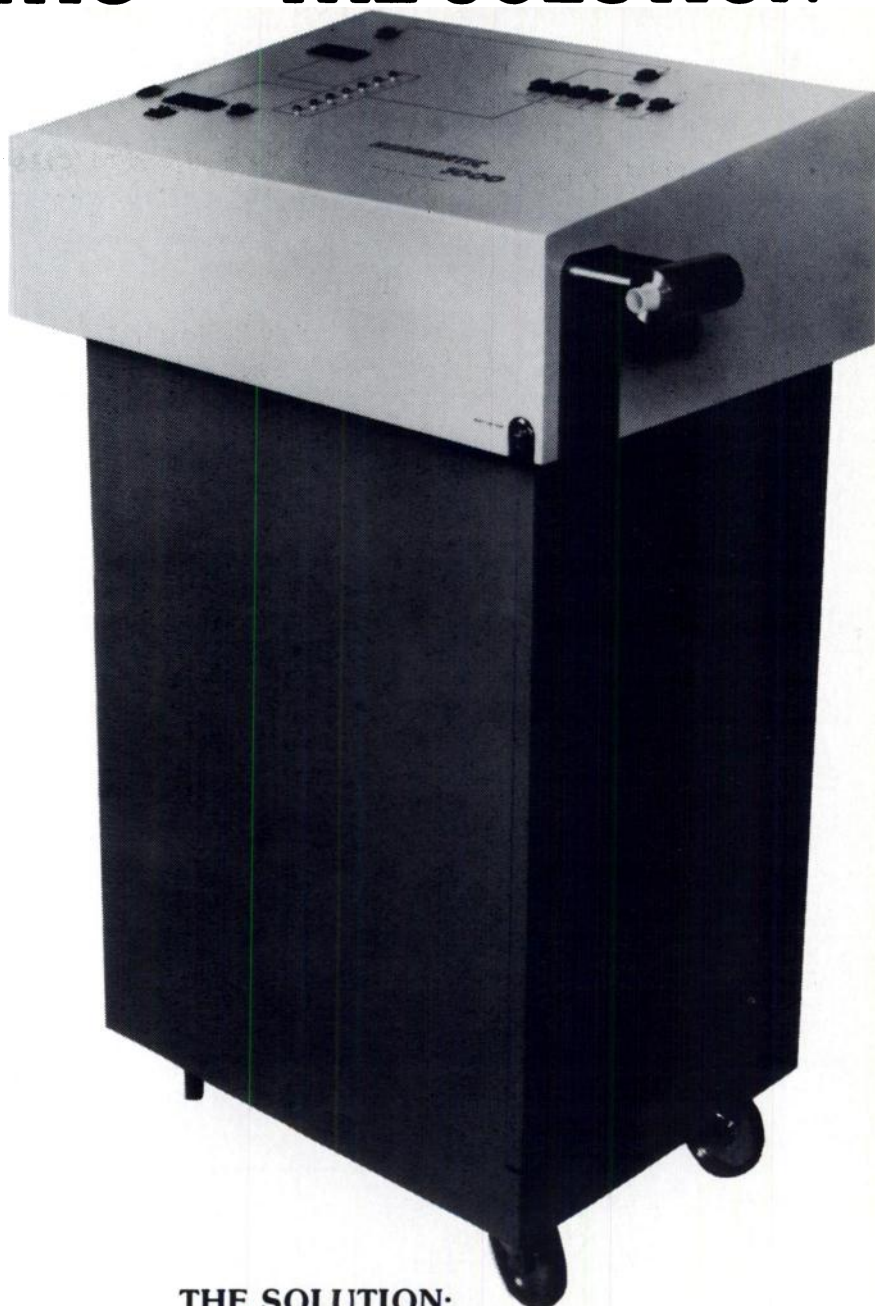
Xenon delivery systems currently being offered are not sufficiently shielded for Xenon 127.

THE SOLUTION:

The XENAMATIC Xenon Gas Delivery System with the optional Xenon 127 lead shielding. Additional lead is provided throughout the unit. In strategic locations we provide up to 1/2 inch of lead. Our goal: to achieve a radiation level of less than 2 mr/hr at the surface under normal use conditions.

THE PROBLEM:

Xenon Traps are really delay systems. If it delays the Xenon long enough for it to decay, then it approaches a trap in function. With Xenon 127, activated charcoal traps either must be significantly larger than previously available traps or they must be refrigerated.



THE SOLUTION:

The XENAMATIC. Our Xenon Trap Cartridge Pack offers 20 feet of continuous activated charcoal pathway (3" in diameter) via nine individual tubes connected in series. Additionally, the individual tubes are specially constructed to inhibit the normal redistribution of "trapped" Xenon which occurs even when the trap is not being used.

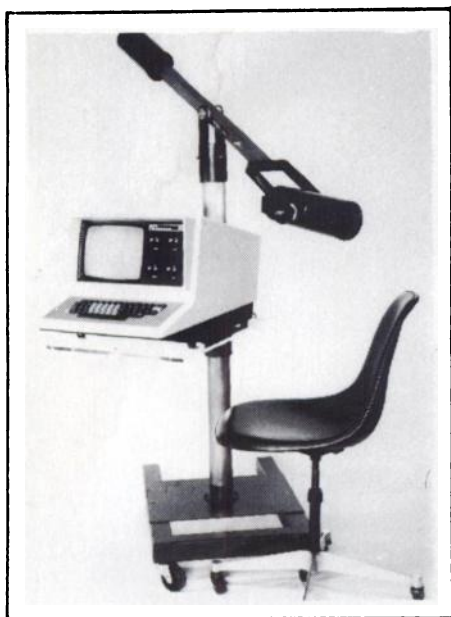
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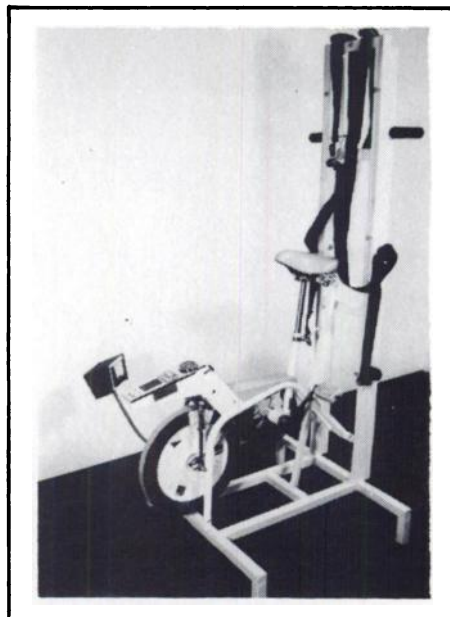
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*CAP Basic Ligand Survey Set K-C, 1982



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TECHNETIUM 99m TSC KIT FOR THE PREPARATION OF TECHNETIUM Tc 99m SULFUR COLLOID INJECTION

For complete prescribing information consult package insert, a summary of which follows:

INDICATIONS AND USAGE: Technetium Tc 99m Sulfur Colloid Injection is used as an agent for imaging areas of functioning reticuloendothelial cells in the liver, spleen, and bone marrow.

CONTRAINDICATIONS: None known.

WARNINGS: The contents of the two syringes, one syringe containing the sodium thiosulfate solution and the second syringe containing the appropriate buffer solution, are intended *only* for use in the preparation of the Technetium Tc 99m Sulfur Colloid Injection and *are not to be directly administered to the patient.*

The contents of the kit are not radioactive. However, after the Sodium Pertechnetate Tc 99m is added, adequate shielding of the final preparation must be maintained.

PRECAUTIONS: The components of the kit are sterile and pyrogen-free. It is essential that the user follows the directions carefully and adheres to strict aseptic procedures during preparation of the colloid.

The stability of the colloidal preparation may be decreased in the presence of polyvalent cations, thus resulting in the agglomeration of the individual colloidal particles. These larger particles are likely to be trapped by the pulmonary capillary bed following intravenous injection.

It is recommended that Sodium Pertechnetate Tc 99m solutions containing more than 10 micrograms/ml of aluminum ion not be used for formulation of the Technetium Tc 99m Sulfur Colloid Injection. The Sodium Pertechnetate Tc 99m solution must also be free of any traces of oxidizing agents such as peroxides and hypochlorites.

Technetium Tc 99m Sulfur Colloid Injection is physically unstable and as such the particles will settle with time. Failure to agitate the vial adequately before use may result in non-uniform distribution of radioactivity.

It is also recommended that because of the increasing probability of agglomeration with aging, a batch of Technetium Tc 99m Sulfur Colloid Injection not be used after six hours from the time of formulation.

The preparation contains no bacteriostatic preservative.

Pregnancy Category C. Animal reproduction studies have not been conducted with Technetium Tc 99m Sulfur Colloid. It is also not known whether Technetium Tc 99m Sulfur Colloid can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Technetium Tc 99m Sulfur Colloid should be given to a pregnant woman only if clearly needed.

Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

It is not known whether this drug is excreted in human milk. As a general rule, nursing should not be undertaken while a patient is on a drug since many drugs are excreted in human milk.

Safety and effectiveness in children have not been established.

Technetium Tc 99m Sulfur Colloid Injection, as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize external radiation exposure to clinical personnel. Also, care should be taken to minimize radiation exposure to patients, consistent with proper patient management.

ADVERSE REACTIONS: Hypersensitivity reactions, including anaphylaxis, have been reported in patients receiving sulfur colloid preparations.

One death and several cases of lung and soft tissue uptake other than RES have been reported in the association with the use of Technetium Tc 99m Sulfur Colloid Injection.

HOW SUPPLIED: The TECHNETIUM 99m SULFUR COLLOID KIT is supplied as a sterile pyrogen-free kit consisting of: five reaction vials, each containing 0.5 ml 1.0 N hydrochloric acid in water; five sterile syringes (labeled "A"), each containing 1.9 mg sodium thiosulfate anhydrous in 1.1 ml aqueous solution; five sterile syringes (labeled "B"), each containing 5.3 mg gelatin in 2.1 ml aqueous buffer solution containing 177 mg sodium acetate anhydrous.

STORAGE: Store finished drug at room temperature.

1481!

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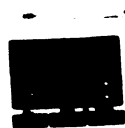
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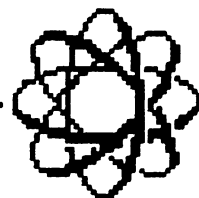
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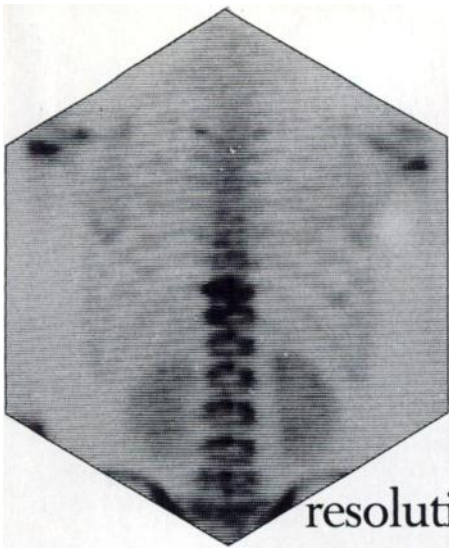


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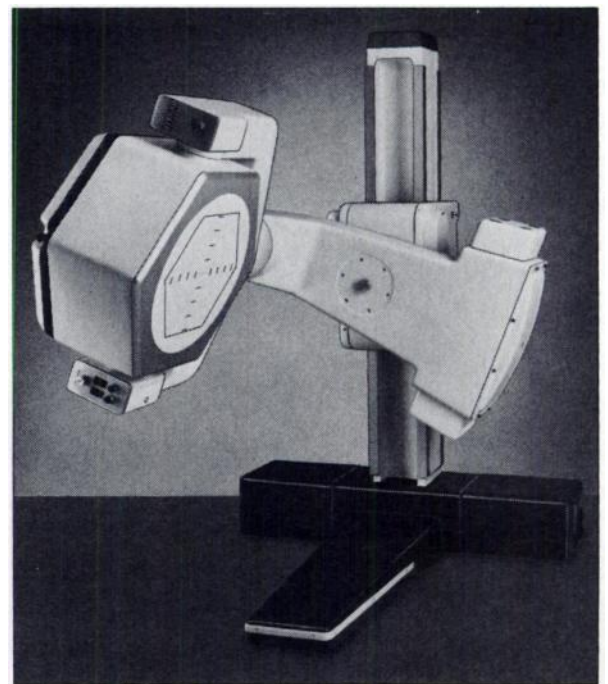
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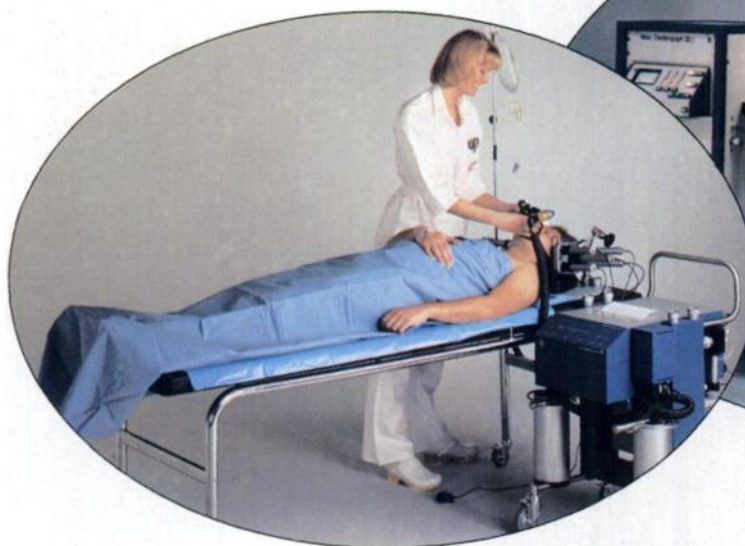


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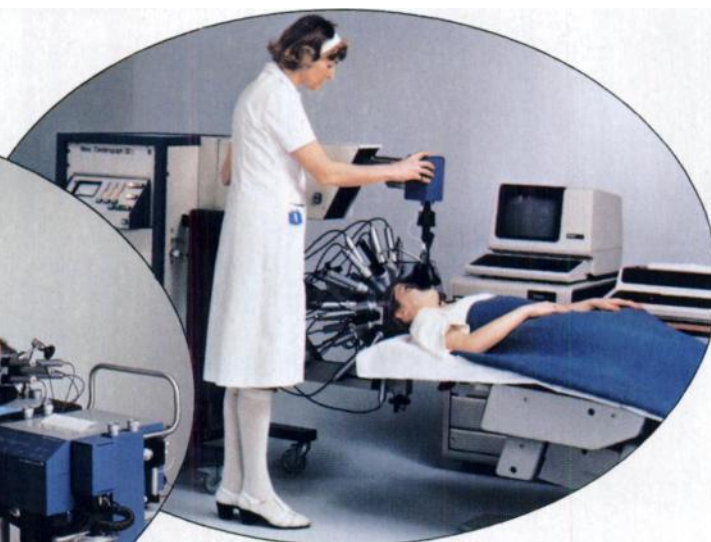
*Ref: Anger HO – Testing The Performance of Scintillation Cameras, LBL-2027, May 1973.

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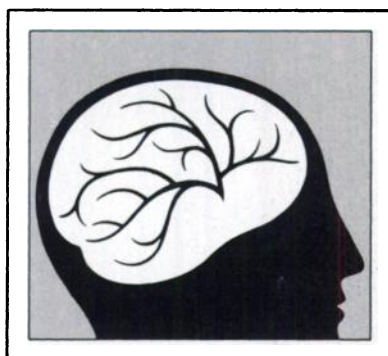
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Clinical Applications

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Newsletter

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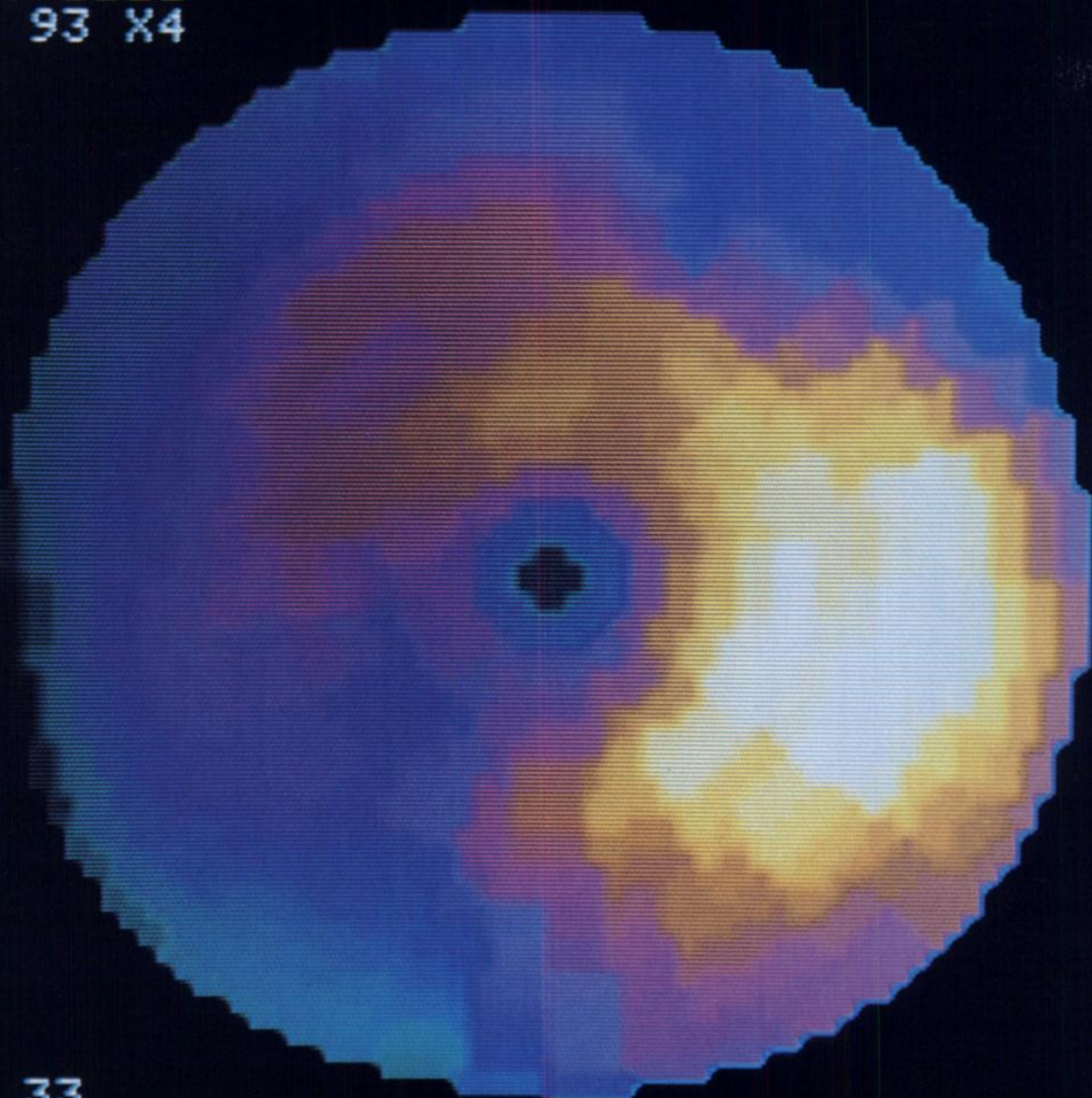
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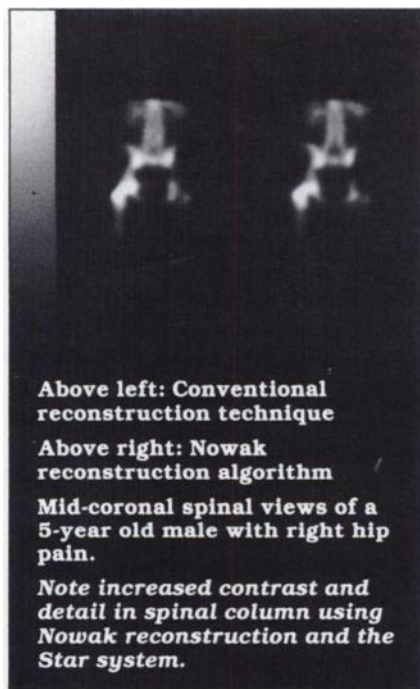
Bull's-eye

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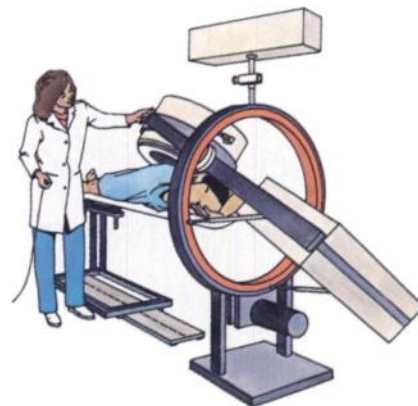
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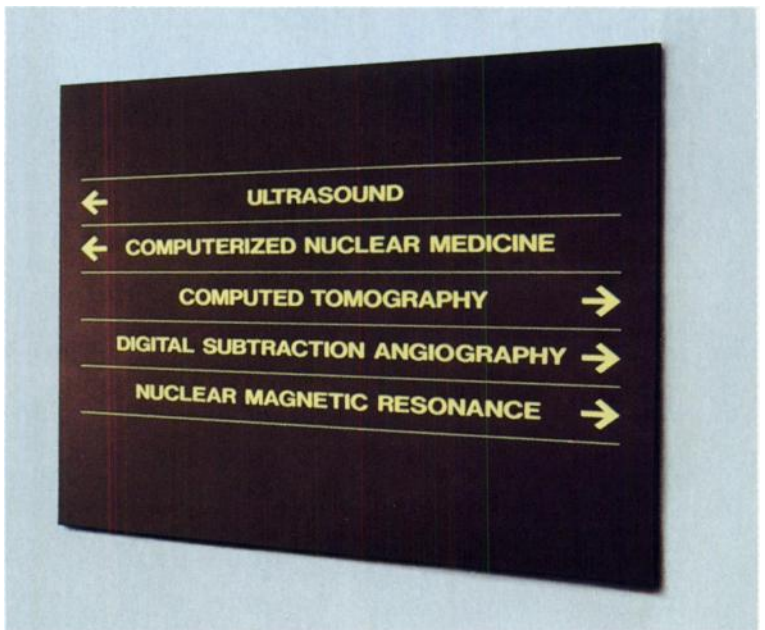
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You can learn to operate it
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26

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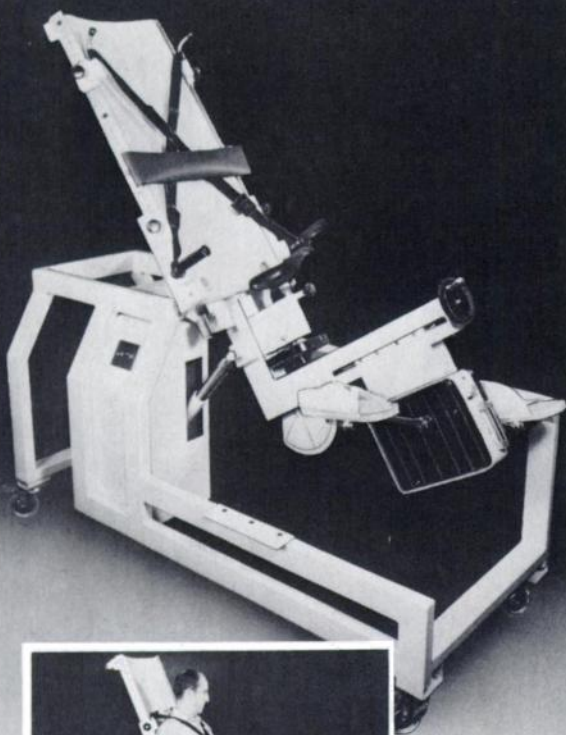


MAIN COMMAND LIST

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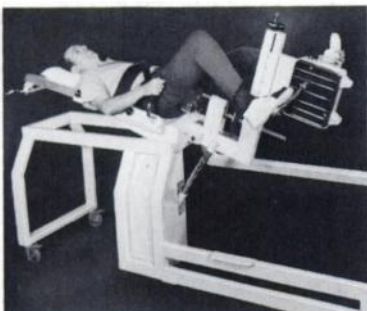
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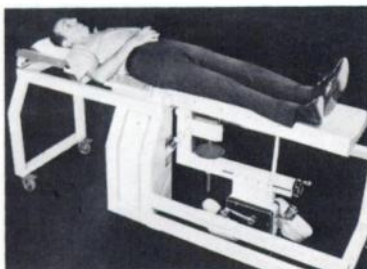
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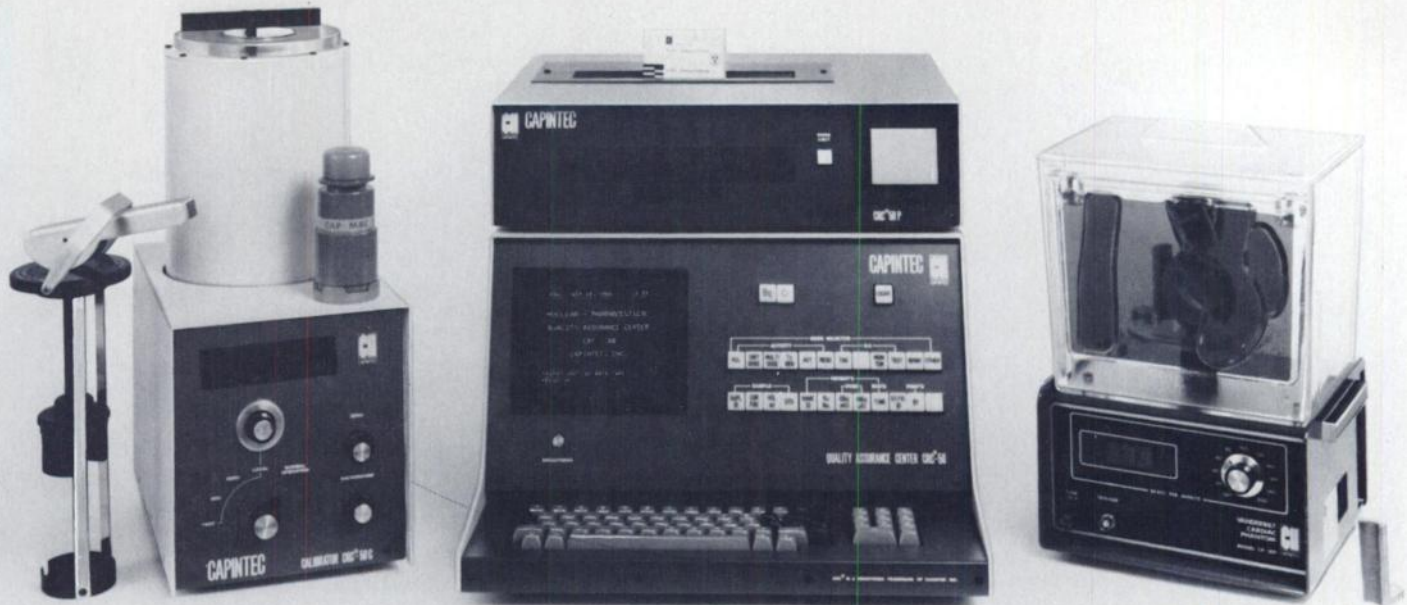
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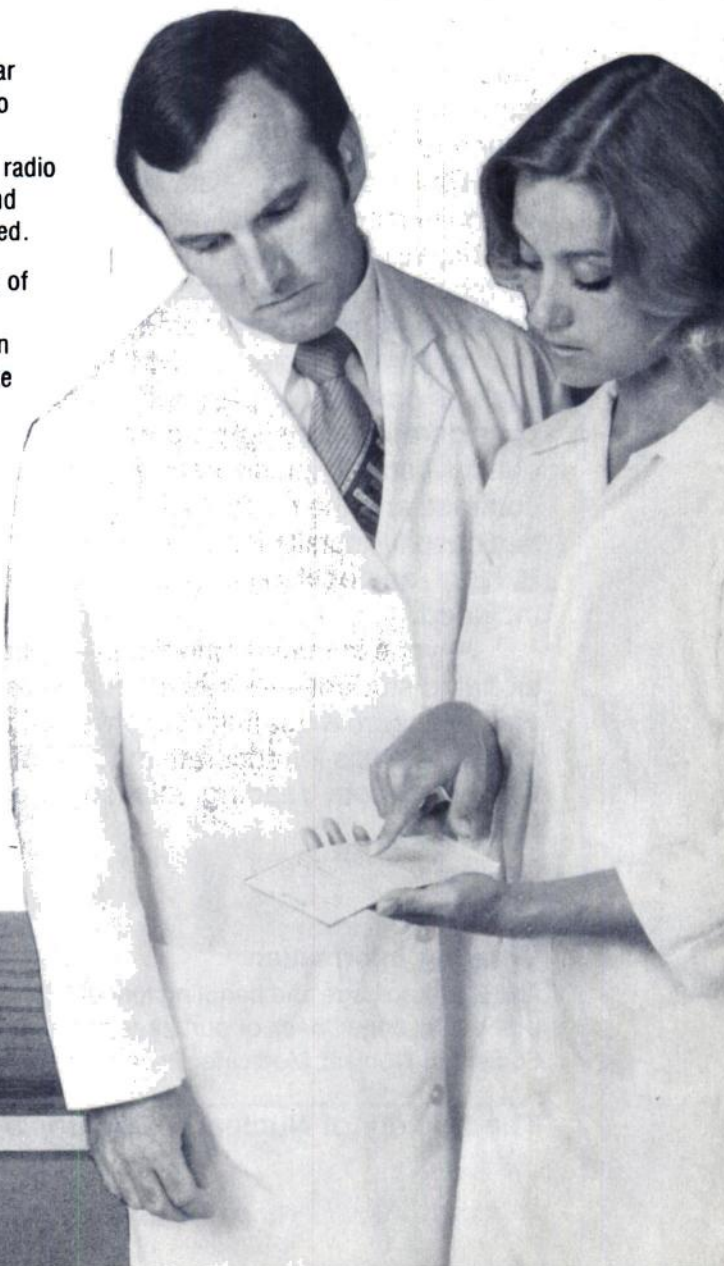
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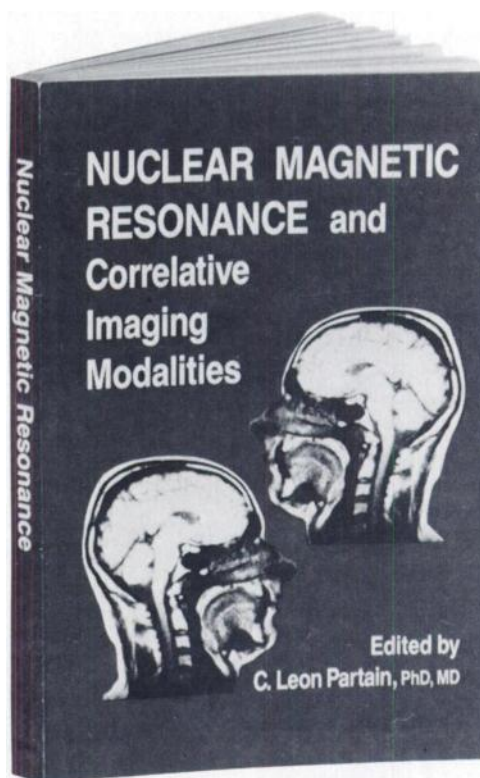
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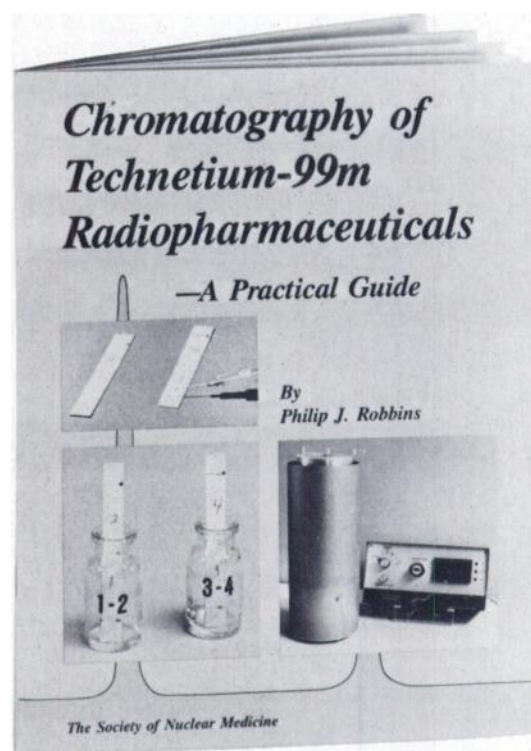
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During the year 1983, sophia développement has created sophia development, inc. for the purpose of contributing to the growth and advancement of medical imaging. I have decided to incorporate sophia, inc. in the United States with the aim of bringing to the medical community our knowledge, our financial stability and our aggressive-ness in order to project us to the forefront.

Respectfully,

Francois Blamont

SOPHA

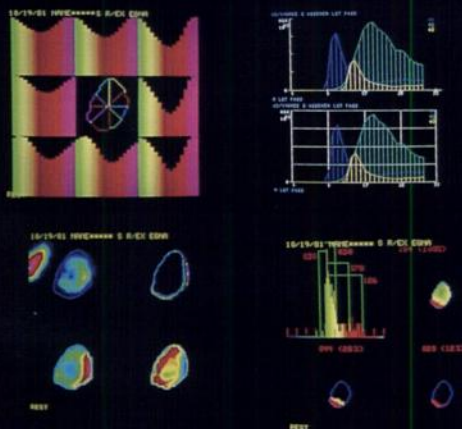
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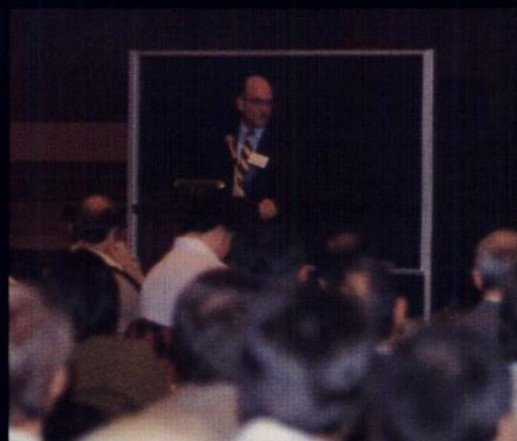
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1.  ACT1= WORK WORK ZONE CURRENT.
2.  MOVE= TRANSFER A COPY OF THE STUDY, IN
    FILE1, TO WORK ZONE FILE 1-30.
    CREATE A COMPOSITE IMAGE OF THE
    30 DOUBLE IMAGES AND STORE IT
    IN FILE 831.
3.  FILE= DISPLAY FILE 831.
4.  FILE= DRAWN L.F. KIDNEY (GIBBIS) AND ST.
    KIDNEY (GIBBIS) AND STORE BOTH IN
    FILE832 (GIBBIS FILE).
5.  FILE= GENERATE CURVE AND ST. FROM ABOVE
    AS A AND RESPECTIVELY AND STORE CURVE
    IN FILE 833 (CURVE FILE).
6.  STOP=
    FILE= DISPLAY COMPOSITE IMAGE IN GUNBORO
    FILE831
    FILE= DISPLAY NOIS OVERLAY IN GUNBORO.
    FILE= DISPLAY CURVES IN GUNBORO.

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Having been involved for the past years in the clinical use as well as in the development of Informatek software, I have come to appreciate the intrinsic qualities of this system. Consequently, I am looking forward to the exciting opportunities opened by the new management, sophia development, inc., for further expansion of the systems' capabilities, present and future.

Dan G. Pavel, M.D.
Director of Nuclear Medicine
University of Illinois Medical Center
Chicago, Illinois

As a long-time user of Informatek's systems and a major contributor to their software, I am pleased that sophia development, inc., has taken over Informatek's programs and many of its personnel, and I look forward to the continuing development of high quality nuclear data processing systems.

Henry N. Wagner, Jr., M.D.
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Orlando Manfredi, M.D., Director of Radiology and Nuclear Medicine
St. Vincents Hospital
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We have had excellent support from sophia development, inc. I just can't say enough about how well supported we have been in the past and the present.

John McMorris, Chief Technologist
Baton Rouge General Hospital
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Ismael Mena, M.D.
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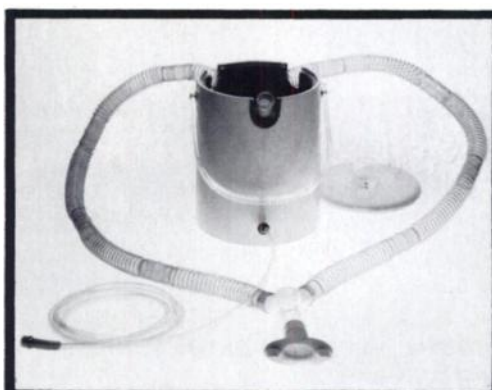
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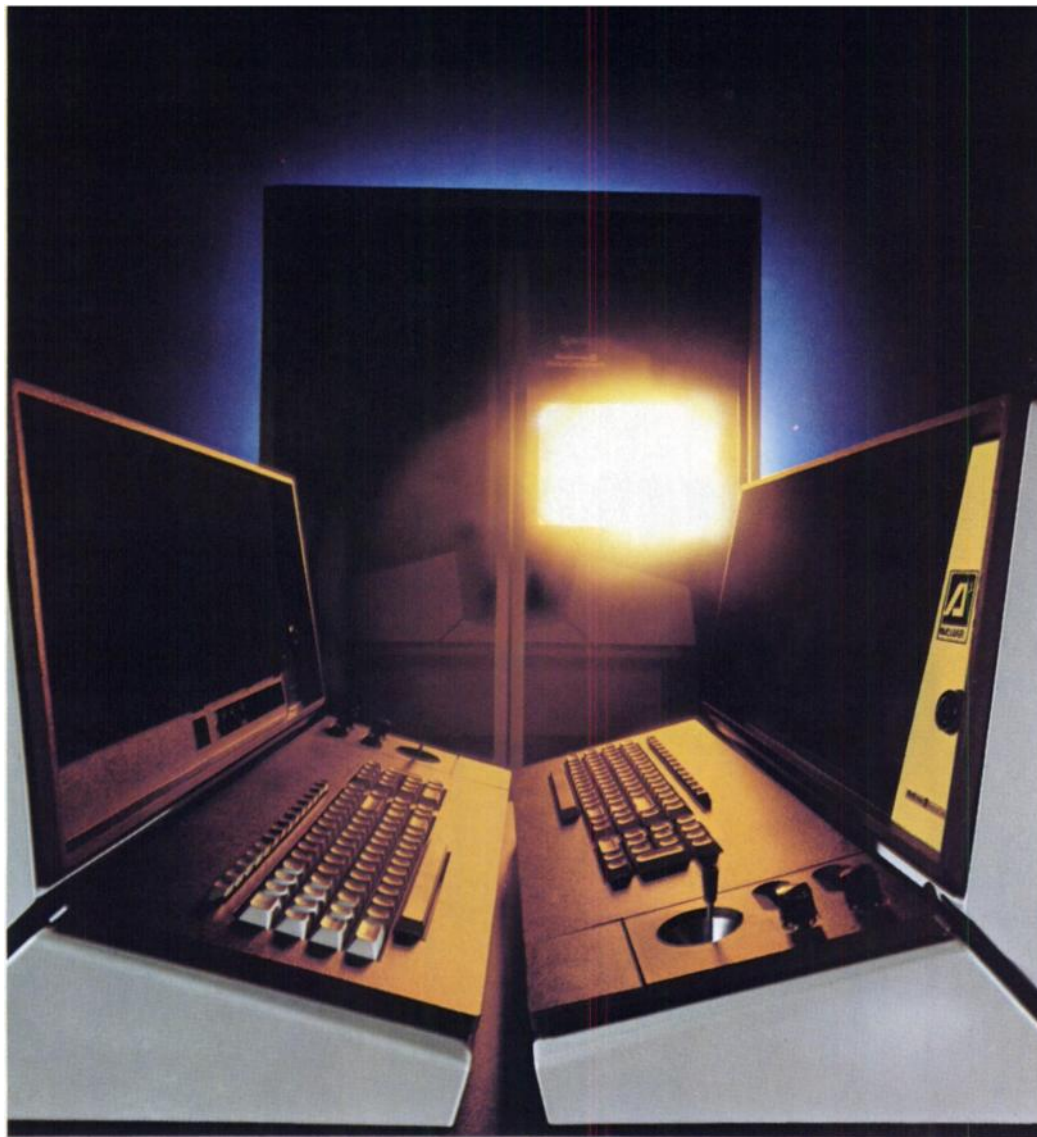
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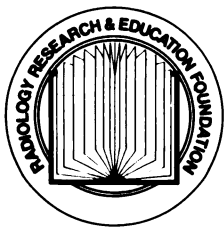
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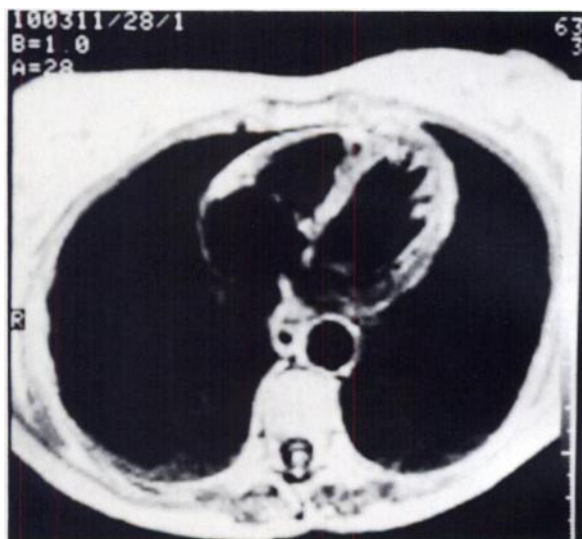
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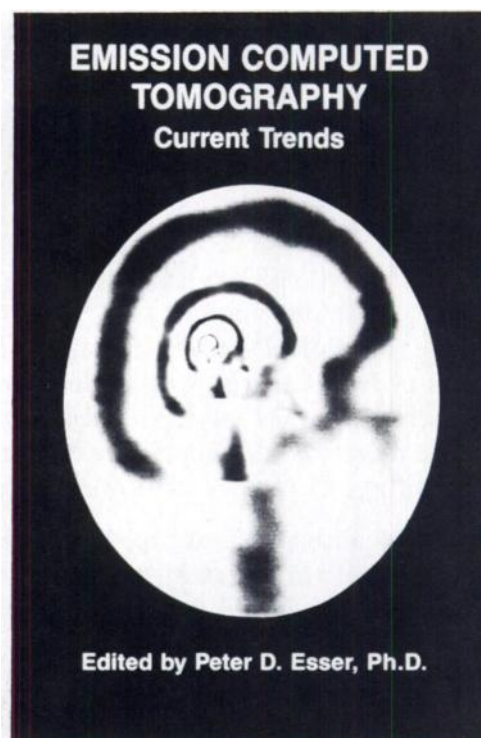
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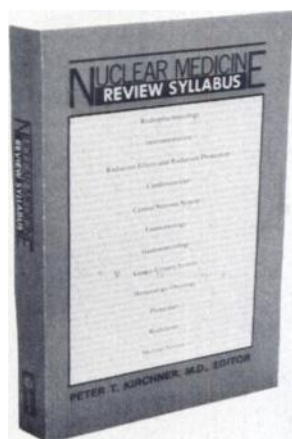
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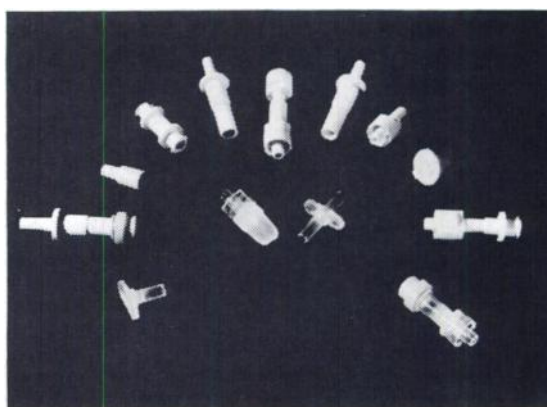
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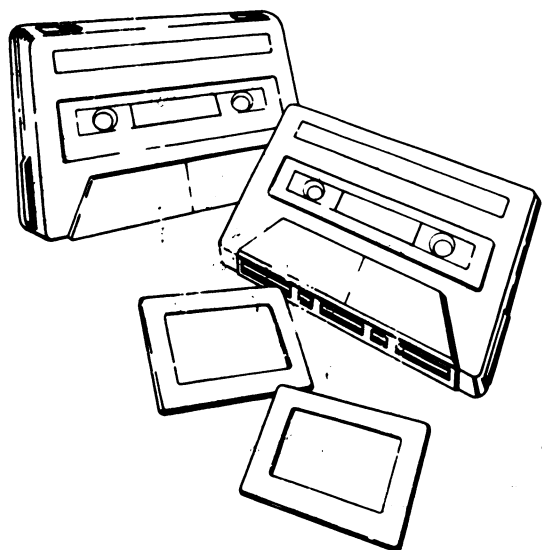
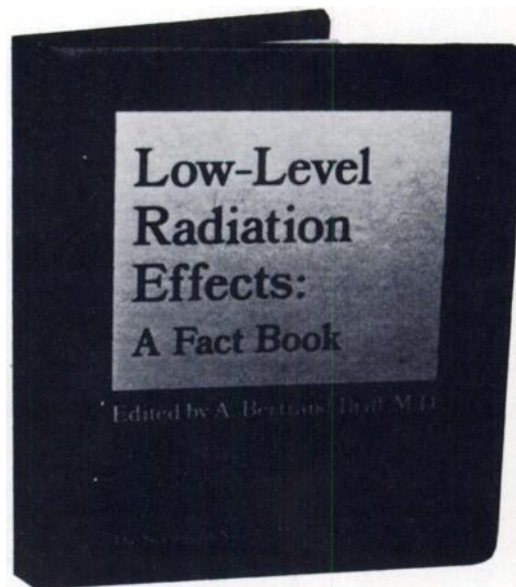
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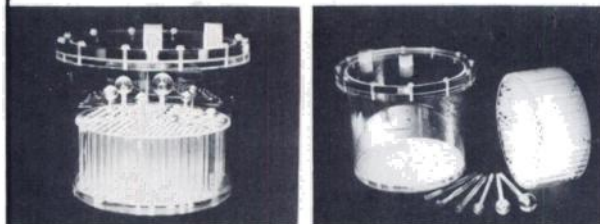
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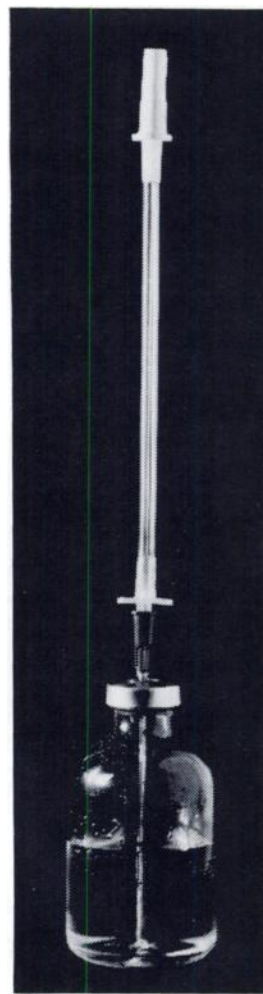
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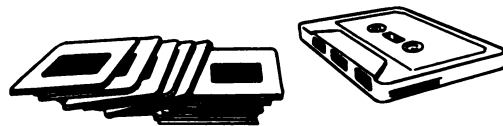
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SNM 217

SCINTIGRAPHIC EVALUATION OF GASTROESOPHAGEAL REFLUX IN CHILDREN: 1983

H. Theodore Harcke, M.D.

45 slides 27 minutes

This audiovisual program discusses the various techniques which can be used to evaluate esophageal function. Radionuclide studies have a distinct advantage due to their noninvasive physiologic method which allows for prolonged observation and increased sensitivity.

The technique, radiopharmaceutical dose, data acquisition and image processing are explained in detail. The viewer should be able to perform a gastroesophageal reflux study and interpret the results after viewing this program.

SNM 218

GI BLEEDING IN CHILDREN: 1983

Sidney Heyman, M.D.

32 slides 19 minutes

This program discusses radionuclide approaches to the diagnosis of gastrointestinal bleeding in children. The techniques of Meckel's diverticulum imaging, ^{99m}Tc sulfur colloid imaging, and ^{99m}Tc labeled red blood cell imaging are illustrated and examined. At the conclusion of the program, the viewer should appreciate the role of scintigraphy in the diagnosis of gastrointestinal bleeding, be able to perform the various techniques and appreciate the advantages and disadvantages of each.

SNM 219

UNIFORMITY AND LINEARITY CORRECTION DEVICES FOR GAMMA CAMERAS: 1983

L. Stephen Graham, Ph.D

66 slides 45 minutes

This audiovisual program examines 1) the causes of nonuniformity, 2) variations in point source sensitivity, 3) nonlinearity, 4) magnetic and gravitational fields, and 5) methods that are currently used to correct for nonuniformities in scintillation camera images. The advantages and disadvantages of each method are discussed. A proper understanding and use of these devices will improve the quality of clinical images.

SNM 220

NEMA SPECIFICATIONS FOR GAMMA CAMERAS: 1983

Robert T. Anger, Jr., M.S.

38 slides 39 minutes

The National Electronic Manufacturers Association (NEMA) standards for the performance of gamma cameras include the measurements of the intrinsic spatial and energy resolution, flood field uniformity, spatial linearity and count rate performance. A "worst case" versus class standards is defined. The actual techniques for measurement are described in detail. At the conclusion of this program, the viewer should know what the NEMA performance measurements for gamma cameras are, their purpose, how they are specified and how they should be used.

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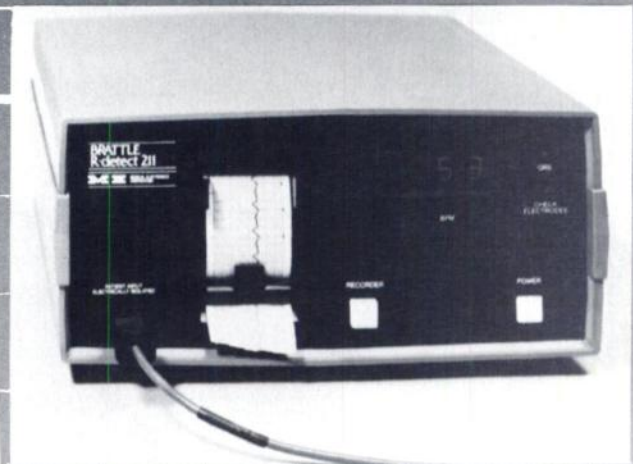
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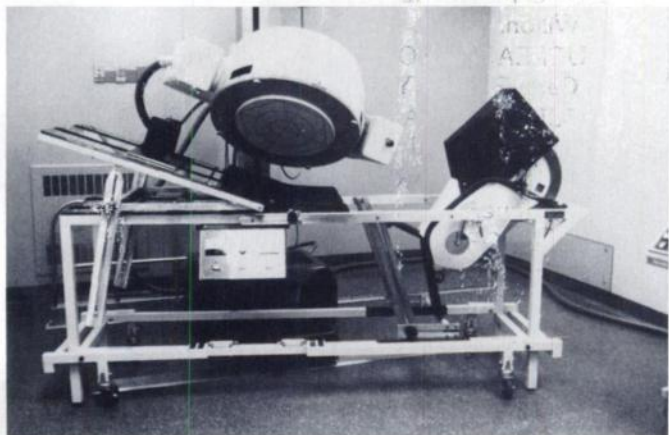


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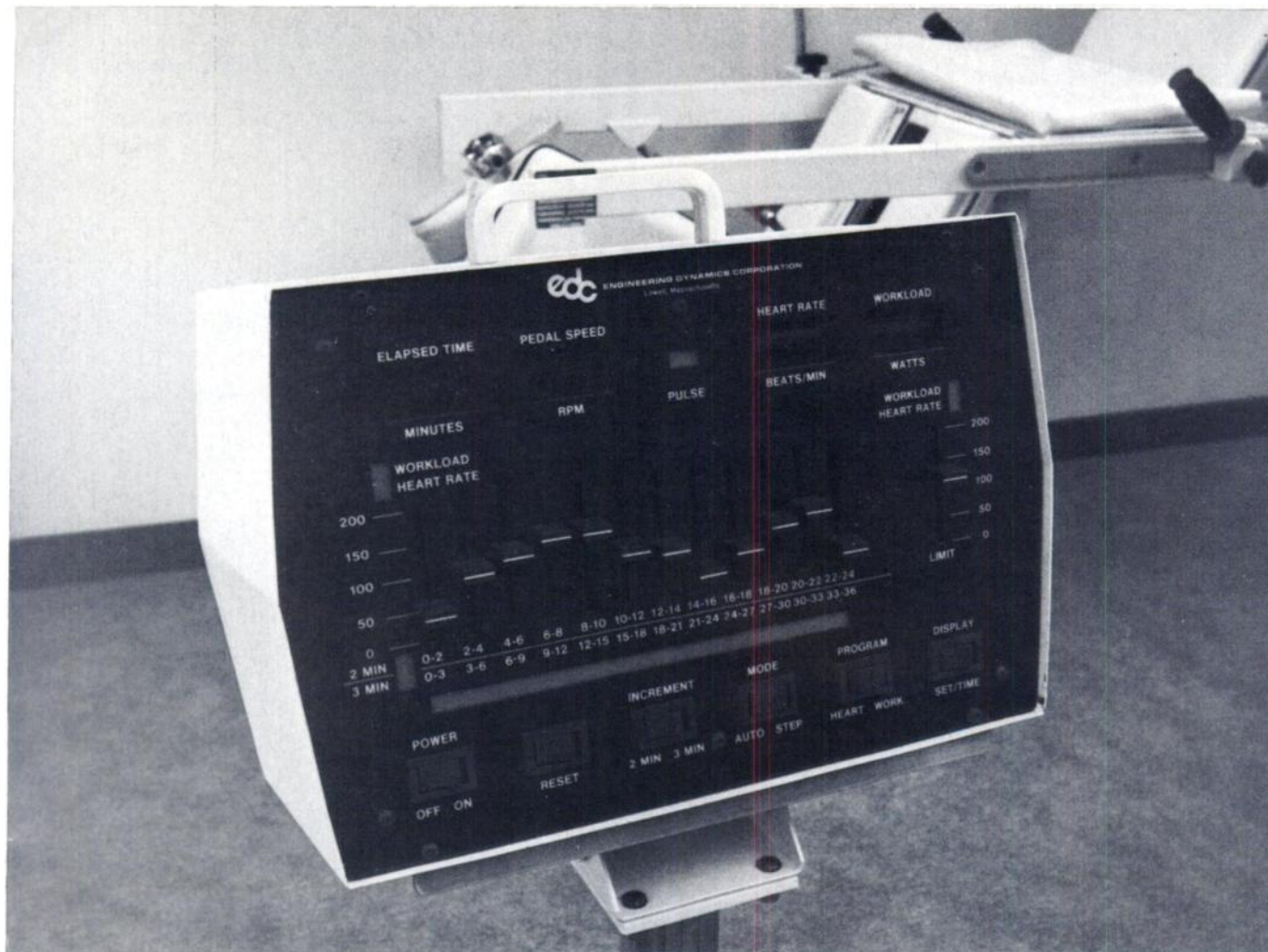


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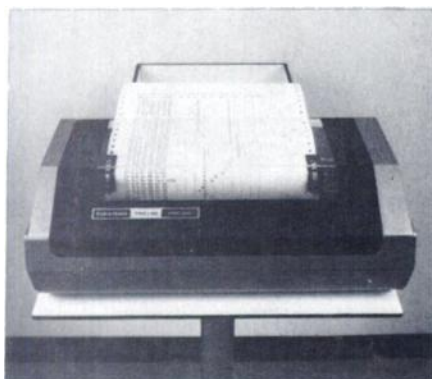
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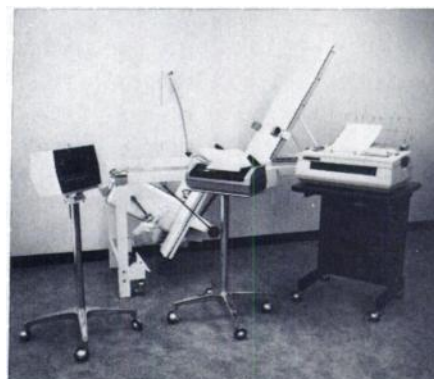


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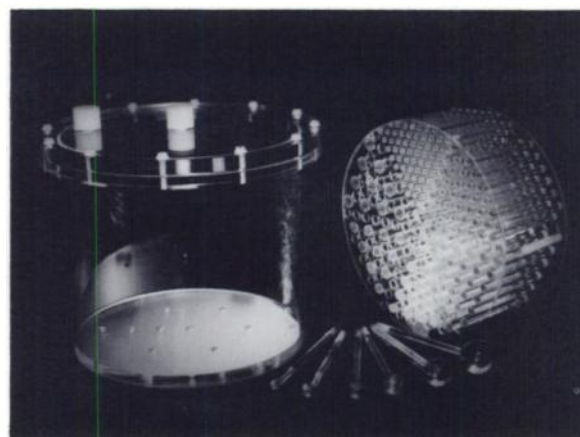
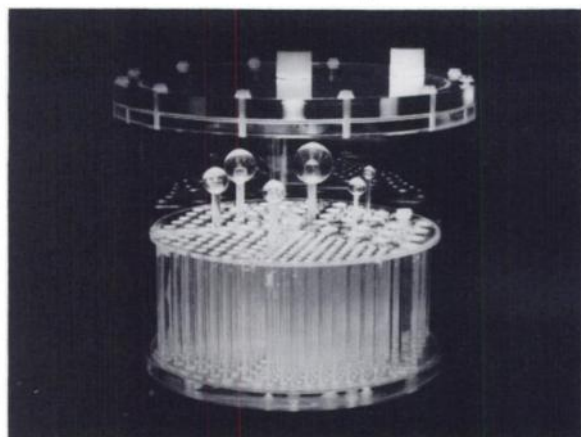
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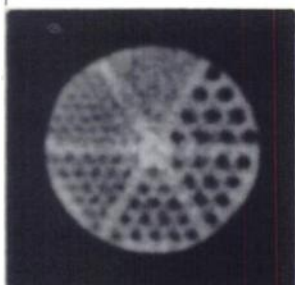


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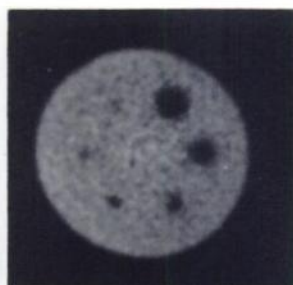
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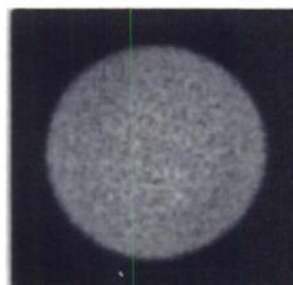
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