



HASSLE WITH TASSEL

Friday the 13th was a good day. Warm, with hazy sun -- not much of which poured into Rockwell Cage to parboil proud parents because of voluminous new curtains hung especially to keep things cooler. With 498 graduate and 693 undergraduate degrees being conferred (1,095 men and 19 women from 41 countries), demand for seats outran the 4000 available in the Cage long before commencement. The solution was closed circuit TV coverage, via 2 remote control cameras, for an overflow audience of some 800 people in Kresge Auditorium.

Other firsts for the occasion: thanks to the ingeniousness of George Schmidt (DSR) and Prof. Howard Taylor (Metallurgy), the Chapel bell was rung at ceremonial intervals by means of a pushbutton in the basement. Feeling that the old bell rope was too long and elastic to provide any uniformity of tone, the two metallurgists worked out a system for moving the clapper electrically. Now, they say, it responds with a swift, sharp "boing" with a mere flick of the finger.

For the first time, too, the academic procession had to be routed through the back door of the Armory. This was made necessary by duPont Athletic Center excavations. Eventually it involved construction of a special flight of steps, laying of new sidewalks, and some surprisingly productive last-minute gardening. All, perhaps, toward a worthy end. Some say that the procession will follow this route even when the duPont Center is completed, because the back path is several hundred yards shorter for the berobed and venerable educators who must tread it.

At the ceremonies themselves, John J. McCloy, former High Commissioner to Germany and currently chairman of the Chase Manhattan Bank, attempted "to mark," as he put it, "the end of a course well run and to set the runner resolutely off on another. As one whose engineering skill was completely exhausted by the perversities of a pulley problem," Mr. McCloy began, "I have never failed to wonder how anyone ever got through here." His charge to those who did last Friday: "The quality which the scientist can offer to his community and to his society is the habit of integrity which derives from the scientific approach. Society needs his doubts and his venturesome instinct, his willingness to dissent and his refusal to conform. It needs him not only in the confines of his laboratory or university . . . but also in the broad area of political, social and economic action . . . The imperative I would place on the man of science, or technologist if you will, is an appreciation of the global character of his work."

UP AND AT'OM

"It will be one of the most versatile research tools ever built," said Dr. C. Richard Soderberg, Dean of Engineering, when initial plans for an MIT nuclear reactor were announced. With funds provided by MIT alumni, National Science Foundation and Rockefeller Foundation, the low, round shell and towering stack at the corner of Massachusetts Avenue and Albany Street is now almost completed.

Total cost of the Reactor (and office building adjacent to it) is estimated at \$3,000,000. Designs were made by an old expert in the field, Prof. Theos Thompson, who had earlier directed construction of a reactor at Los Alamos for the Atomic Energy Commission. Ground was broken in June of 1956, construction tackled with gusto and efficiency by ACF Industries, Inc., of New York, assisted by the Cowper Company (who helped to mix up the 5600 tons of concrete used in the structure), Ferguson Electric Construction Company, and the J. W. Danforth Company (plumbing and piping).

Today, two years later, the interior of the MIT Nuclear Reactor has just received its first cheerful coat of blue and yellow paint (colors chosen by Dean Belluschi); 5½ pounds of uranium-235 and 5 tons of cooling heavy water have been loaned by the AEC to start things off; plans for operation have been fully coordinated with state and city safety officials; the final operating license has been received from the AEC (dated June 9, 1958); and the reactor is expected to go critical before July. For two or three months it will operate at low power while performance is perfected and instruments calibrated. Before classes begin in the Fall, the first nuclear reactor in New England is expected to be in full operation.

No atomic power plant, the MIT reactor is a "tame" or "domesticated" type which will be used only for research, teaching, and medical purposes. In it controlled nuclear fission (splitting of uranium atoms in a chain reaction) will be induced at a power of 1000 kilowatts. Heat generated by fission will be carried off by the tons of heavy water circulating through the reactor core or center. Neutrons and gamma rays released in the process will then be studied and they will be used to bombard and irradiate all manner of test materials.

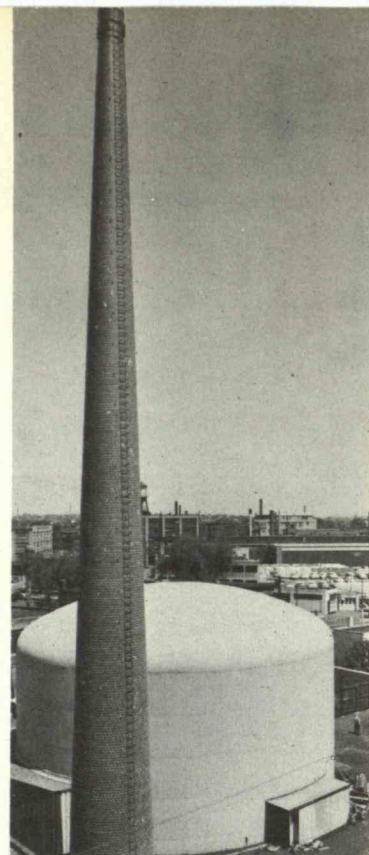
Choice of this type of reactor was based partly on its large available experimental space and partly on its safety. The heavy water in the reactor core puts a damper on too much neutron activity and keeps the temperature at a low 104° F. -- about that of a warm bath. An immense shield of concrete, lead and steel around the core prevents radiation from escaping into the surrounding air. The result: the radioactivity level outside the machine will be less than one tenth of the maximum occupational dosage permitted by the AEC.

The building itself has also been designed for complete containment. Housed in an air-tight steel and concrete shell with access only through air-tight double doors, the reactor will keep its peaceful atomic activities entirely under its own roof.

To make it an ideal research tool, several special devices have been added to the reactor. There are heavily shuttered "beam



Alumni return in postgraduate roles. Left to right: Bob Rowe '48 (Cowper Co.); Charley McDonnell '48 and Dick Lyke '56 (ACF Industries)





Man in a hot hole: Prof. Thompson checks reactor core at installation

ports" leading up to the core, through which neutrons can be withdrawn to the outer shell of the reactor for experimentation. There is a so-called thermal column, providing a large space filled with "slow" (2200 miles/sec.) neutrons. There are "rabbit tubes" -- like the pneumatic tubes in department stores -- through which small amounts of material can be shot next to the core for controlled exposure. There is a closed TV circuit capable of keeping a long-range or close-up eye on activities around the reactor.

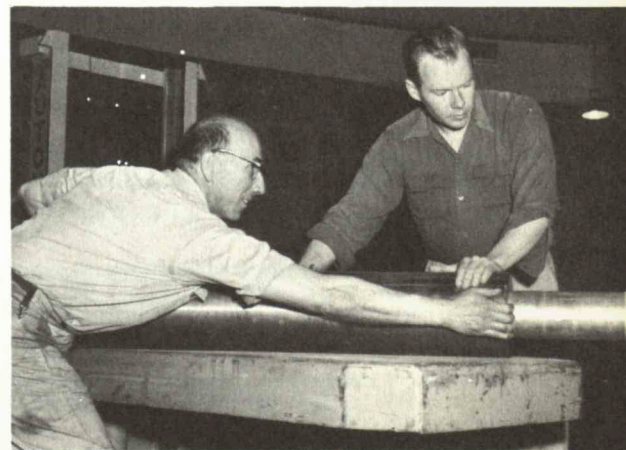
Unique in any reactor built so far is the medical therapy room in the basement directly under the machine. Conceived by MIT nuclear engineers in cooperation with medical experts in the Boston area, the room will make possible new and highly localized treatments of brain tumors and cancer. It is also the first room in history that makes use of a neutron

beam which can be directed down (already nicknamed an "inferior" beam by consulting doctors). With hydraulic operating table and heavily-shielded observation panel, the medical therapy room will be available for use by all hospitals in the area.

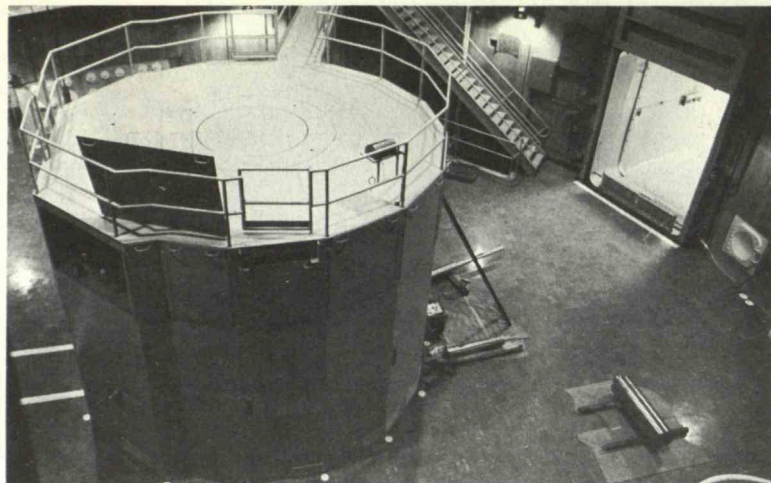
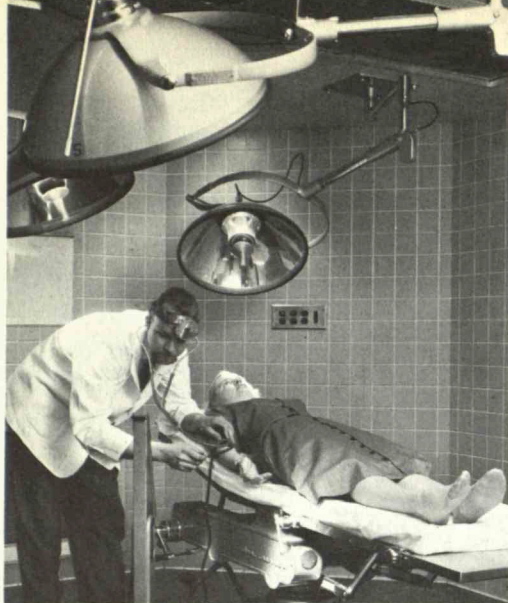
Applications for use of these facilities are already gathering considerable momentum. Requests have come in from a host of MIT departments -- geology, metallurgy, physics, food technology, chemistry, mechanical engineering, and others -- as well as from other neighboring colleges and research groups. These in addition to the Reactor's real proprietors, the new Department of Nuclear Engineering, which will open its doors on July 1 under the direction of Prof. Manson Benedict. The first such department in any New England college, the nuclear engineering group visualizes all sorts of future projects beyond the all-important study of nuclear fission itself and the training of nuclear engineers. Some of these might be:

- * investigations into the "physics of the solid state" (structure of materials)
- * studies of the effect of radiation on living organisms, such as plants, with an eye to improving biological and/or genetic mutations
- * experiments in the sterilization of foods and medical supplies
- * production of isotopes and "tracer elements" -- radioactive variations of chemicals used for many purposes in research and medical therapy -- which New Englanders previously had to import from the Brookhaven National Laboratories on Long Island

The reactor will be staffed by about a dozen people. Director will be Prof. Thompson. Research associates Dave Lanning, Ed Profio and Dan Schwartz will be in charge of on-the-spot operations. The business end of things will be handled by Tom Cantwell and Lincoln Clark, converts from chemical engineering and chemistry, respectively. Constantine Maletskos, radiation expert from the Occupational Medical Service, will be on duty full-time as reactor protection officer. Ed Barnett, who came to MIT from Brookhaven, will be design engineer for reactor modifications and experimental equipment. Also helping out will be graduate students, electronic and safety technicians, and a probable quota of two secretaries.



Larry Ristuccia (left) and Ed Barnett (right) pull out "beam port" for checking



A unique facility of the MIT Nuclear Reactor is the medical therapy room (left). In the picture Aldo Sutter (Chem. Eng.) poses as doctor, Nancy Robinson (Prof. Thompson's secretary) as patient. At the right is the reactor itself, which sits in the middle of a huge circular room. One of the air-tight double doors can be seen in the upper right corner.

R.S.V.P.

Lincoln's Lab Division 3 is planning a "Joint Moonlight Cruise" on Monday, June 23, from 9 p.m. to midnight. Price: \$1.50 per person. Conveyance: the Boston Belle. Information: Bob Craven (Ext. 2471) or Frank Bowes (Ext. 3579). Everyone invited.

FOR SALE ETC.

Sailboat: 17' centerboard sloop (Snipe). Finest material, new cond. Barbara Lindsay, Ext. 7350 (Lincoln).

1 wooden box, 14"x 16" x 31" i.d., \$4. Golf irons (3, 5, 7, 9 & 10), left-handed, will throw in beat up bag, \$15. A. C. Switendick, Ext. 805.

For sale: complete photo lab for 2 1/4 x 3 1/4 or smaller photography. Includes 2 1/4 x 3 1/4 Century camera with Heiland Strodonar "7" electronic flash, G.E. light meter, B & J condenser enlarger and all processing equipment. Approx. \$900 worth, will sell complete set up for \$300. Erland Babcock, Ext. 679 (Lincoln).

Portable phonograph, 78 rpm, hand wound, like new. Ideal for picnics, children, etc. \$10. Dana, Ext. 7425 (Lincoln).

Freshmaster food freezer (upright). 9 cu. ft. perfect cond. 5 shelves. Can be seen anytime after 5. Best offer. MONTROSE 3-4460.

Bendix duomatic washer-dryer. Needs minor repairs. \$50 or best offer. Ext. 3146.

'50 Studebaker 4-dr sedan. Clean, good cond. \$75. W. Derry, Ext. 2581.

'53 Ford Customline 4-dr. Standard shift. R&H. Rebuilt motor. 2 extra tires. \$595. Chalmers, Ext. 791.

'53 Studebaker Champion sport coupe. 6 cyl. with overdrive. 20-25 mi./gal. Green & gray, ww's, R&H. Second car. \$350. J.R. Hutchins, III, Ext. 2129 or UN4-5288 (evgs).

'54 Hudson Jet 4-dr sedan. R&H, automatic transmission. Good cond. \$500. L. J. Ricardi, Ext. 7153 (Lincoln) or CEDAR 7-9282.

'54 2-dr Mercury hardtop. Power steering, ww's, R&H, snow tires. Good cond. \$900. MO3-4919 (evgs).

'55 Ford Ranch Wagon. 2 dr, 8 cyl. Excellent cond. \$1150. Ext. 2949 or DE2-9581.

'57 Buick Special 2-dr. 14,000 miles. Bought new by orig. owner. Fully automatic, R&H. Mr. De Franco, Ext. 685.

Furn room for rent. 29 Marlboro, Newton. K priv's, linen, parlor. BI4-5128 after 6 p.m.

Furn or unfurn rooms available in Winchester, Sleeping accommodations only. Semi-private bath. Twin beds available. Car pool for Lincoln Lab employees can be arranged. Ext. 7326 (Lincoln) or WI6-0065W.

2 lg furn rooms for rent. Near Central Sq. Kitchen priv's. UN4-3929.

Furn office (1 room) to sublet. Suitable for professional consulting. Main St., Kendall Sq, in Better Homes Bldg. \$50/mo includes everything but garden. Avail. now. Goody, Ext. 4410.

To sublet, on or before July 1. Lg 2-BR furnished apt, near Harvard Sq. Ext. 4410 or KI7-7708 (after 6).

Furn apt for summer sublet. 3 rooms, lg K, bath. 38 Carver St., Camb. Conv. to MTA, walking distance to Harv. Sq. Aug. 2-Sept. 10. \$20/wk. Ext. 2116.

Apt to sublet, July 15 - Sept, '59. Unfurn. BR, Lr-DR, K, bath & 1 small room. Parking. 1572 Mass. Avenue, near Harv. Sq. \$155/mo. Aaron Wold, Ext. 855 (Lincoln) or UN4-8387 (evgs).

Clean sunny apt. LR, K'ette, BR. Sublet 1 yr. Back Bay -- very convenient to MIT. Unfurn. \$70/mo. Ext. 619 or CO6-2391 after 6.

Furn apt available August 1. Lg LR with fp, reception hall, BR, K, and bath with shower. Desirable location: Linnaean Street, Cambridge, 15 minutes to M.I.T. by MTA. \$110/mo all utils included. UN4-8172.

For summer rent. Comfortable, cool home with garden in Brookline. 4 BRs, piano, TV, Bendix. 6 weeks, June 28-Aug 9. \$200 for entire period, all utils included. AS7-1092 after 5 p.m.

Cape Cod cottage for summer rental -- weekly. W. Chatham near beach. Sleeps 4-7. Furn. K, LR, bath with shower, 2 BR's, screened porch, fp, garage. Ideal for family with small children; very reasonable. Iris Moldaw, Ext. 870.

For rent. Westwood. Unfurn. 7-rm house. Den with fp, basement playroom. Yard with shaped trees. Quiet st. \$150/mo. 1 yr lease preferred. Avail July. Ext. 4278.

6-rm Cape for sale, furn or unfurn, on Lexington Rd, Concord. 3 acres of land. First floor: K (with electric stove), LR with brick fp, 2 BR's, tile bathroom. Upstairs: 2 finished rooms with bath. Mrs. M. Kuchinsky, EMERSON 9-4376 after 6 p.m.

House for sale. Architect-designed contemporary on over an acre wooded hillside. 3 BRs, study-guest room, living-dining room, compact work-center K, storage basement. Many built-ins. Near Routes 2 & 128 in Waltham near Lincoln line. Low assessment, municipal services. School bus to new school. \$18,000. TW3-5283.

For sale. Wayland. Remodelled older house. 5 BR's, mod. K, lg. LR-DR, study, 1 1/2 baths. 48,000 sq. ft. lot. Lg trees & many flowering shrubs. \$20,000. R. L. Best, Ext. 7212 (Lincoln) or EL8-4592.

Research assistant coming to MIT this fall wants unfurn. 2-BR apt -- garden style or in private home, or small house to rent or buy. Write to Wendyl A. Reis, Jr., 88-14 240th St., Bellerose 26, N.Y.

Wanted: 2nd hand motor scooter, double-seated. Lambretta or Vespa. Good cond. Mrs. Watts, LO6-4185 (evgs).

Man wanted to share spacious apt on Commonwealth Ave. (Brighton). Share expenses -- about \$10/wk. Parking. Peter McHugh, LO6-1948 or ST2-1049.

Wanted: new home for smoky-blue, short-haired, 3-yr-old house cat. Playful spirit. Spent 4 wks kittenhood at MIT. Ext. 605 or EL4-3608 (evgs).