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MAGNET TECHNOLOGY VITAL TO FERMILAB SUCCESS



...(Left photo) (L-R) W. Medernach, K. Fleischer, D. Timke and S. Barath during fabrication of 3-way split magnet...(Right photo) Magnet crew with completed magnet, (L-R clockwise) S. Barath, J. Jagger, W. Medernach, R. Franck, J. Mendoza, Jr., J. Jones, K. Fleischer, B. Hilliard, B. Murphy, J. Hessinger, R. Isiminger, B. Condon and R. Douglas...

At the heart of every system in the Fermilab accelerator are the magnets which contain or guide the beams of particles that are the business of the Laboratory. Laboratory milestones in the past four years, and in the past week, often hinge on the successful products of the Fermilab Magnet Facility. Ever-increasing sophistication is required of the personnel there as the Laboratory takes significant steps forward in its research and magnet technology.

The latest product of the Magnet Facility was successfully tested on Friday, April 4, when the Proton Department completed installation of a triple-splitting station which will permit the three Proton target halls to receive beam simultaneously, with energies up to 500 BeV, increasing the capacity of this experimental area. Beam from the accelerator previously was split for use by P-Central and P-East, and with the four new magnets now at Proton Enclosure H, beam will be available simultaneously to experiments in P-West as well.

The evolution that has taken place in magnet technology at Fermilab produced a combination, for this purpose, of the original 1970-style Booster accelerator magnets with the Lambertson magnet design, to produce the unique new triple-splitters. The magnets were designed by Ed Tilles of the Proton Department and Stan Snowdon of the Accelerator Division. They are completely "canned" in stainless steel jackets that eliminate the need for separate vacuum chambers. Just upstream of the three-way Lambertsons are six wide-gap modified B-1 magnets. These are the vertical bends to the Proton Area accomodating the three beams with special wide gaps.

Magnet production at Fermilab has changed considerably since early 1971 when as many as 56 Main Ring magnets were produced per week. Fewer people now produce a more diverse product line at the Facility which is located in the large blue buildings on Road D known as the Industrial Area. A portion of production is still devoted to keeping a supply of replacement

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MAGNET TECHNOLOGY (Continued)



...(Left photo) Cryogenic magnet group: G. Tuma, R. Brocker, T. Young, G. Jugenitz, H. Warren, D. Fischer, D. Olson, J. Gordon, G. Mikota, C. Bowling, P. Hamilton, K. C. Kirksey, D. Leifheit, and B. Assel. (Not shown: I. Gonczy.)...(Center photo) T. Santoy (L) and D. Sherwin with completed EPB Bump magnet...(Right photo) B. Condon, Inspection Group, tests 3-way magnet...

Main Ring magnets on hand, but most of the group's efforts are directed to building special magnets.

The challenges of the energy saver/doubler effort revolve around the cryogenic magnets being produced at the Magnet Facility. Costs are important here, and so are new fabrication techniques. The expertise of these specialists is producing new and better tools for the work going forward in the energy saver/doubler project. The D-series magnets now in production represent the fourth generation of doubler magnets.

Among the unique magnet projects currently in process are the extraction quadrupoles for Main Ring beam extraction into the Energy Doubler region and bending magnets for the planned Nucleon Therapy Facility. In the limited space available in many experiments' installations, together with unusual experimental requirements, new approaches in building magnets for experiments require innovative fabrication techniques. An example is the magnets for E-95, which successfully met the conflicting requirements of large aperture, high magnetic field, thin iron yoke, and coils bent to one side only in order to allow minimum closing angle of the two spectrometer arms.

Fermilab's Magnet Facility, headed by Will Hanson, consists of 35 technicians, 4 technical specialists, 3 engineers and 2 draftsmen. Their products play a vital role in what will happen next in the Fermilab accelerator system.



...Thornton Murphy & Ed Tilles of Proton Dept. standing by 3-way Lambertsons in Enclosure H just prior to test last Friday...

...(R) Scope trace of Proton triple split, which operated successfully for the first time on April 4. The top trace shows the main proton beam split into 3 vertically displaced beams by the Accelerator Department Switchyard Group, using electrostatic septa in Enclosure E.



These 3 beams are then split apart horizontally, as shown in the bottom trace of the photograph, by the 3-way Lambertsons in Proton Department Enclosure H. The beams can then be transported to the 3 Proton experimental areas...

...NALREC's Annual Easter Egg Hunt brought 300 youngsters to the fields beside the Village Barn on Saturday, March 29. Minutes later 75 dozen eggs had been found and the Easter Bunny passed out candy to the hunters, in the Barn. Mary Greenwood was NALREC chairman of the event with Sherry Nila, Jackie Moran, Helen Ecker, Ellen Kukuk, Liz Foster, Denise Augustine, Jean Plese, Bob Condon, and Greg Chartrand...



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SPRING CONCERTS IN THE FERMILAB AREA

...Centuries of Music presents a performance of Verdi's Requiem Mass on Sunday, April 13, at 8:00 p.m. in Hemmens Auditorium, Civic Center, Elgin. Thomas Wikman conducts the 60-piece professional orchestra that will include eight trumpets and featuring Elliot Golub as concertmaster. Tickets are \$4.00 for adults (\$4.50 at the door), \$1.50 for students and senior citizens. Tickets may be obtained from Bob Goodwin, Ext. 3724, or by mail from Centuries of Music, P. O. Box 1024, Elgin 60120.

...The Downers Grove Oratorio Society, with Margaret Bollinger, will perform Bruckner's "Te Deum" and Kodaly's "Psalmus Hungaricus" on Sunday, April 20, at 7:30 p.m. Tenor Jonathen Dean Welch, Chicago Lyric Opera apprentice, will be featured. The concert will be presented at the Downers Grove North High School, Main and Grant, Downers Grove. Adult tickets are \$2.50, students \$1.00, children 12 and under are admitted free. For further information, call Jan Ryk, Ext. 4130.

...Downers Grove North chapter of the American Field Service will sponsor Rick Shindell, Toledo organist, in concert on Wednesday, April 16, at 8:00 p.m. Don Young, Accelerator Division, Ext. 3724, has tickets at \$2.50 each, \$3.00 at the door.

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...POSTCARDS of two Fermilab views are for sale in the Fermilab Guest Office or the Public Information Office during the day Monday through Friday. They are on sale in the Operations Center, on the east side of the Atrium, during evening hours, and from the receptionist or the Operations Center on weekends. Postcards are 10¢ each.

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LIVE THEATER COMES TO FERMILAB AUDITORIUM

The presentation of two one-act plays under the title, "CAGES," marks the first live theater on the stage of the auditorium at Fermilab. The Atlantis Theater Company will present the Lewis John Carlino plays, *Snowangel* and *Epiphany*, at 8:30 p.m. on Friday, April 18.

Epiphany was written by Carlino for a Shelley Winters performance off-Broadway in 1963. It is a satire on male and female roles that has become increasingly poignant and contemporary in the years since its original production.

Snowangel is a love story.

Incidental music was composed and recorded for both plays by Manfredo Best, Brazilian-born leader of the Latin jazz group, "Batucada."

The Atlantis Theater Company is directed by Arthur Meiselman who has worked in New York and San Francisco as well as Chicago. "CAGES" will open at a Chicago night club later in April.

Reservations may be made in advance by calling Ext. 3440 or 3091. Tickets are \$3.00 for adults, \$1.50 for children. Student group rates are available.

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THIS WEEK AT FERMILAB

...Those perennial optimists, the Fermilab Golf Team, think spring is really going to happen. They're organizing their summer schedule at a meeting on Wednesday, April 23rd at 12:15 in the Curia II meeting room, CL 2W. Ellery Cook, Ext. 3734, and Pete Lentini, Ext. 3363 are in charge. There are still openings in the Saturday golf clinics to be held on Saturday mornings during May. Call Jane Theis, Ext. 3082, or Norm Worthley, Users Center, Ext. 3524 after 4:30 p.m.....International Film Society presents *Shane*, 8 p.m. Friday, April 11, CL Auditorium, an American film starring Alan Ladd. It was directed by George Stevens in 1953.Get your exhibits ready for the Annual NALREC Arts and Crafts Show, May 12-16. All Fermilab employees and their families, all experimenters and their families, and employees and families of ERDA, Mercury Management, and Advance Security are invited to participate. Applications for exhibit space will be circulated in the Laboratory soon. For further information, call Denise Augustine, Ext. 3091, chairman of the event.

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CLASSIFIED ADS

FOR SALE - Set used Golf Clubs w/bag. \$25. Good starter set. Ellery Cook, Ext. 3734.

GIVE AWAY - Medium size male dog-mix breed, part toy Collie & Shepard, 3½ yrs. old, house broken, excellent w/children. Marty Glass, Ext. 4019, 969-0015.

FOR SALE - Remington portable typewriter; elite type w/carrying case. \$25. S. Koteles, X3395.

FOR SALE - Brick & cedar ranch. 4 yrs. old., 3 bedrooms, lg. kitchen, wall to wall carpeting, full basement, many extras. By owner, asking \$39,900. Call 231-6177, West Chicago.

TRADE - 8 ft. pool table w/ping pong table top, for a bumper pool table or best offer. Al Maier, Ext. 3518, 357-3891.

FOR SALE - 1971 Ply. Sta. Wagon Custom Suburban P/B/S, A/C, AM/FM Stereo, cruise control. \$1025. Call Penny Ext. 3771, 964-0634.

FOR SALE - 25" '68 Philco Color TV, last of the tube type, needs picture tube, make offer. 19" portable black & white TV, needs some work. Come & get it. H. D. Clover, Ext. 3089.

YOUR REPRESENTATIVE - for Stuart McGuire & Mason - shoes and fashion clothes for women & men. Homer D. Clover, Ext. 3089, 554-1375.

FOR SALE - 1968 Ford Wagon, P/S/B, auto. 9 passenger, A/C. \$475. A. J. Bianchi, Ext. 3701.

FOR SALE - 1970 Ford Van 300 radio, heater, \$1300, good condition. Lullaby Canape Crib, good cond, \$40. Admiral 18,000 BTU conditioner, good working order, \$50. J. Bockmier, X3259.

FOR SALE - Great Pyrenees female, 16 mo., to good home w/fenced yard. A big Marshmallow. \$50. Call 377-0757.