

July 7, 1983

FERMI NATIONAL ACCELERATOR LABORATORY

# FermiNews

## SAVER REACHES GOAL, SETS ENERGY RECORD!



by Thornton Murphy

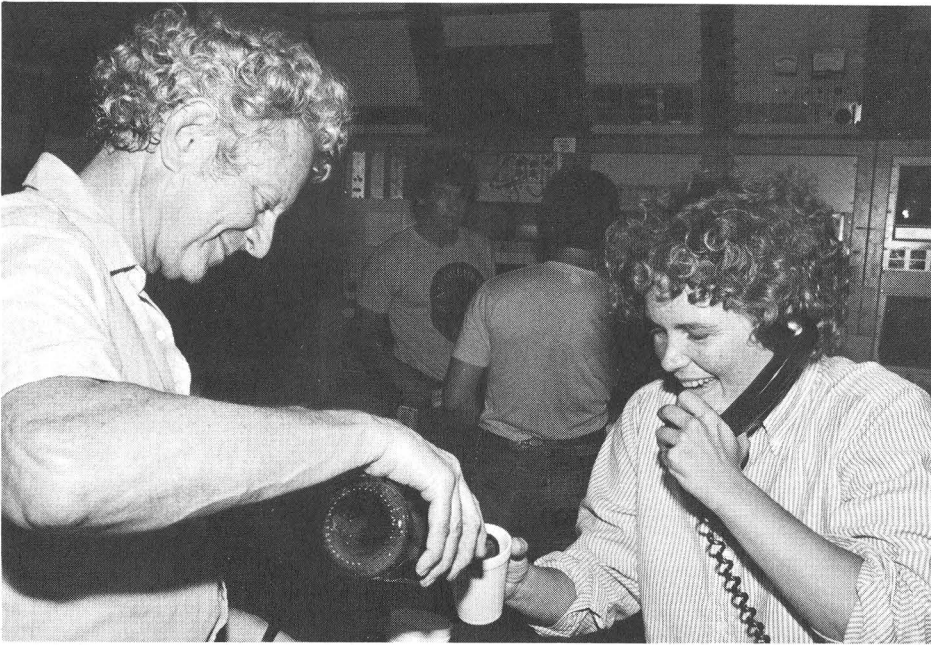
The Energy Saver has reached its primary design goal: accelerating protons to 500 GeV in a ring of superconducting magnets. In fact, the energy was 512 GeV--a new world record for accelerators. The record was set at 3:37 p.m., Sunday, July 3, only 13 hours after the first serious attempt to accelerate beam above the injection energy of 150 GeV.

News of this historic achievement spread rapidly--by telephone and telex to all quarters of the world. The Control Room rapidly filled with off-shift workers and other well-wishers as the champagne was broken out.

The events leading up to this milestone followed the usual pattern of a long pause while a blockade to progress was diagnosed, followed by sudden leaps forward. Difficulties in achieving coasting beam at 150 GeV, reported in Doubler Developments two weeks ago, were finally tracked to a misdesigned flange in the C0 straight section and a Kimwipe left in the bore tube in A0. After the Kimwipe was removed on June 25, coasting beam was rapidly achieved. The rf cavities were proven capable of maintaining the bunching at 150 GeV and even accelerated the beam slightly. —————→

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There followed a two-day down period for necessary repairs with the expectation that acceleration towards 500 GeV would begin soon after startup on June 30. Unfortunately, the weather did not cooperate. A lightning bolt struck service building E0 at 3 a.m. on



Director Leon Lederman pours champagne for Linda Klamp as she "spreads the news" on Sunday, July 3.

Friday, July 1, damaging enough sensitive electronics to cause six hours of diagnosis and repairs, followed immediately by more lightning-induced trips around 9:30 a.m. The next night torrential rains found their way all the way to electronics racks.

When all was finally ready to attempt acceleration, beam reached the top of the 250 GeV ramp on the very first pulse at 3:12 a.m., Sunday, July 3. After a shift of studies at that energy, the current ramp in the magnets was reset to 400 GeV and beam accelerated to that energy at 1:38 p.m. A "go for the record" spirit then prevailed; after readjusting the ramp again, the energy goal was exceeded amidst jubilation (see front page) at 3:37 p.m.

As this issue goes to press, the Doubler is holding at 512 GeV and low intensity to make systematic measurements of beam characteristics. The energy is already more than needed for the 400-GeV run for physics experiments scheduled for October of this year. The next important tasks for the Doubler are to increase the intensity and master extraction of a high intensity beam to the Experimental Areas. Rich Orr comments, "We are sweating blood to make our end work. I hope the experimenters will be ready in the fall--although we still have a long way to go."

## Resolution

At its Friday, June 17, meeting at Fermilab, the Universities Research Association (URA) Board of Trustees voted by acclamation the following expression of recognition of the Laboratory's attainment of an initial beam in the superconducting ring:

"Be it resolved that the Board of Trustees of the Universities Research Association congratulates the Director and staff of the Fermi National Accelerator Laboratory for reaching an impressive milestone of the Saver project in record time. In particular we wish to acknowledge the singular accomplishments of Dr. Rich Orr and Dr. Helen T. Edwards in leading this distinguished effort."

This was submitted to Leon Lederman by Dr. H. Guyford Stever, president of URA, in a letter dated June 23.

## GIVE BLOOD FOR THOSE WHO ARE LESS FORTUNATE

The next Fermilab blood drive will be held on Friday, August 5, in Conference Room 1 West from 9 a.m. to 2 p.m. For information please call ext. 3232.

CLASSIFIED ADS TO BE DISTRIBUTED WITH FERMINES JULY 7, 1983

FOR SALE:

HOUSE: THREE-BEDROOM 7-ROOM BI-LEVEL IN LISLE. 10 yrs. old, fully crptd., alum. siding, 1-1/2 baths, LR, DR, eat-in kit. w/built in stove and oven, lg. paneled fam. rm., util. rm., 1-1/2 car garage, fenced yard, garden, dog run, patio w/gas grill, 12 mi. from Fermilab, low taxes, nr. park, train, and shopping. \$71,500. Call Paul Czarapata, ext. 3106.

CARS: 1978 PLYMOUTH HORIZON. 4-dr., AM/FM radio, tape deck, snow tires, manual shift, good gas mileage, new muffler, original owner, dependable and reliable \$2,200. Call Joanie, ext. 3440, 3442, or Bj, ext. 3667.

1977 HONDA CVCC HATCHBACK. 5-speed, AM/FM/cassett, air cond., excel. appearance/running. \$2,000 or best offer. Call Bill Kells, ext. 4827.

1976 BUICK LE SABRE CUSTOM. Maintained in excellent cond., all power, air cond., AM/FM 8-track stereo, no rust. \$2,000. Call Moshe, ext. 4521 or 879-5494.

1974 OLDSMOBILE. Good condition. \$600. Call Moshe, ext. 4521.

1968 VOLKSWAGON BEETLE. Good body, good running cond., needs new floor pans. \$500. Call Mtingwa, ext. 4819.

MISC: 1974 CJ-5. New brakes and tires, 1-yr. old carb. clutch, 2 yr. old top, exec. mech. cond. Asking \$2,400. Call Dennis Gaw, ext. 4596.

SUZUKI 1100. RC engineering, 4 into 1 exhaust; call Dean Beckner, ext. 4596.

NIKON TELEPHOTO LENS. Nikkor-Q auto 135 mm f3.5, sunshade, leather case. Asking \$65. Call Joe Lach, ext. 4103.

GIBSON 10,000 BTU AIR CONDITIONER. 110 volt, w/support bracket, designed for casement style window, but will work in double hung. \$200. Call Mark Leininger, ext. 4600, or 695-3263.

For the following items, call Rich Klecka, ext. 3868. Geyser portable and submersible sump pump, \$49; electronic liquid level control for sump pumps, \$29; Kenmore Power Miser 8 40-gal, 5500 watt, electr. water heater w/8 yr. tank, \$139. All less than 1 yr. old.

TABLES. 2 sm. bi-level matching end tables, \$5 for both; 1 laminated coffee table w/walnut wood look. Call Pat, ext. 4041.

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FOR SALE:

MISC.

For the following items, call Doug Howard, ext. 4841 or 464-5745. 38-in. tractor tire for sandbox, \$10; old Singer sewing machine and cabinet, \$25; cedar chest, \$20; 30-in. door w/hrdwr., \$10.

For the following items, call Mike, ext. 3700 or 690-7642. Beautyrest crib mattress, excel. cond., \$25; Peterson car seat, new-born to 4 yrs., good cond., \$20; extend. guard rail for bed, excel. cond., \$5.

For the following items, call Marion, ext. 4468. Drexler walnut TV cabinet, \$75; 5-piece ranch oak bunkbed suite incl. 1 doubler 6 drawer dresser and 1 triple 12 drawer dresser, \$500; child's dresser w/bookcase, \$25.

For the following items, call Bill Kells, ext. 4827. Five drawer solid oak dresser, \$30; like new love seat/twin bed convertible, \$200; antique ornately carved solid oak Morris chair, \$250; elec. broom, \$6; Scott's push mower w/ grass catcher, sharpened, \$20; small four burner gas range/oven, \$50; G. E. electric range/oven, \$75; G.E. refrig., \$75; mahogany din. rm. set w/6 chairs and lg. table, \$250.

For the following items, call Moshe Moshe, ext. 4521. 19-in. solid state GT Matic II color T.V., \$190; 2 twin beds complete, \$30 ea.; chest of drawers, \$40; wood table and 4 chairs, \$90; lg. wood coffee table, \$35; sm. coffee table, \$8; new student desk, \$30; toaster oven, mixer, vacuum cleaner, lamps, twin folding bed, folding table, kit. utensils. All prices as listed or best offer.

For the following items, call Moshe Moshe, 879-5494. Sofa, love seat, chair set, chest of drawers, lg. table, kit. table, chairs, two twin mattresses, twin bed, 4 tires 165-SR13, refrig., lawn mower, dehumidifier.



GILBERT & SULLIVAN'S

# TRIAL by JURY

ON WED, JULY 13 FERMILAB AUDITORIUM

Directed by: Dick Gustafson

Musical Director: Tokio Ohska

8:30 p.m.

Music: Stephen Pordes



## LEDERMAN GETS ANOTHER DEGREE

Leon Lederman received his second honorary degree in four weeks when, on June 10, the University of Chicago bestowed upon him his third honorary Doctor of Science. He was not the only one on that occasion, but found himself in the illustrious company of seven fellow honorary degree recipients from fields as diverse as anthropology, mathematics, religious studies, philology, astronomy, humanities, and chemistry, all feeling honored themselves to have been called to the prestigious university.

## IIT APPLICATIONS DUE FOR FALL

Applications for admission to IIT should be submitted as soon as possible in order to qualify for IIT/V fall registration. A representative from IIT/V will be at Fermilab Thursday, July 21, in Curia II from 1:30 p.m. to 2:30 p.m. to take fall registration materials from continuing students. Anyone interested in IIT/V is encouraged to attend. Class schedules and catalogs will be available.

**Congratulations To...**

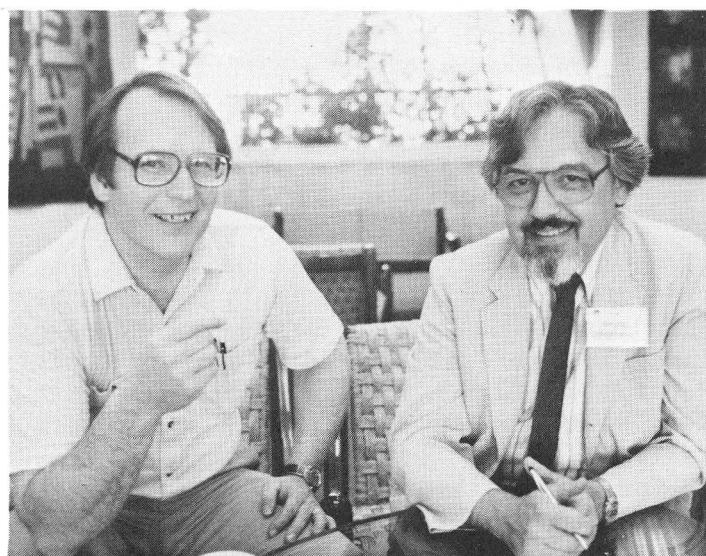


## SUMMER INSTITUTE OPENS

by Eva Ritter-Walker

On Monday, June 20, Fermilab opened its doors to the first Summer Institute for Science Teachers. Planned and organized by the Friends of Fermilab Association, the Institute welcomed 45 teachers from area schools to the full four-week program and to the plenary sessions, meeting on Tuesday and Thursday mornings in Curia II, where advanced topics are discussed by invited lecturers.

The first Tuesday's lecturers were neurologist Dr. Daniel Hier from Michael Reese Hospital and psychologist Dr. Susan Levine from the University of Chicago who began with "perspectives on the brain." If you have ever wondered about the complexity of your brain, Dan Hier was very willing to explain that it is easily as complicated as a computer, that if you think of it in terms of components, they number  $10^{10}$ , or about three times as many as there are people around the world! Although the brain is not as fast at information processing as the computer, it makes up for its



James Hutten (left), New Trier High School biology teacher, and George Zahrobky, biology teacher from Glenbard West High School, discuss Summer Institute lectures.

(comparative) slowness by being a self-organizing system which is capable of parallel processing. This unique characteristic which computer scientists are hard at work to imitate, allows us to take several things into account at the same time and to decide, for instance, whether,

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in a threatening situation, to fight or to run; to remember sometimes very early incidents in our lives when exposed to a particular smell; or to drive safely through a crowded city, bombarded by all



High school chemistry teachers (left to right) Gary Newton from Larkin, Chris Kawa from Crystal Lake, and Rick McKelvey from Cary Grove attend a lecture by Bill Snyder from Northern Illinois University.

sorts of visual and audible stimuli. Innumerable events of this sort happen to us every day without our being aware of them. None of these, however, would be possible if we had to worry about "component loss" for, reassuringly, the brain's redundancy of nerve cells (or neurons) permits us to lose 40-50% of those cells over our lifetime without being noticeably affected by the loss. Does this mean that our brains function perfectly and indestructibly? Nothing could be further from the truth. Many neurologists find their lives' work, analyzing the effects of destructive lesions of the brain due to trauma, stroke, and tumor in order to discover how the brain works; which network is involved in the formation of memories; which is involved in the collaboration of language; and which is concerned with the analysis and manipulation of spatial images.

Susan Levine built on the groundwork provided by her neurologist colleague and discussed plasticity (recovery from injury) in the young brain, evidence for hemispheric specialization, and developmental theories. In the mature brain, the right hemisphere, once erroneously assumed to be the minor one, is responsible for music,

emotion, spatial abilities, even face recognition (among others). The left hemisphere, on the other hand, is associated with speech and language. Yet we are whole-brained creatures, she pointed out, and even for the simplest tasks, we need both hemispheres.

As instructors of the young, the science teachers were particularly interested in certain problem areas: they learned that individual brains do look different, despite certain common features; that while recent findings have confirmed gender-related hemispheric differences, children's hemispheres, up to the onset of puberty, are symmetric and show no specialization; that, on the average, right-handed people seem to be more asymmetrically organized than left-handed persons; that Orientals have greater spatial abilities; and that all of us in general rely more heavily on our right hemisphere than on the left and therefore have greater bloodflow in that part of the brain. Fighter pilots have greater right-hemisphere activity than helicopter pilots and gunners; we can recognize a face up to 35 years past high school graduation; and which hemisphere we are most dependent on may actually influence our career choices. As we wonder about the processes of memory, thinking, or learning, we also wonder about creativity. To the surprise of many, creativity is not necessarily thought of as being strongly associated with either the right or the left hemisphere. Instead, it appears that both may be equally involved, as artists have better interhemispheric communication than their non-artistic neighbors--painting a story with the brush or telling a picture in words...

All in all, the plenary sessions opened with a fascinating and stimulating set of lectures, providing many answers to the curious and raising as many questions again as to what we are all about.

### **Housing Reservations Due July 21**

Thursday, July 21, is the deadline for receipt of reservations for fall on-site housing. Responses will be mailed out by Friday, August 12. Starting dates for fall occupancy will begin during the first week of September. For information, please call the Housing Office, ext. 3777.