

# Fermi news

**FERMI NATIONAL ACCELERATOR LABORATORY**

## Fermilab holds Users Annual Meeting

The Laboratory's future was the main topic of discussion as users gathered for the Fermilab Users Annual Meeting, held July 31 in Ramsey Auditorium.

Chair of the Users Executive Committee John Rutherford welcomed the Fermilab users and community to the day-long series of talks focusing on the long-term future of the Laboratory between now and the turn-on of the SSC.

"We will try to look beyond the presently approved program," Rutherford said of the meeting. "The most exciting particle physics breakthroughs may well come from this era and the Lab needs our help in formulating plans which optimize the forefront opportunities which the Fermilab accelerator will make available."

Deputy Director **Ken Stanfield** opened the meeting with a discussion on the long-range plans for the experimental program. In his talk, Stanfield concentrated on Fermilab's long-range schedule, the presently approved program, advice from the Physics Advisory Committee (PAC), and plans for future workshops.

"During the present collider run, we hope to complete the goal of 100 inverse pico barns," Stanfield said. "We will turn to a fixed-target run in 1994 and 1995, come back with a collider period, and then return to Tevatron fixed-target operations."

Speaking on the advice from PAC, Stanfield said that PAC remains convinced that B physics should play an important role in the future of the Laboratory. "They strongly encourage us to renew our efforts to facilitate the development of a strategy for a comprehensive long-range program for a dedicated B detector," Stanfield said. "In addition, the PAC reaffirmed the importance of the study of possible neutrino oscillations to the Fermilab program. They believe that this physics is likely to be an important part of the future Fermilab program because of the very high neutrino fluxes that are made possible by the Main Injector."

Michael Witherell of the University of California, Santa Barbara, and member of the High Energy Physics Advisory Panel Subpanel followed Stanfield's speech with HEPAP's recommendations for the fu-

ture course of Fermilab.

In general, Witherell said, "HEPAP's picture of the 90s includes the pursuit of new physics with existing accelerators at Fermilab, SLAC, Brookhaven and Cornell. The picture also contains major upgrades to existing facilities, (such as) the Fermilab Main Injector and B Factory, and research on future linear colliders. The one recommendation which stood outside all of the others, is about the SSC, and that is, the current construction schedule for the SSC should be maintained. That is the most important priority for the field and the future."

Witherall said the HEPAP Subpanel based its recommendations on three possible federal budget scenarios of lower, middle and upper. In his speech, he focused on the middle scenario, which is based on constant dollars. In this scenario, Witherall said, "The construction of the Tevatron Main Injector at Fermilab should be completed by early FY 1997. The recommendations retain the vitality of many parts of the program: some of the most important experiments in particle physics at Fermilab, completion of the Main Injector at Fermilab and gradual shift of resources toward SSC research. This is what the recommendations are trying to keep, but since it is a constant budget scenario to gain those new projects, other things must be sacrificed. Very good physics will have to be sacrificed for budgetary reasons in this period."

Speaking next on the view from Washington, D.C. was Wilmot "Bill" Hess, Associate Director of High Energy and Nuclear Physics at DOE.

In his speech, Hess said that DOE supports and agrees with Fermilab III, Fermilab's plan for the next five years, and with the goal to increase luminosity of the accelerator.

"That is very important. I think one can say now that this Laboratory, probably of all laboratories in the world, has the highest potential for new important discoveries, and we want to push that and do everything we can with that as we move toward the SSC," Hess said. "That means going after the Main Injector."

Hess added that DOE "is coming along reason-  
Continued on page 2

### inside

**Corrective Action Plan takes shape**  
page 3

■  
**Lisa Jenkins adds special touch**  
page 4

■  
**Announcements & Events**  
page 6

■  
**Timeline: a date to remember**  
page 7

■  
*Fermi news* is published by the Fermilab Publications Office.  
MS 107, P.O. Box 500  
Batavia, IL 60510  
708 840-3278  
FNAL::TECHPUBS

The deadline for the Friday, September 4 issue of *Fermi news* is Wednesday, August 26. Please send your article submissions or ideas to the Publications Office.

Fermilab is operated by Universities Research Association, Inc. under contract with the U.S. Department of Energy.



## Users Annual Meeting continued



John Rutherford



Ken Stanfield



Michael Witherell



Tom Nash

ably well" and will be doing what they can to keep the funding coming for the Main Injector. Hess emphasized that Washington is behind Fermilab and the rest of the high-energy-physics community. "The Bush Administration has said that they do not want to hurt this science or other sciences, and I think they really mean (it)."

Thomas Devlin of Rutgers University followed Hess' speech with a talk on the future of CDF in the next five years and beyond.

He said CDF is planning many upgrades for later runs, including the addition of a scintillating tile plug calorimeter to replace the existing gas calorimetry. "The addition of this plug calorimeter will allow us to move the muon system in closer. So there is a substantial increase in the coverage for calorimetry and muons."

This will play a role in one of CDF's goals to make a precise measurement of the W mass, Devlin said.

In concluding his speech, Devlin added he feels CDF is a powerful tool for B physics and is looking forward "to a terrific run."

Speaking on the future of DØ in the next five years and beyond was Paul Grannis of SUNY, Stony Brook. He said DØ will be making hardware changes in the future, including the replacement of present tracking chambers, more fine-grained higher radiation damage unity, and improvements on the muon trigger and the muon data acquisition.

Grannis added that, in the future, the new detector will be dedicated in part to relative fractions of B mesons, exclusive and rare decays and CP violation.

"We have an enormous future for as long as we can run the Tevatron," Grannis said. "And we will know a lot by just running for a while. We are limited only by our imagination."

After the lunch break, **Chris Stoughton** (RD/Astrophysics) began the afternoon session with a talk on the Sloan Digital Sky Survey Project. The sky survey, a project designed to chart the universe and the structures within it, will provide a map of the universe with unprecedented detail and accuracy. A collaboration of six institutions is working on the project, which will begin construction at Apache Point, New Mexico in 1993, Stoughton said. The following fall, a one-year test operation will begin, and in the fall of 1995, the experiment will begin, Stoughton added.

N.W. "Bill" Reay of Ohio State University followed with his talk on Neutrino Oscillation Physics Program at Fermilab. Reay said that he thinks

physics is getting serious about this program. "The physics and the motivation for the physics remains as bright and shiny as ever." Reay added that the neutrino program could be ready shortly after the Main Injector is started. "There is a long future for neutrino oscillation measurements."

Katsushi Arisaka of the University of California, Los Angeles, continued the program with a talk on the future world program of K physics. In his speech, Arisaka talked about the need for K physics. "There are three topics to search for in the kaon system," Arisaka said. "Lepton violations, the origin of CP violations and determining CK metrics precisely."

Following Arisaka, was **Joel Butler**, Computing Division Deputy Head.

In his speech, Computing for Analysis of Fixed-Target and Collider Data over the Next Two Years, Butler said the Computing Division will be focusing on migrating off the Amdahl system in the future. "The Amdahl has been a very dependable machine," Butler said. It has been heavily utilized, but there is no known upgrade (to the Amdahl) that can solve our computing problems. It is out-of-sync with the rest of the things that we are doing."

Butler said one half of the Amdahl will be removed from service in January, 1993. In June, 1993, the second half will be switched off and support will be dropped.

Speaking next on the long-range projections for accelerator performance was **Stephen Holmes**, Accelerator Division Head. "Our challenge," Holmes said, "is still to try to get up to  $5 \times 10^{30}$  in August. I think we will be well on our way by the end of the month."

In the 90s, the Accelerator Division's primary goal will be to get to a luminosity of  $5 \times 10^{31}$ , Holmes added. A secondary goal of the division will be to simultaneously increase the number of protons delivered from the Tevatron.

**Thomas Nash**, Computing Division Head, spoke next on Fermilab computing and what it can get and give in a closer collaboration with the outside world of high performance computing. "We presently are integrating commercial components at the highest possible levels," Nash said. "The future, at least for the next few years, is to continue with farms of computer servers. We don't believe we can build closely coupled machines alone, because the next generation of switch components are proprietary, so we expect a close col-  
Continued page 8

# Corrective Action Plan takes shape

The Tigers are long gone, but their influence remains. In an effort to make the Laboratory even safer and more efficient, many employees have spent a great deal of time and effort preparing a corrective action plan which responds to the findings cited by the Tiger Team.

The corrective action plan states how the Laboratory will solve the problems cited in the Tiger Team's draft assessment report submitted to the Laboratory at the June 8 final closeout meeting. The plan must address each of the Tigers' findings and concerns and include a concise statement describing the finding, a description of planned action(s) and a schedule for completion with intermediate milestones. The plan must also include an estimate of resources necessary to correct the finding in terms of people and dollars.

After findings and concerns were identified, the Directorate and division and section representatives selected individuals who would have primary responsibility for developing action plans. **Vernon Cupps** (ES&H/Radiation Physics Staff), who manages the Activation Analysis Lab, was one of the selected individuals. He wrote four action plans by himself, and co-authored eight with **Mark Bodnarczuk** (Directorate), manager of the Office of Quality Assurance and Conduct of Operations.

"It took a lot of time," Vernon said, but he noted that the ES&H Section was well prepared to write the plans because internal audits had revealed findings before the Tigers came. "The major part for us is done; the major impact of the Tiger Team is over except for fixing the problems."

"I finished in about a week, but for others it took longer," said Mark, who was the Tigers' lead mentor for QA and Conduct of Operations. He also wrote several action plans on his own. Mark said that like the ES&H Section, the QA and Conduct of Operations Office was well prepared to respond to the findings.

After Mark, Vernon and the other primary plan writers finished preparing their corrective action plans, they submitted them

to the Action Plan Team, which included **Hugh Montgomery**, leader, **Rich Stanek**, deputy leader, **Gerry Bellendir**, **Kevin Cahill**, **Tom Nicol** and **Dan Wolff**. **Dan Johnson** (RD) and **Jerry Makara** (AD) provided staff support for the Action Plan Team. The compiled individual action plans were called Draft 0.

"Hugh's team reviewed our plans and made comments," Vernon said. "They were pretty satisfied." They did, however, ask that the timeline for resolution of the findings be sped up. Vernon explained that although he had tried to plan corrective actions using only the personnel currently on staff, extra employees would probably be needed to implement action plans promptly.

Ensuring prompt resolution of important findings was one of the tasks of the risk analysis subteam, comprised of **Dennis Theriot**, **Bob Ducar**, **Bob Trendler** and **Tim Miller**. In late June, the four used the Risk-Based Priority Model partially developed by the DOE to determine the relative importance of the Tiger Team findings and concerns. According to Bob Trendler, the model helped the team analyze any possible impact the findings and concerns could have on the safety and health of the public and Lab employees, the environment and the Laboratory mission. Other factors evaluated were the degree of non-compliance to various laws and DOE orders, the investment impact and the effect on public perception. For each of these factors, the team assigned two numbers; an impact level number and a "likelihood of occurrence" number. "Based on the sums of these numbers, the priorities of the findings and concerns were assigned," Bob said. The group analyzed more than 180 findings and concerns. Two consultants from Management Strategies, Inc. provided guidance.

"A Risk-Based Priority Model gives credibility to risk assessment," Bob said. "The advantage of this in my perspective is that it's difficult in your mind to assess risk with so many different findings. This attaches a number to the risk." Twenty-five

findings demanded mitigation as soon as possible, but Bob said, "We were busy in mitigation even before the Tiger Team's final report."

While the risk analysis subteam finished, **Harlan Dick** and **Dave Carlson** set about creating a profile of the money and personnel needed to mitigate all of the Tiger Team findings. Using ESHTRK, Filemaker Pro and Microsoft Excel, Dave said, "What we tried to do was take information from the people who planned and wrote the tasks in the individual action plans, and convert the tasks to dollars." Dave emphasized that **Shelly Malinski**, **Barb Angelos** and **Trang Nguyen** of the Computing Division provided a great deal of support.

The budget subteam's job consisted of three main parts. The first was to convert the action plan to dollars. The second, according to Dave, was to identify the right type of finances, the correct "flavor" of money to be used on each task. The final step was to smooth the mitigation expenses over five years, taking into account the Lab's expected income as well as the risk analysis team's report. "It was very time consuming," Dave said. "Harlan and I tried to maintain the level of accuracy needed in a short amount of time."

Using the subteams' reports, the Action Plan Team prepared Draft 1 of the action plan, which was reviewed for completeness against DOE guidance. During the first week in August, the Team finished Draft 2 and sent it to the Directorate, division and section heads, DOE Batavia Area Office, Chicago Operations Field Office and the Office of Energy Research in Washington, D.C. Representatives from these offices will review the document.

After modifications from reviews are incorporated, **William Happer**, Director of the Office of Energy Research, will submit Draft 3 to **Paul Ziemer**, Assistant Secretary for ES&H. Ziemer will review the report and if he approves it, will submit it to Secretary **Watkins**. Implementation of the action plan is the next and final step.

## Activities Office moves up



*l to r Sue Winchester-Finks and Jean Guyer*

After several years as a fixture of the first floor east side, the Activities Office has moved. They are now located on west side of the 15th floor. Although they are still working on settling in at their new location, the office is open and ready for business. Those looking for the the pamphlet racks can find them on the south side of the 15th floor west elevator bank.

## Public Information heads east



*Barbara Lach, Cyndi Rathbun and Brian Charles*

In preparation for the expansion of the 1W Conference Room, the Public Information Office has moved to 1E in the space formally occupied by the Activities Office. The office is open and it is business as usual.

## Lisa Jenkins adds special touch to work

**Lisa Jenkins** really gets into her work. A lot of the time, she can be seen spinning on chairs, sitting under desks and hunched over her drawing board.

But this is all part of her job as a design drafter with the FESS Engineering & Planning Group. Lisa designs and plans office layouts throughout the Laboratory, and always goes an extra mile to make sure that those she works for are comfortable. For those asking her help, she personally chooses office furniture, such as chairs, desks and partitions, and helps to move, assemble and setup the furniture.

She designed the furniture layout for many office areas in Wilson Hall, including the Tiger Team Response Team Offices on the 2nd floor, the Tiger Team's Offices formally on 8E, 9W and 9NE and the Science Education Office on 8W, among many others.

Working with the Science Education Office, she also designed the layout of the offices at the new Science Education Center, selected and ordered the furniture, and helped choose the style and color of the carpeting and tile for the building.

In designing an office layout, Lisa first begins by paying close attention to the relationships between the people in an office.

"When I start designing (an office area), I figure out the relationships in the group," Lisa said. "In the first interview, I find out who needs to be next to whom and I draw a bubble diagram to analyze the spacial relationships. Then I inventory the furniture to see what stays and what needs to be purchased."

After Lisa draws the initial floor plan, she plugs in all the furniture as a first pass and then meets with the move coordinator. Once the floor plan is approved by the move coordinator, she ensures that all plans have been made regarding new phone lines, electrical outlets and computer lines.

"This is something very important to be concerned about in a move," Lisa said. "Phone and computer lines, as well as electrical outlets are a vital consideration in the space-planning process."

Lisa's expertise goes beyond planning and choosing patterns and colors, however. Working closely with those requesting her help, she insures that each workstation adheres to all ES&H and OSHA standards, and that each user has the most

ergonomically correct equipment.

"It is important that we meet all standards of ergonomics," Lisa said. "A chair has to meet a person's preference and have the capability of adjusting to their body size."

Lisa gained some of her experience for this job while a student at Harrington Institute of Interior Design in Chicago, where she graduated with a Bachelors of Arts in Interior Design and a minor in Fine Arts in June of this year. She came to the Laboratory as a full-time model builder in 1990, and worked her way into her current role as an office interior designer.

Lisa said she thinks her work provides her with a challenge. "Wilson Hall is a tremendous space-planning opportunity. Many areas throughout the high-rise could be better organized and more efficiently planned and utilized according to the individual needs of the section or group occupying the space. Everyone has different needs, different requirements, different work habits, different working relationships with the other members of their group. Individual space-planning consultation can address these varied requirements.

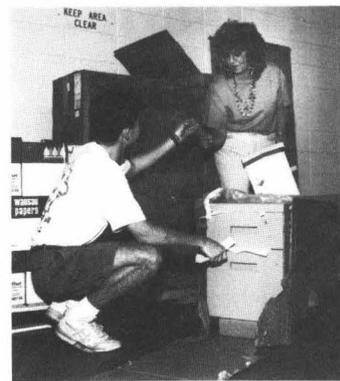
"Groups are constantly growing, changing and moving to various locations within the Laboratory. My education and background allow me to provide a needed service. My efforts are appreciated and people are receptive to my suggestions and recommendations. The people I've worked with since I've been here are anxious to improve their working environments. People produce more effectively when they are comfortable with their 'home away from home.'"

Those who have had Lisa help them with their 'home away from home,' know just how hard she works.

**Jean Lemke** (Directorate), worked with Lisa in setting up the Response Team offices for the Tiger Team visit.

"I was impressed with Lisa's responsiveness, quickness and follow through. The offices had to be setup by May 5. I met with Lisa on April 13 regarding furniture needs. Lisa kept me informed daily regarding the furniture order. In the event the furniture did not arrive on time, she had a back-up plan.

Continued on page 8



*John Ducar and Lisa Jenkins*

## Fermilab's Carl Penson sings as second career

Fermilab employees who venture to Aurora's Laugh Factory comedy club or to a musical at Naperville's Summer Place may see a familiar face on the stage. When they leave, however, it's the show-stopping voice that they'll remember.

**Carl Penson** (TS/Machine Shop) leads a double life. By day he works at Fermilab, as he has for the last thirteen years. By night, he sings. He just finished a successful run portraying runaway slave Jim in the Summer Place production of *Big River*, William Hauptstein's and Roger Miller's musical adaptation of Mark Twain's classic novel, *The Adventures of Huckleberry Finn*. In addition, Carl serves as the opening act for comedians at Laugh Factory every Friday and Saturday night.

"I enjoy singing," Carl said. "Honestly, there is nothing in the world that's more relaxing to me." The Auroran's singing career began at the Greater Mount Olive Church of God in Christ, where he sang in a children's choir. His family was supportive of these early efforts—Carl said "there were quite a few of us who sang or played instruments."

Carl continued singing in church groups and in school choirs and ensembles. Later, the grown-up singer joined Greater Mount Olives' Gospel Radio Choir, in which he often sang lead vocals. He also performed for two or three years with the Living Waters, a gospel group which performed at the Paramount Arts Center in Aurora, the

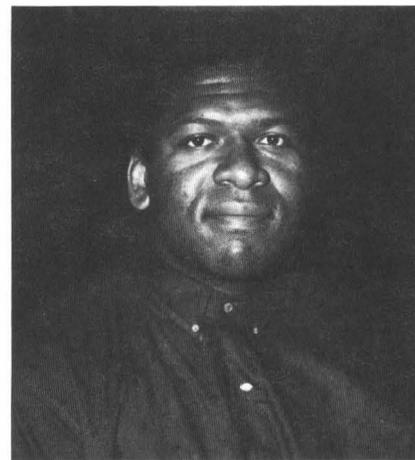
Hemmings Auditorium in Elgin, Chicago's Congress Hotel and other venues.

*Big River* was Carl's first musical. "I was singing at Laugh Factory one night, and the musical director at Summer Place heard the show," Carl said. The musical director asked Laugh Factory personnel how to contact Carl, then invited him to try out for the part of Jim.

Carl was not familiar with the process of producing a play. "I was just trying to figure out where to be, what I was supposed to do," he said. "Then I started to focus on the character. I got to sing quite a lot." Carl sang about six songs either solo, in a duet or in a trio, and the songs afforded him the opportunity to show off the lower end of his range, which spans tenor and baritone parts. The *Naperville Sun's* Genevieve Towsley called Carl's performance of *Free at Last* "moving and poignant."

Carl discovered that the time required to produce a musical is substantial. He liked staying busy, however, and said, "I'll kind of miss it. The cast was a very nice group of people." If "the right part" came along, Carl would consider another musical.

Many weekends, he performs at weddings. At one wedding last year, a friend of Laugh Factory's owner heard Carl sing, and that led to Carl's current gig. He is concentrating now on his performances at Laugh Factory. Accompanied by a tape, he sings for about half an hour, two shows per night.



He sings songs by Luther Vandross, Al Jarreau, even some Frank Sinatra tunes. Carl's favorite kind of music to sing and to listen to is jazz, and he is currently working on some compositions of his own.

When he isn't singing or working, Carl said "anyone who knows me will tell you I'm at the gym." He does "a little of everything" while working out, and is a member of the Summer Basketball League's "Dream Team," which is, at this writing, undefeated.

Family members at Fermilab are especially proud of Carl. His sister, **Nancy Penson**, works in the Travel Office, and niece **Angie Richardson** can be found in the Library.

Carl plans to continue singing, and hopes to record an album someday. For now, though, singing is its own reward. The thrill of performing is singing, not being in front of a crowd. "But is it gratifying," Carl admitted, "when you have an appreciative audience and they show their appreciation."

## Cooling tips may shrink your electric bill

The dog days of summer may wreak havoc on your electric bill. Following are some tips for conserving energy while staying cool.

- Plant trees. Good shade trees will drop the immediate local temperature a good ten degrees or more on hot days.
- Room air conditioners are really more efficient than central air conditioning because they can be operated just where they are wanted. Use the smallest unit you can get away with.
- Clean the filters and compressors on air

conditioners regularly. Nothing works better dirty.

- Use fans. They cost much less to run than air conditioners and can be very effective. Place window fans on the hot side of the house and have them blow out, to draw cool air into the house from the other side.
- Attic vent fans can be enormously effective. Heat rises and collects in attic areas. This produces hot air overhead that air conditioners have to labor against to cool the rest of the house.

- An exhaust fan in the kitchen will help a lot in cooling, too.

- Light-colored roofing materials reflect a lot of sunlight and help in cooling during the summer. The difference is considerable.

- Solar reflective film (you see it often on shop windows) installed on windows and glass doors will reflect back about 80 per cent of the direct rays of the sun in summer.

Reprinted courtesy of the *Chicago Tribune*.

## Nalrec News

The **September Social Hour** takes place Friday, September 18. George Davidson says there will be a D.J. with progressive music, and partygoers with the most musical savvy will be awarded prizes. Mike Frett is getting pizza from West Chicago. You won't want to miss this one!

Mark October 16 on your calendar—it's **Octoberfest**.

Watch for posters advertising the **Branson Music Jamboree**, a five-day, four-night trip offered November 4-8, 11-15 or 18-22. Cost is \$419 double accommodations, \$499 single accommodations for a deluxe motor coach trip to Branson, Missouri. Five meals are included.

Travelers will see four country music shows, including the Baldknobbers Jamboree, Shoji Tabuchi Theater, Roy Clark Theater and Grand Palace Music Theater.

A \$50 deposit is required to hold your spot. Payment is due thirty days before date of departure.

## Movie Schedule Announced

The Fermilab International Film Society presents movies from all over the world. Movies are shown at 8 p.m. Fridays in Ramsey Auditorium.

The August and September movie schedule is as follows:

August 28: *Labyrinth of Passion*

Fifty bizarre characters race in and out of a screwball sex comedy set in Madrid during a wildly promiscuous and permissive time. Pedro Almodovar, dir. Spain, 1982. (100 minutes).

September 11: *Slacker*

Set in the college town of Austin, Texas, this is a deadpan, funny, disquieting look at slackers: students, ex-students, nonstudents, dropouts, discards. . . Richard Linklater, dir. U.S., 1991. (97 minutes).

September 25: *It*

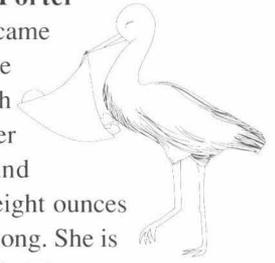
Sex symbol Clara Bow plays a gold-digger to the tunes of live piano accompaniment! With Gary Cooper. Clarence Badger, dir. U.S., 1927. (72 minutes).



## Congratulations to

Carey and **Janet Porter**

(RD/CDF/PIG) who became the parents of Sarah Anne on July 10 at 4 a.m. Sarah was born at Mercy Center Hospital in Aurora, and weighed seven pounds, eight ounces and measured 20 inches long. She is welcomed by Angela, 10, Theresa, eight, Tony, seven, and Samantha, two.



Suzanne and **Dave Fagan** (CD/DCD/USS) became the parents of Nicole Louise on August 6 at 1:34 a.m. Nicole, who was born at Central DuPage Hospital, weighed six pounds, 10 ounces and measured 19 inches long.

Shawn and **Gayle Stephens** (LS/Education) became the parents of Samantha Michelle on August 13 at 3:14 a.m. Samantha was born at Delnor-Community Hospital, and weighed six pounds, 12 ounces and measured 19 inches.

## New in the Stockroom

CN 1825-1340 Paint, enamel, fast-drying, 12 oz. pressurized spray can, wood/metal. Seymour hi-tech P/N 16-134, flammable, flat white, indoor/outdoor.

CN 1825-1335 Paint, enamel, fast-drying, 12 oz. pressurized spray can, wood/metal. Seymour hi-tech P/N 16-122, flammable, gloss true red, indoor/outdoor.

## Construction begins on Wilson Hall 1 West

Construction began this month on a renovation project that will expand the Wilson Hall 1W Conference Room.

Construction is scheduled to convert the conference room into a new, approximately 150-seat lecture hall with tiered seating. The lecture hall will be expanded into the area formerly occupied by the Public Information Office and partially into the vending area on the south side of the conference room. The project is scheduled to be completed in late fall.

# Timeline: a date to remember

## Antiproton Source Groundbreaking

August 16, 1983, was an ordinary late summer day. Except for an itinerant breeze that periodically stirred the Big Woods on Fermilab's western border, the weather had remained characteristically warm and still. Behind the Booster on a barren piece of land, though, things were beginning to move more than the laggard weather suggested.

A group of people, some formally dressed but wearing work boots and hard hats, had assembled around a ceremonial plot of bare earth. Had this ground been located in a suburban back yard, it might have been an ideal location for a swimming pool. Years of proposals and planning, however, already had decided that the land would be used otherwise.

One dozen golden shovels reserved for occasions like this broke the earth at once, marking the spot where excavation would soon begin. The brief ceremony finished, and the group congratulated each other on the significance of the moment. Here would be built the Antiproton Source, a machine capable of creating antimatter—a vital substance if the Tevatron were to become the most powerful accelerator in the world.

Antiproton Source research and development at Fermilab began in 1976 and focused on a method of storing and collecting the antimatter particles known as electron cooling. At about the same time on the French/Swiss border, physicists were building the CERN Super Proton Synchrotron using a completely different technique involving stochastic cooling. The creators of the proposed CERN machine were certain that their antiproton source could manufacture and store a sufficient quantity of antiprotons to produce the high energy collisions sought after by physicists.

Antiprotons were predicted in 1927 and discovered in 1955. If they could be manufactured successfully and brought to collide at nearly two trillion electron volts (TeV) in the Energy Saver's superconducting magnets, the universe might reveal another of its ancient secrets. But in 1979, the ambitious Energy Saver project was still four years

away from completion, and another equally ambitious project designed to realize the power of the accelerator had to begin before the two TeV threshold could be approached.

In 1978 the Fermilab Physics Advisory Committee advised that a colliding beam department be established to build a massive detector that could make sense out of the powerful collisions generated by the Energy Saver, and the Collider Detector at Fermilab (CDF) group was quickly set in motion. The Department of Energy succeeded in persuading Congress to sanction the construction of the Antiproton Source and CDF in 1981, and the project became known collectively as TEV I.

Throughout the latter part of 1980 and half of 1981, **John Peoples**, then head of the Research Division, had worked with the CDF group to design their experimental hall. He also had participated in the conceptual design of the Antiproton Source, and in late 1981 he took over as project manager of TEV I.

The Antiproton Source was an enormous effort about to be built by a group who had, admittedly, no expertise in constructing such a machine. There was clearly a certain irony to the whole project, John remembers. "We were building something all of us approached for the first time. There were almost no accelerator builders among us, certainly no one with experience with cooling antiprotons, and it was a very complicated pair of storage rings."

The difficulty in constructing the Antiproton Source would be compounded by the shortage of experienced accelerator builders brought on by the Saver's ongoing construction. From the ranks of associates, Laboratory employees and postdocs, John recruited personnel for the Antiproton Source project. From Argonne National Laboratory, Lawrence Berkeley Laboratory, Novosibirsk and CERN came the design help the project required.

In June of 1981, however, the Laboratory reconsidered the electron cooling design for the Antiproton Source that Congress had authorized earlier and concluded that it could be improved. To harness the full power of the Energy Saver, the TEV I

group quickly began working on a new conceptual design using stochastic cooling. The design group finished by March of the following year, and in May of 1982 the Department of Energy approved the new plans.

Contractors had poured the foundation for the Antiproton Source in October of 1983, and the accelerator tunnel soon began to take shape when the walls were cast later that month. CERN's 1983 discovery of the W particle with their proton-antiproton collider reaffirmed the superiority of the Fermilab Antiproton Source stochastic cooling design, and work on the Antiproton Source tunnel and service buildings continued at an unbroken pace into the winter. From an airplane, the unmistakable triangular array of the Antiproton Source tunnel, its three operations buildings and surrounding road had gained definition by the summer of 1984. Below the surface of the earth, members of the TEV I group were busy installing supports for the Debuncher and Accumulator rings that would soon fill the Antiproton Source tunnel.

Installation peaked in February of 1985 with the daily arrival, connection and testing of Accumulator and Debuncher components. By the time the last magnet was positioned in the Antiproton Source Accumulator on April 8, 1985, the total number of magnets required for both rings came to 700. Commissioning of the Debuncher ring began on April 6 even before the last magnet had been installed in the Accumulator, and the test run met with success when 8 GeV protons from the Saver took one complete turn around the ring April 21.

When CDF saw the Saver and Antiproton Source generate the first 1.6 trillion electron volt proton-antiproton collisions on October 6, 1985, the TEV I project had earned a place in Laboratory history. No longer were the Saver and Antiproton Source working toward separate goals; together they had broken the one TeV barrier. Together they could be called the Tevatron.

—*Brian Charles*

## Lisa Jenkins continued

The offices were set up by the end of the day on May 5."

Jean added that she admired Lisa's dedication and hard work.

"Lisa is very pleasant to work with and is very knowledgeable about making the best use of the space which is available."

**Marge Bardeen** (LS/Education Office), who worked with Lisa in setting up the offices in the Science Education Center, agreed with Jean.

"Lisa did a lot for us," said Marge. "She interfaced between the outside (vendors) and us in terms of giving us a chance to select furniture without having to do it ourselves. I like working with Lisa. She responds to what people are saying, and she is a lot of fun. She helped make the inside as beautiful as Bob Wilson's design on the outside."

A chargeback code is required for Lisa's consultation help.

## Harper's index

Estimated percentage of all hats sold in the United States each year that are baseball caps: 70.

Number of the 3 items looted from the Frederick's of Hollywood Museum in Los Angeles last April that have been returned: 2.

## Classified ads

### Real Estate

2-story, 1-yr.-old townhome (3S 125 Timber Dr., Warrenville). 2BR, 2.5 BA, whirlpool tub, loft w/ wet bar, 2-car attached garage w/EDO, 3 skylights, vaulted ceiling, 2 ceiling fans, oak cabinets, neutral colors, central AC, all appliances stay. 5 minutes to Lab. Great view. Asking \$134,900. Call Cyndee, 708-393-2705 or x2713 or WARNER::CHOPP.

Nice family house in Aurora, 522 4th Ave. 3BR, lg. living room and dining room. Maintenance-free exterior and 2-car garage. Asking \$64,900. Call Gerri at 708-556-3347.

A Japanese graduate student working at Fermilab wants to experience living in an American family at reasonable cost. Call Nobuyuki, x8405 or FNALD::UEMURA.

Three bedroom home in Batavia available for rent from Oct. 1. Large living/dining room, front porch, full attic, full basement and a small yard. Four miles from Wilson Hall. Call Ian at x2561 or FNALD::IANM (current tenant) or Gary Larson at 708-879-8833 (owner)

### Miscellaneous

Rust-colored hide-a-bed sofa. Asking \$75. Call Sherri, x3411 or 708-897-5818.

Woman's bike, 3-spd 26" Huff. \$45 obo. Contact Jack V. Smith, x3011 or page 306.

Baby crib, made from solid hardwood materials. Dark brown. Includes mattress. Excellent condition, \$50. Call Marc, x4189.

90% waveless queen size waterbed w/shelved headboard, pedestal drawers under base. Excellent condition, \$300 obo. Call x3095 and ask for Steve (days) or call 708-369-5575 (evenings).

Microsoft Works and Microsoft Mouse version 2.00, for DOS systems and OS/2 systems. New in unopened package—30% discount. \$100. Call John, x3088 or 708-369-3210.

### Vehicles

1986 Pontiac station wagon. V8-5 ltr., full power, excellent condition, 75k miles, \$3950 obo. Call Luca, x8424, 708-527-8372 or FNALD::STANCO.

1986 Chevy Cavalier RS L4. White, 2-dr., AT, power steering and brakes, A/C, AM/FM stereo. Ex. cond., 70k miles, new brakes, new battery. \$2000 obo. Call Alain, x4368 or 708-406-8321 or FNALD::PLUQUET.

1980 blue Ford pickup F100. Rusty but trusty! 6cyl., AT, 1/2 ton. Asking \$500. Call Sherri, x3411 or 708-897-5818.

1985 Ford Escort. 2-dr., 4-cyl. Ex. cond. 1 owner, garage kept. \$1700. Linda, x3082 or 708-897-2377 (evenings).

1988 Pontiac Fiero Formula 2.8 liter, fuel injected, V6, automatic, tilt, A/C \$4,500. Call Bob, 357-3306.

Fun boat! 1987 Bayliner, 22' bowrider, 230 hp, tandem trailer included. Superb condition, \$12,000. Elissa, x3304 or 708-851-8842.

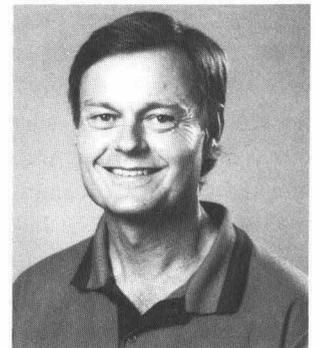
## Annual User Meeting continued

laboration with industry there."

Speaking next on the organization and direction of the Research Division was **Roger Dixon**, Acting Head of the Research Division. "The Research Division is not going to be reorganized completely," Dixon said. "We are just going to make some minor adjustments. The changes in the way we do business in high-energy physics is what is driving us to make adjustments in the division." These changes include the new ES&H culture and the fact that Fermilab is involved in much bigger experiments with longer runs, Dixon added.

Closing the meeting and speaking on the Laboratory's future was Director **John Peoples**. Peoples said the Laboratory will be extending and developing its mission and doing different things.

"Today, we have the highest energy accelerator in the world. That will be true for roughly a decade. But, we have to begin to look at the future where we are not the highest energy machine. Part of our program has to be dedicated to the future. We really have to think about our future, and a future which is going to be very different than the past 20 years."



Roger Dixon