

# FermiNews

The Newsletter of the Fermi National Accelerator Laboratory

## USERS HOLD ANNUAL MEETING

"Visions, with me, are like schedules," Fermilab Director John Peoples quipped to the 300-plus people assembled in Ramsey Auditorium on Thursday, July 13, to hear his remarks on "A Vision of Fermilab's Future" at the 1995 Users' Annual Meeting. "Tomorrow I might have a different one." The audience chuckled, but the point was clear. Visions aren't static, they evolve. And in sharp contrast to the grim sense of doubt that characterized last year's meeting, a feeling of tenta-

tive optimism prevailed in the crowd now gathered to hear about the physics and finances that would shape the Lab's future. Speakers looked proudly to the past, and expectantly toward the future. A vision, now, did not seem out of the question.

### EXPONENTIAL OUTLOOK

The mood was captured in a talk on charm physics by Guy Blaylock, a postdoc from the University of California, Santa Cruz. Blaylock showed a graph of the number of charm particles reconstructed at the Lab since 1980. Every five years or so, the number rose by a factor of 10. Forgoing the pointer, Blaylock walked to the 15-foot screen and looked up through the steadily increasing points. At the top he had drawn some clouds. "I'd like to think we can just keep going up there," he said quietly, "right into the clouds."

In making a best fit to the future, exponentials were the curve of choice for the day. This year, accelerator performance exceeded the goals set for Run Ib, achieving a peak luminosity of  $2.5 \times 10^{31} \text{ cm}^{-2} \text{ s}^{-1}$ , and delivering a record  $4.9 \text{ pb}^{-1}$  in one week. Fermilab physicist Gerald Jackson, discussing luminosity at Fermilab, showed that it tended to double every year and a half. "I think if you fall off that exponential you might begin to worry," he said. In keeping with that tradition, the Accelerator Division reported plans for a recycler to capture unused antiprotons at the end of a store and put more bunches in the machine, hoping one day, to reach luminosities of  $10^{33} \text{ cm}^{-2} \text{ s}^{-1}$ . Physics lives by leaps and bounds.

Showing what they had done and planned  
*continued to page four*

### Gate Access Change Tomorrow

All employees, users and contractors: don't forget that the vehicle site access change to the Fermilab site takes effect tomorrow, Saturday, July 22, 1995. To avoid delay, you'll need a vehicle sticker or a current Fermilab ID. If you don't have a sticker, they are available from the Key & ID Office, WH1E, from 8 a.m. to 4:30 p.m.

REMEMBER: "To get in and out of Fermilab quicker, get your car a vehicle sticker."



Users take a break and engage in lively conversation during their Annual Meeting held in Ramsey Auditorium July 13 and 14.

## FermiNews



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# COMMUNITIES PREPARE TO MEET THE CHALLENGE

A year ago, Vice President Gore challenged the telecommunications industry to bring the information superhighway to every classroom in America. Industry is responding, and Fermilab is playing an important role in the process.

The Interagency Technology Task Force, under the direction of the U.S. Department of Education, is offering Challenge Grants to consortia working toward National Education Goals. These grants will support communities of educators, parents, industries and others in working to transform their factory-era schools into information-age learning centers.

In order to be selective in this process, external panels of experts have been chosen to review the applications and make recommendations to the Secretary of Education. Fermilab was one of

the seven sites around the country to participate in the reviewing of 510 proposals received by the U.S. Department of Education. By September 1995, approximately 16 five-year grants will be awarded. In some cases the grants may be as small as \$500,000 per year or as large as \$2 to \$3 million a year. However, the typical grant will

average \$1 million a year.  
—Michelle Rathbun



*Kris Ciesemier, Fermilab Education Office, made the facility and equipment arrangements for the Tier I, Phase 1 reviews that were held at Batavia Middle School and the Tier I, Phase 2 reviews that were held at Fermilab. Kris served as a reviewer for both phases. Above center, Kris reviews proposals with the Tier I, Phase 2 reviewers.*

## “TOP” UNIVERSITY SCIENTISTS DO TEACH

BY TOM DEVLIN\*

Last spring, 10,000 students were enrolled in courses taught by American and Canadian physics professor who worked on the discovery of the top quark.

Nights and weekends, via plane flights, computer links and tele-conferencing, members of university faculties across the continent searched for the top quark in experiments at Fermilab while carrying a full range of teaching activities at home.

This contradicts the fashionable assertion that high-level research at univer-

sities results in neglect of undergraduate teaching. Elected officials and members of the media have hopped on the bandwagon to persuade students and parents that they are being victimized by universities with strong research programs.

A Pennsylvania legislator has proposed a law to dictate classroom time for professors. A *Philadelphia Inquirer* article said high tuition charges subsidized research equipment and salaries of non-teaching professors. This echoed a CBS “60 Minutes” segment in which the University of Arizona was

accused of this and other abuses. Scenes of physics laboratories and equipment were shown in the background. Arizona’s largely unnoticed response pointed out that no tuition was used for research. On the contrary, “80% of the equipment used by undergraduate science students was paid for by research grants.”

No hard evidence exists to support the accusations that research harms teaching, but researchers are alarmed by the attack. In a speech last January to Universities Research Association, Neal

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# WILSON HALL TO UNDERGO RENOVATIONS

A number of life safety and service improvements will be done in Wilson Hall during the upcoming months. Most tenants and visitors will be affected in some manner. Contractors will be parking in the east and west parking lots and will be sharing the use of the elevators. Office operations and restroom/locker room usage will be interrupted. The FESS/Engineering group, however, is doing all it can to keep disruptions to a minimum. A brief description of each project follows.

- A new **MEDICAL FACILITY** will be constructed on the ground floor directly below the existing facility. The existing women's restroom/locker room on the ground floor will be remodeled into a men's and a women's restroom. A new women's locker room will be constructed on the east side. The women's locker room will be unavailable for three to four months, and the men's locker room will be unavailable for approximately a month and a half. FESS/Engineering is working to keep these closure times as short as possible.

- New **ELEVATOR CONTROLS** will be installed to improve the elevator service and provide safer operations during emergencies. This work will be done from September 9 to December 3, with each elevator out of service for three to four weeks.

- The **SIDEWALKS** leading to the Auditorium lobby will be removed and replaced between September 1 and October 15. Access will be available from one side at all times. Some parking in the Footprint Area will be disrupted to create work space for the contractor.

- The **FIRE ALARM SYSTEM** throughout Wilson Hall will be replaced with a more modern system during the period from July to January. This involves considerable work above the ceilings on each floor. Individuals' offices will be disrupted during normal working hours to perform this work. Work surfaces and computers will be protected and the area will be vacuumed immediately following the work.

- The **FIRE DAMPERS** in the ductwork on each floor of Wilson Hall will be replaced or refurbished to insure proper operation. This work will be done at night from July through September. Some work will be required in offices, especially at the south end of the building. Work surfaces and computers will be protected and the area will be vacuumed immediately following the work.

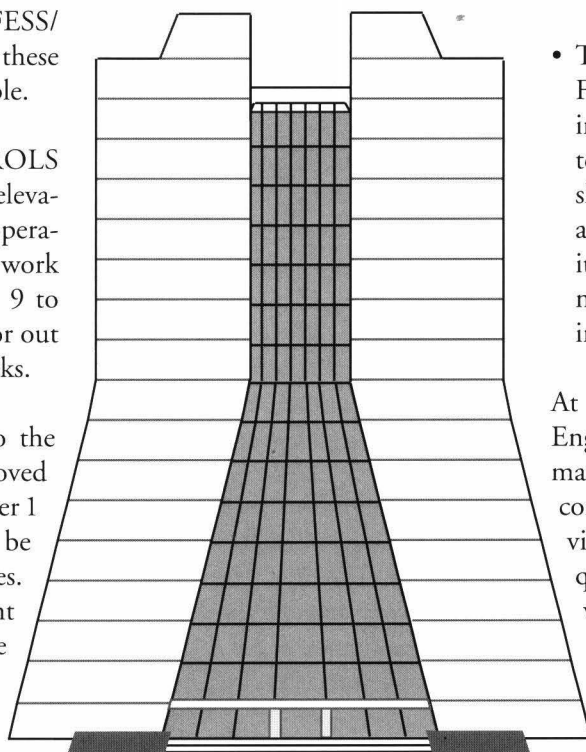
- Between now and October, the **PIP-**

**ING PENETRATIONS** between floors will be sealed to reduce the potential spread of fire. Most of this work will be done at the exterior window wall columns, below the heating vents. The contractor may need to move some furniture to create access to these areas. However, when possible, the contractor will work around the furniture and complete the work in an office in less than one half hour.

- The **MAIL CHUTES** at the north end of the building will be removed and the floor openings will be sealed. This work will be completed between August and September and the construction should have little or no impact on daily routines.

- The **TRASH CHUTE DOORS** at the south end of the building will be repaired or replaced between August and September. This construction should have little or no impact on daily routines.

- The **ROOFS ABOVE THE 16TH FLOOR** on both sides of the building will be replaced between September 1 and October 31. This work should go unnoticed by most tenants. The contractor will be prohibited from using the elevators for material hauling during the morning and lunch time rush hours.



At the start of each project, FESS/Engineering will post additional information regarding times and dates of construction and the name of an individual who can be contacted with any questions or concerns. Individuals whose offices will be disrupted will be contacted personally to arrange for contractor access and protection of equipment.—*Ed Crumpley*

# FIRE SAFETY TIPS TO TAKE ON VACATION

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Like all buildings, hotels and motels can have fires. You can increase your chance of survival by being prepared and by doing the right thing in an emergency. Take the time to become familiar with your surroundings and to plan how you can escape in case of fire.

## **Hotels and motels are doing more to make sure guests are safe from fire.**

When you make a reservation, ask if your hotel has smoke detectors and automatic sprinklers. When you arrive, take time to read the fire safety and escape information.

## **Find the two exits nearest your room.**

Make sure they are not locked or obstructed. Count the number of doors from your room to these exits so you can find them even in darkness or smoke.

## **Learn how to find and unlock the door of your room in the dark.**

Put your room key and a flashlight

close to your bed. In the event of fire, take your room key with you and don't pause to take anything else.

## **Locate the fire alarm on your floor.**

If you find a fire, sound the alarm, leave the building, then call the fire department.

## **When you hear the fire alarm, escape, don't investigate.**

## **If the fire is in your room, get out and close the door.**

Once you're out, report the fire to the management and call the fire department.

## **If the fire is not in your room, leave if you can.**

First, feel the door. If it's cool, open it slowly and go to the nearest exit.

## **If your door is hot, don't open it.**

Your room may be the safest place for you. Call the fire department to report

the fire and let them know you're trapped and where you are. Seal all cracks around doors with wet towels. Shut off fans and air conditioners. Signal at your window or balcony and wait to be rescued.

## **Crawl low in smoke.**

Cleaner air will be near the floor. If you encounter smoke or fire at lower levels, turn around and use another exit. Take your key so you can go back to your room if you can't use the exits.

## **Never use the elevators during a fire.**

They could stop at the floor where the fire is. Use interior stairs instead.

## **Remember: Never smoke in bed.**

Almost half of all fatal hotel fires are caused by careless smoking.

If a fire starts, stay calm. You are your best chance of survival.—*Jack Steinhoff*, Fermilab fire chief

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## USERS ANNUAL MEETING

*continued from page one*

to do with the beam now at their disposal, experimenters from collider and fixed-target experiments presented results past and present. It was a trade show of particles, W's, Z's, c's and b's, dressed up and on their best behavior. Depending on the speaker's loyalty, the Tevatron was dubbed a top factory, a bottom factory or a charm factory, but clear to all was the Tevatron's role as the highest-energy collider and fixed-target accelerator for 10 years to come, vital for a wide range of physics.

Some of the results contained hints of things that might topple the reigning standard model; but, at the end of the day, the top quark was the only addition to the fundamental particle family. Wrap-

ping up a talk on new-particle searches, Elizabeth Gallas, a physicist from the University of Texas, put up a single transparency, with a mixture of reverence and disappointment. "Conclusion," it read, "The standard model has survived another year."

As for the years to come, Chip Brock, Michigan State University physicist, summarized what many seemed to be thinking. "Rather than running from the next paper accelerator," he said, "we have to realize that Fermilab is a place that has the resources and leadership to attack any problem." Other talks presented ideas ranging from exotic muon colliders to ultrahigh luminosities of  $10^{33}$ . Like the murmurings of a prophet, they spoke of things that might one day come to pass.

## FOLLOW THE PHYSICS

Having sown the seeds for future physics, experimenters needed only the soil to nurture them. In a year when funding for many projects has eroded, DOE's John O'Fallon reported a relatively fertile funding picture for high-energy physics in 1996, up five percent from 1995 to \$677 million, subject to approval by the U.S. Senate. But after 1998, he said, projected HEP funding appeared flat in dollars, its real value dropping with inflation. The National Science Foundation's Robert Ely reported that grants for CDF and DZero would drop by a few percent, as funding shifted to CLEO upgrades at Cornell. Perhaps Ely unconsciously illuminated what this means to physicists as, responding to a funding question, he absentmindedly removed a dollar bill

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## TOP TEACHERS

*continued from page two*

Lane, director of the National Science Foundation warned that we must improve our teaching. All agreed, but several of us urged him to investigate the validity of the assertions. D. Allan Bromley, presidential science advisor for the Bush administration and president-elect of the American Physical Society, expressed similar thoughts recently in a speech given at Rutgers. Again, I objected that no evidence of widespread abuse existed. Dr. Bromley wisely pointed out that it does not matter what I think; the issue is the public's perception. I decided to get some data on the subject.

The top-quark discovery identified over 800 scientists from many countries with some claim to excellence in research. I sent questions to all in this group with regular faculty appointments at 44 U.S. and two Canadian universities. With shameless arm-twisting, I got data about all 123 men and women in this target group. I sought a snapshot of their teaching activities when the top quark was announced. Here are the results:

- 103 taught regular lectures, tutorials, recitations or laboratories for 9,734 undergraduates.
- 26 taught advanced classes for 216 graduate students.
- 98 supervised the thesis work of Ph.D. candidates.
- Of the 12 without regular classes that semester, three held full-time administrative posts, one was recovering from a serious illness. The other eight were on sabbatical for full-time research and training of graduate students. They will resume classroom teaching in the fall.

In nearly identical words, many emphasized that "all lectures [and most recitations] are taught by faculty." Most agree with one who said, "I love teaching and I think it is important to teach

physics from a working physicist's viewpoint." "My office hours for students is anytime," said another. Their typical self-imposed work week is over 60 hours. "I am proud of my work on the top-quark discovery. I am proud of my undergraduate teaching."

Many devoted a lecture to describing the top-quark work. Students were both excited by the news reports and having a professor who was directly involved in the research.

Sixty percent volunteered information about out-of-class activities essential to education: advising, course development, textbooks, admissions and high-tech upgrades to teaching laboratories and lecture demonstrations.

Several teach Saturday Morning Physics to high school students. One is co-founder of the Teachers Academy, devoted to bringing access to high-quality science and math teaching to every one of the 400,000 children in Chicago's schools. Others taught summer pre-physics classes to disadvantaged students in Philadelphia and Texas. As soon as the "Jupiter Impact" pictures came in, they appeared on the Internet through the efforts of one of these physicists working with the Franklin Institute, Philadelphia's Science Museum. Another collaborated "with the med school to develop new electronics for PET scans."

In the decade leading to the top-quark discovery, hundreds of undergraduates worked on the project part-time or during the summer in university laboratories. These are apprenticeships, and nobody has invented a better method of education. The best way to learn science is to spend time with scientists doing science.

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We are mistaken in portraying the university as a teaching institution. It is a learning institution, and learning must take place at all levels from the newest freshman to the most senior professor. How can one learn from someone whose own learning is a dusty, distant memory? The Canadian author, Robertson Davis, observed that "Intelligent societies have always preserved their wise in institutions of one kind or another, where their chief business is to be wise, to conserve the fruits of wisdom and to add to them if they can." In our society, universities serve this function. Through our students, we seek to conserve wisdom and to spread its fruit, and, in our research, we seek to add to them.

*\*Tom Devlin is a professor of physics at Rutgers University and a member of the DZero Collaboration at Fermilab. An edited version of this article appeared on the editorial page of the New York Times, June 13, 1995. Reprinted with the author's permission.*

# People & Events

## LAB LOOKING FOR A FEW GOOD STUDENTS

### JEANNELLE SMITH JOINS TUITION REIMBURSEMENT PROGRAM TEAM

Thinking about heading back to school to finish that degree, or are you eager to improve your professional skills? In either case, through the Lab's tuition reimbursement program, you'll soon be college bound.

The tuition reimbursement program is led by KARIN ETTER (LSS/Benefits) and JEANNELLE SMITH (LSS/Personnel). Jeannelle joined Karin last month in directing the program, replacing DEBBIE WYLAND who has moved to the Visual Media Services group.

About 250 people take advantage of the Fermilab tuition reimbursement program every year. These 250 employees are reimbursed for 100% tuition, required fees (except late fees and parking fees) and required books.

Karin can help employees find the pro-



*Jeannelle Smith (l) and Karin Etter*

grams and classes that are right for them. She maintains a stockpile of college catalogs and course schedules in the Benefits Office on WH15W and she can offer tips and advice in choosing a course of study. The Lab does ask that an employee's program of study be job-related or related to a position the employee can reasonably aspire.

After selecting a course of study, employees must complete an "Educational Support Request" form available in the Benefits Office. The employee's supervisor or group leader must approve the

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## NEED MORE FERMINESWS?

Do you need more copies of *FermiNews*? If you have new hires or summer employees, please notify the Publications Office at x3278, MS 107 or

TECHPUBS@FNALV to update your count. Let us know if your change is for the summer only or permanent.



*Milt Jackson*

## ARTS SERIES PRESENTS

MILT JACKSON, SATURDAY, AUGUST 26, 1995

Vibraphonist Milt Jackson has been at the heart of jazz since he was first discovered by Dizzy Gillespie as a teenager in 1945 in a Detroit nightclub. Although influenced by vibist Lionel Hampton, Milt Jackson was the first proponent of be-bop to play the instrument. He was a member of the Dizzy Gillespie-Charlie Parker Sextet in the late '40s, and along with Parker and Gillespie, became one of the leaders of the be-bop and modern jazz movements. Soon after, he played with groups led by Coleman Hawkins and Thelonius Monk. In 1950 he, along with other members of Dizzy's Big Band, began playing as a combo which later became known as the Modern Jazz Quartet. Milt Jackson continues to be a vital and original musician today. He was named by *DownBeat's* Readers Poll in August 1994 as the Best

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## ARTS SERIES

continued from page six

Individual on Vibes by a 2 to 1 margin.

### TAIKO DOJO, SATURDAY, JULY 22, 1995

Tickets are still available for San Francisco Taiko Dojo, Saturday, July 22, 1995. The exact origin of Taiko remains unknown. However, through ancient folklore, historical writings and anthropological studies, it is known that Taiko has been associated with many aspects of Japan's culture. In Buddhism, the drums represented the voice of Buddha. Farmers used drums to chase pests from the fields. Drumming was used in times of war to signal men in battle. Grand Master Seiichi Tanaka founded the San Francisco Taiko Dojo 21 years ago and is credited with bringing Taiko to America. His philosophy is evident in performances that blend contemporary rhythms, a variety of percussion instruments, singing and Taiko and martial arts stances. Past performances include a command performance before Emperor Hirohito, Japan Mexico Cultural Festival, thousands of performances around the country, appearances on national and international television and a unique collaboration with jazz great Art Blakey.

For further information or telephone reservations, call xARTS weekday from 9 a.m. to 4 p.m.

## Harper's Index

Weight, in pounds, of an apple pie baked by students at Spokane Community College last July:

33,500

Average number of peas in a pod:

8

# MOVIE SCHEDULE

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The Fermilab International Film Society presents movies from all over the world. Movies are shown at 8 p.m. Fridays in Ramsey Auditorium. All foreign films have English subtitles. Admission is \$4 for adults. Call x8000 for more information.

■ July 28 *Ed Wood*,  
Provocative look at famed B-movie director Ed Wood, his weird, inspired

film-making and his poignant relationship with fading film icon Bela Legosi. Tim Burton, dir., US, 1994.

■ Aug. 11 *Clockwork Orange*,  
Kubrick's vivid adaptation of Anthony Burgess' novel offers a potent look at a society in the not so distant future. Malcolm McDowell is superb as a prime misfit. Stanley Kubrick, dir., UK, 1971.

## MICROWAVE CHECKS BEGUN

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The ES&H Section annually surveys microwave ovens at Fermilab for sanitary condition and microwave leakage. This year's survey, conducted by co-op

students, has begun. If you have a new microwave oven or one that was not surveyed last year, please call x2977 or x8807.

## PUT ON YOUR EXERCISE GEAR

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Just a reminder that July 31 is the last day to start the two month National Parks exercise program. The goal is to exercise your way "through" eight of America's most scenic National Parks in 60 days. Your exercise workout counts as mileage as you log your progress across the country. You can choose the activities and the exercise level that work best for you and move

toward your goal at your own pace.

Participants will receive some great incentives plus a chance at a grand prize drawing. If you still want to join the program, stop by the Recreation Office on WH15W and pick up an information packet. You must turn in your registration form by July 31.

## Congratulations

To ROGER SLISZ (FESS) and JEAN KIDD (LSS) on their recent marriage. Jean and Roger "tied the knot" Saturday, July 8, 1995 at Lake Ellyn in Glen Ellyn, Illinois. A reception followed at the Greek Islands in Lombard.

## TUITION REIMBURSEMENT

*continued from page six*

request form. The employee then forwards the form to Jeannelle at MS 124, who will then process the form and maintain the employee's paperwork throughout his or her course of study. "I help employees keep all of their paperwork straight, show them how to follow the guidelines and ensure that they are properly reimbursed," said Jeannelle.

Karin and Jeannelle encourage employees to take advantage of the tuition reimbursement program. Karin notes that employees are not the only ones who benefit from additional education. "The program provides the Lab with better trained, more skilled employees, and it keeps people on the cutting edge of their fields." ■

## USERS ANNUAL MEETING

*continued from page six*

from his pocket, nervously smoothed it, then put it away in another pocket. He may have hit upon the metaphor for future HEP funding—one hand taking from the other, with tough decisions about where to put resources.

In closing remarks, John Peoples gave his view of the Lab's direction. Foremost was attaining  $10^{32}$  luminosity with the Main Injector, making possible the physics that experimenters had been discussing. "It's a real challenge," he said with a smile, "but the Accelerator Division has

# CLASSIFIEDS

### ■ VEHICLES

1984 Chevy S10 truck, 4 x 4, Tahoe, V6, fully equipped, 4 wheel drive, new tires, battery & converter, \$2,500. Call Rich at 708-897-8125.

### ■ MISCELLANEOUS

3 piece living room set, excell. cond. Includes: sofa w/2 matching pillows, love seat w/2 matching pillows & chair. Also includes: 3 wall pictures, floor lamp, 5 ft. brass stand w/glass shelves, 2 black & gold tables, black 78" x 84" patio window valance, 2 silk plants, \$500. Call x8091.

Sofa (96") & matching love seat (72"), cream & beige, good condition, \$300. Call Ed at x2974 or 708-906-0752.

Men's golf clubs, Triumph Tempo VSS2 1, 3, 5 metal wood, 3-9, PW, SW perimeter weight irons, Ping putter. Additional 1 iron, 4 wood, bag, balls,

chipping practice net & electric putting practice device incld., \$325. Call 708-365-5309 after 5 p.m.

Maytag washer & gas dryer, matched set, approx. 6 yrs. old, excell. cond., \$300. Call Greg at x4893.

### ■ REAL ESTATE

Timeshare property (1 week) for sale. Week no. 4, title in North Carolina @ Fairfield Harbour, part of the Fairfield Communities in Little Rock, Arkansas. Detached unit, 2 BR, dining area, loft, 3 decks, living rm. w/fireplace. Currently 2 weeks in the bank, asking \$2,500 o.b.o. Call Terry at x4572.

### ■ WANTED

The Aurora Lions Club is collecting eye glasses for people in need in South America. A collection box is located in the Linac Accelerator Building, Room LIG139, or call Michael May at x4418.

this terrible habit of making their goals." Beyond that, John said, physicists should explore the possibility of luminosity as high as  $10^{33}$ . Early in the next century, he said, Fermilab could also host an experiment like NuMI, sending beams of neutrinos 456 miles through the earth to Soudan, MN, to look for neutrino oscillations.

"Follow the physics" was his message. "The physics should be determining what we do next. We don't have to plan 20 years ahead." Recalling his days as a young physicist, he reminded the audience that "in the 1960s, long-term planning meant a couple of weeks."—David Kestenbaum ■

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submissions or ideas to  
the Publications Office.

