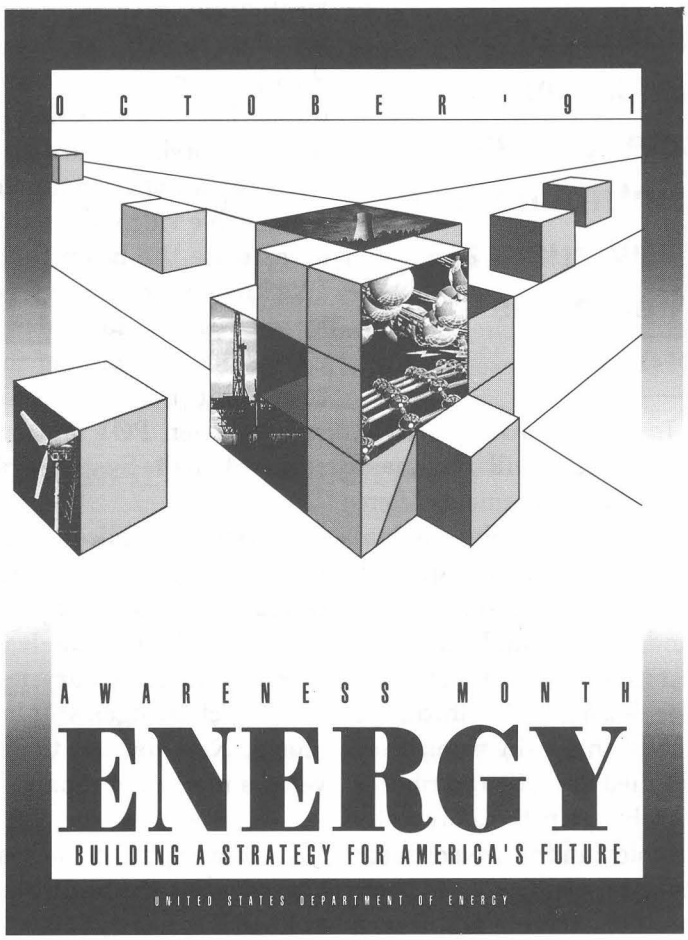
FermiNews

October 4, 1991 Vol. 14, No.17 Fermi National Accelerator Laboratory

October: Energy Awareness Month

The annual observance of Energy Awareness Month is designed to promote a greater public understanding and awareness of energy resources, efficient energy use and conservation. This year's theme—*Energy: Building a Strategy for America's Future*—should remind all of us of the importance of proper planning today to ensure our energy needs of tomorrow.



Energy is closely linked to the economic prosperity of the United States. Essential to our daily activities, energy is a major factor underlying the strength of the U.S. economy, the largest in the world. The U.S. economy produces a vast array of products and services, and energy lies at the heart of this productivity. Our historical economic strength has been due in part to low energy costs as a factor of production. The fact that the United States represents less than five percent of the world's population, but produces one-fourth of global economic output testifies to the strength of our economy and the high standard of living we enjoy.

Our geographically dispersed population requires Americans to drive farther for commerce and leisure than do people in most other countries. Our transportation networks are the most extensive in the world. Compared with other nations, U.S. residents have greater personal space in homes and offices, a greater number of single-family homes, better heating and cooling systems and a wider range of labor-saving appliances.

The culture at Fermilab represents some of the best and brightest in our society. Innovation and sensitivity to global issues confronting society as a whole are birthed in environments such as ours as a model of the future.

On April 17, 1991, the President signed an Executive Order on Federal Energy Management that directs all Federal agencies to improve the energy efficiency of their buildings and facilities by twenty percent from 1985 to the year 2000. Accordingly, the U.S. Department of Energy has provided both programmatic and financial assistance to accomplish the task. Successful implementation of these requirements, however, will be the cumulative effect of our individual efforts. —*Steve Krstulovich*

Inside. . .

Skateboard leads the way to beam pipe repair

Technology developed at Fermilab is driven by the pursuit of fundamental science. The contributions of individuals are vital to this process.

In the following article, *FermiNews* will showcase two of the fundamental components of technological development and quality improvement—creativity and innovation. Recently, a team of Laboratory employees demonstrated initiative along this vein when they applied these two attributes to solving a potentially costly problem in the area of beam tube repair. Owing to their problem-solving abilities, a substantial amount of experimental time and money was saved while a new technology was gained. Their story follows:

When a section of vacuum tube in the proton beam line developed a small water leak, a creative solution was immediately required to correct the problem. The tube, 12 inches in diameter, several hundred feet long and buried beneath more than 10 feet of soil, had corroded, causing a vacuum leak as well as decreased beam intensity to downstream experimenters.

Initially, the dilemma was to pinpoint the exact location of the leak. **Cary Kendziora** (RD/Exp.Areas Sup.) elected to handle the job and immediately developed a skateboard-size device on which he mounted a moveable video camera to investigate the beam tube. "We knew there was a leak so we went in to find it," Cary said. The area of the tube that needed repair was between PØ1 and enclosure E in the Switchyard.

To further complicate matters, it was located directly beneath a road. The first obstacle of finding the leak was negotiated by Cary, but the real challenges still lay ahead. Now he had to develop a method of repair.

Estimates placed the cost of excavating the beam pipe at Road B at nearly $50,000. The guard rails, road base and pipe would have to be removed, the pipe repaired and welded, and then everything rebuilt. Beyond the tangibles, the $50,000 figure did not include the precious time lost by experimenters who would be without beam while construction work took place. Another method of repairing the beam pipe had to be conceived and quickly.

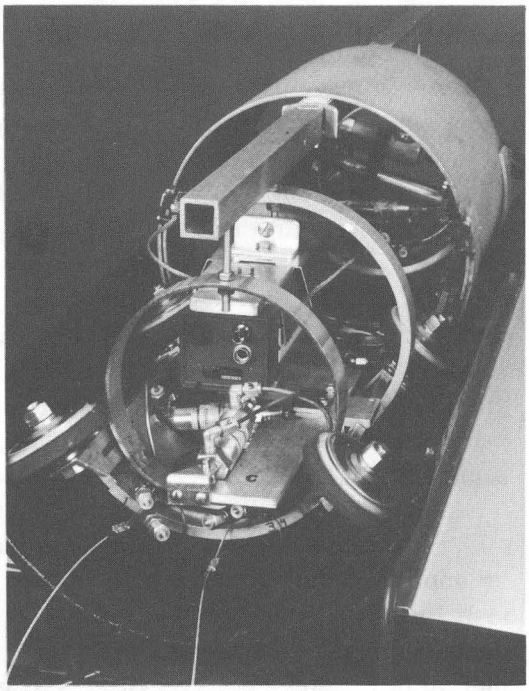
With the consent and encouragement of **Sam Childress** (RD/Facil. Dept.), Cary took an unconventional approach and tackled the repair project from the inside out. Springboarding off the skateboard device that he used to locate the leak, Cary conceptualized a similar machine that could locate the leak, clean the surface of the beam tube and patch the tube all in a short period of time. Adding the camera to a moveable sled, Cary realized that a fully rotating metal brush could rough clean the corrosion from the pipe interior, and a Freon sprayer would remove the finer particulates. From a conceptual standpoint, cleaning the surface would prove to be far easier than applying a patch.

(l to r) Cary Kendziora, Ron Davis, Willie Stitts and John Barilla load the Internal Pipe Repair Apparatus into a simulated beam pipe in the Proton Assembly building.

The solution to patching the hole was to be found in a method similar to bicycle tube repair, the only exception being that this "tire" was going to be repaired from the inside out. "First, we learned the physics of what it would take to put a seal on it," Cary said. With **Jay Hoffman** and **Finley Markley** (TS/Engineering) supplying a special brew of epoxy, Cary designed an expandable hydraulic cylinder that would forcibly and evenly apply a patch to the clean beam tube. The cylinder would push the epoxy into the leak, and a 500 watt lamp would accelerate the curing process, enabling the sled to be removed in about 12 hours.

Charlie Paul and **Marty Solis** (RD/Exp. Areas Sup.) took Cary's design and fashioned the parts into a working device that performed to the desired specifications. **John Barilla, John Buckley, Ron Davis, Craig Rogers** and **Willie**

Stitts (RD/ Exp. Areas Sup.) all completed an incredible amount of work in a very short time, according to Cary, finally commissioning the Internal Pipe Repair Apparatus.



The Internal Pipe Repair Aapparatus, shown above, eliminates the need to excavate a beam pipe to fix a leak. The apparatus was successfully used to repair a leak in the proton line.

But would the heat supplied from the lamp be sufficient to bond the epoxy on the patch to the beam tube? Cary hoped it would. To find out whether or not his estimate was correct, he monitored the temperature of the epoxy and the temperature of the tube's surface in an experimental situation. After testing a dummy beam tube in a water bath, Cary found that the lamp provided sufficient heat, and a bond would be able to form under the adverse conditions found in a leaking, underground beam tube.

Five weeks of intensive research and development paid off on September 7 and 8 when the Internal Pipe Repair Apparatus performed the task for which it was designed.

Without any costly excavation or downtime, Cary's sled repaired the leak at less than one-fifth the cost of digging up the enclosure and cured the epoxy resin in only 12 hours. Cary's approach demonstrated the two basic requirements of quality improvement—creativity and innovation. "We're confident that we can find and repair any leak," Cary said.

Having proven its success, the Internal Pipe Repair Apparatus is now considered a valuable technology that may have a number of uses at Fermilab and other accelerator laboratories and industry, Cary added. —*Brian Dick*

Nalrec news

Send in those favorite recipes to create the first Fermilab cookbook. Please mail your recipes to **Nancy Bartlett**, MS 315 or **Charlotte Smith**, MS 228. Submit recipes by October 31, so we can publish the collection by early Spring. Include your name, department, mail stop and phone number. With your contributions, a wide variety of traditional favorites and international dishes can be represented in what's sure to be a real chef's companion. Nancy can be reached at x2902 and Charlotte at x4550 if you have any questions.

Octoberfest party

Come and see what **Dominick Carullo** has in store for this great party to be held October 11 at 5:00 p.m. in the Village Barn. There will be brats, a hayride, raffle and door prizes. The band will play a little bit of everything. It looks to be a good time for all.

Children's Halloween party

The Children' s Halloween party will be held Saturday, October 26 at 1:30 p.m. until 3:30 p.m. at the Village Barn. Magician Terry Evanswood will provide the tricks; Nalrec will provide the treats. Show time is at 2:00 p.m. There will be games, and all children under age 10 will be able to participate in a costume contest. Any questions regarding the Children's Halloween party, call Sherri at x4366.

Remember the:

Christmas Dinner Dance December 20, 1991 at the Fox Valley Country Club.

First Time Nalrec New Year's Eve party on December 31, 1991. — *Charlotte Smith*

October is Quality Month

A commitment to quality improvement makes possible projects challenging to employees and can have a substantial effect on important functions that the Lab provides for its users.

Security interests

New system improves safety and officer efficiency

Why is that Security Officer asking for your ID card and then waving a beeping wand over it? Glad you asked!

It's the Security Department's newly acquired software program, *The Tour Watch Manager*® at work. The system improves the officers' efficiency in protecting property and it increases their ability to assist you in times of emergency or disaster.

A key component of the system is a microprocessor-based, hand-held laser scanner and data entry device know as a *MicroWand*™. It not only reads bar codes including those found on your Fermilab ID card, new style property tags and many stockroom-issued items, but it also allows keyboard data entry. The data collected with the *MicroWand* is periodically uploaded to a PC. System software is capable of producing a variety of statistical and management reports to assist in assessing patrol efficiency and effectiveness. It reduces effort required to comply with DOE documentation requirements.

ID checks by Security Officers are not a new activity. They have been standard practice for many years, particularly at night. It is important for us to be able to "account for people" in remote areas and at night. This is not primarily for property protection purposes but for personal safety and emergency evacuation. Concern for our ability to protect and if necessary evacuate employees has been noted in Fermilab's own internal assessment activities and in Tiger Team inspections of other DOE facilities including Argonne, Lawrence Livermore and Sandia National Laboratories. The new system makes this task easier for the officer and less time-consuming for Users and employees. *Tour Watch Manager* is more reliable and accurate than previous hand-written methods.

This improvement in accuracy and reliability would have been very useful in the early stages of the Wide Band fire just four years ago this month. That night a considerable amount of concern and time was involved in confirming the whereabouts of an experimenter who was "thought" to be in the lab. It turned out he was not there and had not been there that night. In the same situation, information easily retrievable from *MicroWand* would give us a better indication of who probably is or is not in a facility. This can reduce unnecessary personnel risks associated with facility searches by emergency responders and/or occupants.

We are investigating other ways to use *The Tour Watch Manager* to improve our performance and effectiveness for the Laboratory community. One area in which we hope to expand is to simplify the property pass system thus making it easier for everyone to move equipment around the site while still meeting DOE property management rules and guidelines. . . but that's another story. — *Rudy Dorner and Bill Flaherty*

DOE to conduct October ES&H appraisal

Representatives of the Department of Energy's Environment, Safety and Health Division (ESHD) will perform a multi-discipline ES&H appraisal of Fermilab during the month of October. The appraisal is scheduled to begin October 4 and will bring about 20 DOE appraisers to the Laboratory.

The functional areas to be appraised during this visit include: emergency preparedness; environmental protection; health physics; industrial hygiene; industrial safety and fire protection; packaging and transportation; quality assurance; and safety analysis and review systems.

Although the Department of Energy conducts periodic appraisals of programs at the Laboratory, this appraisal will be conducted differently than those in the past. "Usually only one functional area is reviewed during an appraisal. This year the appraisal will have a multi-discipline approach," said **Don Cossairt**, Head of the Fermilab ES&H Section.

The appraisal will begin with an opening meeting and then the appraisers will meet with designated individuals in the various functional areas to review documents, procedures and compliance with Department of Energy Orders. During the time of the appraisal, Don Cossairt encourages all employees who are interviewed to give the DOE team their utmost cooperation. "A cooperative spirit facilitates an appraisal," stated Don.

"This is just one of the periodic reviews of our management and ES&H programs conducted by DOE," said **Dennis Theriot**, Directorate.

Following the appraisal, a closing meeting will be held during which findings will be presented. After the closing meeting, action plans to rectify any findings will be formulated.

Into the fifth digit

September capped a record month for numerical milestones at Fermilab. Employee identification numbers 9999 and 10000 were issued to incoming Fermilab employees who became part of the team on September 23. **Colleen Farrell** (BS/Info Systems) became employee number 9999, retiring the four-digit sequence while **Mark Kujawa** (CES) tapped into five digits with number 10000. Colleen will work as a computer programmer handling human resource-related databases, and Mark will serve as a fire technician maintaining site-wide safety systems. Colleen hails from Chicago and Mark from Island Lake, near Mc Henry.

New employees Mark Kujawa and Colleen Farrell received a warm welcome from Sharon Rowland (c) as she processed the last Fermilab four-digit ID and began the five-digit series. This marks the first change in the number of digits since July 1970.

A note of thanks to **Sharon Rowland** (BS/FM/Emerg. Serv.) for assembling a celebration for Colleen and Mark and making them feel at home. Say hello to both record breakers when you see them; they're the ones carrying the Fermilab ID balloons.

Volunteers needed

The Education Office is looking for naturalists who enjoy working with young people to volunteer time in one of its programs. The volunteers will act as docents in the field, assisting middle school children as they perform field studies in the prairie and forest. A background which includes formal or informal field biology is a must. Avid bird watchers, gardeners, hunters or outdoor persons should consider these positions. Teaching experience would be helpful. Commitment is very flexible. Availability must include hours during the school day. If you or someone you know is interested in helping our youngsters learn about nature, call **David Abler** in the Education Office at 708-840-8259.

Real Time '91

On-Line Support Department participates in computer conference

Several members of the Computing Division's On-Line Support Department attended the recent conference on Computer Applications in Nuclear and Plasma physics held in Julich, Germany. Those in attendance from Fermilab were **Ruth Pordes** (CD/OLS), **Don Petravick** (CD/On-Line Software), **Margaret Votava** (CD/D A Software) and **Matt MacPherson** (AD/EE Support). The conference is held biennially under the auspices of the IEEE CANPS committee. Ruth is the present chair.

The Fermilab representatives presented papers on the work of the Department in the area of software engineering for the Digital Sky Survey, data acquisition systems for PAN-DA and beyond and UNIX product support (UPS). The conference provided an excellent opportunity for professionals in the field from Fermilab to exchange experiences and developments with colleagues at CERN, CEBAF and other Western European, Japanese and American institutions. Vendor booths offering new hardware and software for data acquisition and online applications were open during the conference.

More than 160 individuals attended the meeting, held for the first time outside of the United States. An award for outstanding contributions to the field of nuclear and high energy physics computer systems was given to Dr. Harry Bisby of Harwell in England. He described the trials and tribulations of being at the center of developing the world's first international electronic packaging standard for high energy physics—CAMAC. He told a story about the chosen name. The CAMAC Standards Committee was determined that the name should be a new word to avoid any potential trademark or copyright problems. After it was too late, they discovered that the name had been registered by an Irish beer company. The beer, however, had never reached the marketplace. Much later Dr. Bisby visited the Camac River in Ireland.
— Ruth Pordes

Prairie harvest

The schedule is set and volunteers are needed

The Fermilab Prairie Committee is looking for volunteers to grab a pair of garden clippers and pick up a paper bag to participate in the annual seed harvest later this month. Saturday, October 26 and Sunday, October 27, volunteers will hand gather seeds vital to the continued growth and diversity of Fermilab's nearly 800 acres of reconstructed prairie. Any interested persons are welcome to spend a day in this fall's vibrant tallgrass oasis.

This year marks the sixteenth anniversary of prairie reconstruction at Fermilab. The effort to rebuild a segment of native Illinois prairie inside the accelerator ring has been underway since 1974. Fermilab was named one of DOE's National Environmental Research Parks in 1989 and now hosts a variety of scientific studies related to the environment.

Harvesting will take place at the unprotected prairies in the Markham, Illinois area on Saturday, October 26. A van will leave Wilson Hall at 9:00 a.m. sharp for those desiring transportation. Harvesters will meet at the McDonald's restaurant on 159th Street, two blocks east of Kedzie Avenue at 10:00 a.m. From there, the group will go the the prairies. Lunch may be purchased at McDonald's. Harvesting will continue until 3:00 p.m.

On Sunday, October 27, harvesting will take place at Fermilab, from 9:00 a.m. until 3:00 p.m. Follow the signs starting from the intersection of Eola and Batavia Roads. Lunch may be purchased at the Fermilab cafeteria or volunteers may bring their own food. Groups are welcome, but advance notice would be appreciated. **Finley Markley** (TS/Eng.), chairperson of the Prairie Committee, also recommends that harvesters wear field clothing and gloves, bring pruning shears if possible and also paper grocery bags.

Volunteers are welcome to spend as little or as much time as they wish on the appointed days. No experience is necessary. Coffee and donuts will be provided. For more information call the Fermilab Public Information Office at 708-840-3351. In case of bad weather on the scheduled harvest dates, call the Fermilab switchboard to verify harvest plans at 708-840-3000.

The Fermilab Prairie Reconstruction project owes its success, in large part, to the efforts of many volunteers.

Although combines are used to harvest the seeds from taller grasses, volunteers are still needed to pick the more delicate and harder-to-find species of plants.

SciTech receives DOE grant

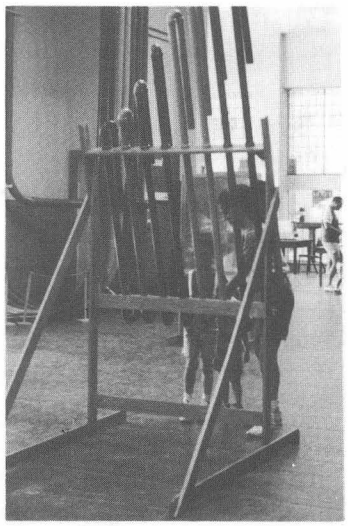
SciTech, the science and technology interactive center in Aurora directed by Fermilab physicist **Ernest Malamud**, will receive a $30,000 grant to develop energy-related science education exhibits and activities, Energy Secretary James D. Watkins recently announced. The award was made under the Department of Energy (DOE) Museum Science Education Program sponsored by the DOE Office of Energy Research. The grant will expand SciTech's exhibits with the help of three local Girl Scout councils.

The museum is located in the former Aurora Post Office in the downtown district. Open Wednesday to Sunday, it is a one-year-old, hands-on science museum established to interest children and students in science by allowing them to understand scientific principles through physical experimentation.

The museum will use area girl scouts led by female mentors to build the exhibits, allowing the girls to use tools as they learn the scientific principles underlying the exhibits. A pilot program was begun one year ago. Fifteen groups of girls built exhibits, finishing with surprising results for their parents. Malamud said, "The fathers were astonished that the girls could make a hands-on exhibit to be used by thousands of people." Presently, SciTech is seeking a program coordinator to organize building the exhibits for the SciTech Clubs for Girl Scouts. With any luck, the position should be filled soon and work could begin in November or December, Malamud forecasted.

Initially, five girl scout troops will build five exhibits to be used in the museum. Scheduling the troops, their shop time, and acquiring the materials are only some of the hurdles that lie ahead, but Malamud expects only winning results. If the museum receives matching funds from a private institution, it could possibly construct as many as 30 exhibits.

About 100 science museums applied for the grants, but only ten museums received funding from DOE's Museum Science Education Program, according to Malamud. "That makes us very happy to have received the award," Malamud said.



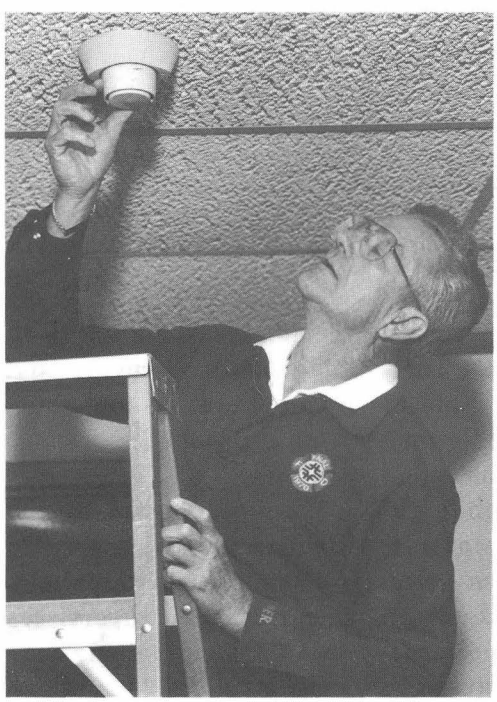
Girl Scout Troop #340 from the DuPage County Council built the Sound Pipes exhibit now on display at SciTech.

Fire prevention week

Time for a quick prevention check

The Fermilab Fire Department would like to remind us that October 7 - 13 is Fire Prevention Week. Take the time now to make sure your home is equipped to protect you and your family in the event of a fire. **Ron Grosklaus** (BS/ES/ Fire Dept.) says that Fire Prevention Week is an ideal time to change the batteries in all of our smoke detectors and flashlights to prepare for a possible emergency. "Do it every year when you set your clocks back to Standard Time and never have to worry about when you did it last," said Ron.

According to the International Association of Fire Chiefs, about 80 percent of homes in the United States have at least one smoke detector in place, but as many as half of all smoke detectors are useless because of old or missing batteries. Play it safe; replace your batteries now to make your home safe and to protect what you value most—your family.



Fire fighter Steve Lusted demonstrates inspecting a smoke detector. During Fire Prevention Week, the Fire Department recommends that employees inspect these life-saving devices in their homes.

Recreation Office notes

Gym membership on sale

Gym memberships for 1991 - 1992 are now available. Enjoy weight lifting, aerobics, basketball, volleyball, tennis, karate, exercise machines and much more. The annual fee is $35 (from October 1 to September 30). Student and short-term visitor memberships are also available. The minimum age required to purchase a membership is 18. To purchase your membership to fitness, stop in the Activities Office, WH1E, between 8:30 a.m. and 4:30 p.m. Monday through Friday. For more information call x3126 or x4544.

Volleyball league starts soon

Come in from the cold and join Fermilab's Winter Refereed Volleyball League. Games will be held on Monday nights, beginning October 21, in the Fermilab gymnasium. An open sign-up will be held on Monday evening, October 7. The captains' meeting will be Monday, October 14 at 5:00 p.m. Rosters will be due at this time. Teams, groups or individuals interested in participating should contact Jean Guyer at x3126 or x4544 for details. All volleyball players must have a current gym membership to play.

Basketball league to begin

Need something to do on Thursday nights that lets you get some exercise at the same time? Then why not join the Fermilab Winter Basketball League? The season will begin October 24 with a captains' meeting held on October 10 at 5:00 p.m. Rosters will not be accepted after October 17. If you are interested in participating or already have a team, contact Jean Guyer at x3126 or x4544, or see Ray Fonseca for further information. A gym membership is required.

Recital at noon

Fermilab will sponsor a free noon recital on Tuesday, October 8 in Ramsey Auditorium. Eight German music students schooled in sixteenth through eighteenth century classical music will perform selections from Bach, Schumann and other German composers. The students are from the Georg-Phillipp Telemann-Musikschule in Magdeburg, Germany and will perform on the piano, flute and violin.

The visit, hosted by the Batavia Rotary, is open to all employees with permission from their supervisors and will be under one hour in length.

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Cla$$ified ad$

Motorized Vehicles

1986 Ford Tempo, 6 cyl; 59k mi., air cond, power mirror, power seats, am/fm cassette, new tires. Excellent condition, very clean, super reliable. No rust. Asking $3,500. Call Gustavo at x2290 or x3799 (home).

1985 Cadillac Coupe DeVille Gold Edition, fully loaded, leather interior, moon roof, spoke wheels. Excellent condition. Asking $4,500. Call Mary at 708-382-1917.

1923 T-Bucket Roadster, rolling chassis with fiberglass body, 351 Cleveland, C-6 auto trans, 9-inch Ford rear end, partially assembled. Extra parts. Make offer. Call Ron at x4663 days or 708-466-7109 evenings.

Miscellaneous

Garage Sale: **New Sharp microwave**-$40; Deluxe 1-yr.-old **Queen mattress**-$40; **4 Bauhaus chairs**-$15 each; **Round table**-$10; **Dishes, glassware, stereo equipment** also for sale. Call x3525 or 708-830-6831.

Three official gymnastic **tumbling mats** with velcro fasteners. Originally $300, will sell for $75. Also, **airline pet carrier** for 110 lb animal-$30 or best offer. Call Ellie at x3771 or 708-892-4676.

New Blaupunkt "Newport" **am/fm cassette car stereo**-$150. Jenkins **upright piano**- $250. Murray 20" gas **lawnmower**- $75. 8-gallon **console humidifier**- $25. Call Dan x4605 or 815-756-6558.

Car club membership drive

The Fermilab Car Club will be accepting 1992-1993 membership applications from November 11 through November 22 in front of the Users Office between 11:30 a.m. and 1:00 p.m. The fee is $25 for a two-year membership

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