

Lab displays best in high-tech

An exhibit highlighting the 1990 DOE R&D (*Research and Development Magazine*) 100 winners is currently on display in the west annex of the second floor cross-over. *R&D Magazine* bestows its prestigious awards on each year's best high-tech products, and last year DOE captured twenty-seven of the 100 prizes. Fermilab has landed twelve awards, and plaques commemorating these honors appear alongside the 1990 DOE display.

According to a 1989 government report, DOE laboratories have received more R&D 100 awards than any other organization since the competition began. The tradition of excellence continued last year, as eleven DOE labs picked up prizes.

R&D Magazine lists the judging criteria for the winning technologies as

"importance, uniqueness and usefulness from a technical standpoint." The 1990 winners were praised for their "important, immediate applications."

The traveling awards exhibit consists of twenty-seven panels, each measuring twenty-eight inches by ninety-two inches. The high-tech inventions the panels feature are varied. One panel spotlights a speedy technique of DNA separation from Los Alamos National Laboratory; another shows Brookhaven National Laboratory's wavefront dividing infrared interferometer, a "spectrometer for use with synchrotron radiation." Oak Ridge National Laboratory's radiolabeling reagent is also featured.

See these and other innovative technologies on display here at Fermilab now through July 31.

Inside

Patent no longer pending	2
Tuition reimbursement	5
Liz Quigg's high-tech kid stuff	6
Ethnic Dance Showcase	8

R&D

Fermilab has tradition of excellence

Fermilab innovators have won twelve of the esteemed R & D 100 awards over the past eleven years. Plaques noting the employees' accomplishments are displayed alongside the 1990 DOE winners' panels on the second floor cross-over.

The first two plaques date back to 1980. The Negative Hydrogen-Ion Source, developed by **Charles W. Schmidt** (AD/Linac), won a prize that year, as did the Energy Saver Dipole, developed by **Dick Lundy** and former Director **R.R. Wilson**. A year later, **Peter McIntyre's** Electron Cooling System won.

Nineteen hundred eighty-three was a banner year—Fermilab claimed four awards. **Frank F. Cilyo's** Precision Electric Current Sensor and **Ed Barsotti's** (CD/D.A. Electronic) "ECL Camac" Ultra-High-Speed Computer each landed an award. **C.H. Rode's** Tevatron Liquid Helium Transfer Line also won, and the Slip-Ring Stepping Motor, developed by **Hans Kautzky** (RD/DØ Constr. Dept.), rounded out the 1983 awards.

Ronald J. Walker's (AD/Cen. Hel. Liquif.) Spectrographic Nitrogen Detector won an R&D 100 Award in 1984, and a year later, the Magnetic Wire Position Transducer, developed by **Hans Jostlein** (Physics Section) and a research team, won.

The Video Data Acquisition System, developed by **Alan E. Baumbaugh** (CD/D.A. Electronic) and a research group, snagged a 1986 award. That same year, **Thomas Nash** (CD/Division Ofc.) and his colleagues developed the ACP Multimicroprocessor system, which claimed a second award.

In 1989, Fermilab garnered another prize with the Advanced Multiple Processor Computer Program (ACPMAPS), developed by a group headed by **Thomas Nash** and **Estia Eichten** (RD/Theo. Physics).

Patent no longer pending

The final segment in a three-part series on Fermilab inventors takes a look at three individuals whose pursuit of excellence has earned them U.S. patents. The concluding group of Fermilab employees who received patents on the inventions between August 1, 1988 and July 31, 1990 again represent the full spectrum of ingenuity rare in nature but omnipresent at Fermilab.

One significant development of the Superconducting Super Collider's (SSC) ongoing evolution was the development of the cryogenic support system used in the superconducting magnets to support the cold mass assembly to the vacuum system, said **Thomas Nicol** (TS/Engineering).

Tom and his group, including members John Goczy and Ralph Niemann (both now at Argonne National Laboratory), had been designing magnets for the SSC. Their work required them to develop a support system capable of restraining large masses at cryogenic temperatures of about 4.5K. Since the 8,000 SSC magnets will be assembled into cryostats which maintain both a vacuum and a constant low temperature during the repeated cooldowns and warm-ups over the SSC's 25-year lifespan, the components needed to be reliable and inexpensive.

The group also needed to overcome difficulties that they found in prior support

systems' designs. One of their goals was to construct an axial anchor system in which the support posts were connected to tie bars that did not penetrate the thermal radiation shields and insulation of the cold mass assembly in order to minimize heat leak from the outside environment to the superconducting magnets.

Their solution to this problem was to design tie bars connecting the fixed post to the adjacent support posts, which have sliding connections to the cold mass assembly. The tie bars distribute axial loads to each of the five support posts.

One step of the support system's design led to another, and the group "developed one patent for something called the support post (in 1987), and then we added a few extra pieces and patented the entire system," Tom said. "It's nice to conceive something that you finally build a prototype of and it actually does what you think it will do because you don't always know these things in advance."

Today, all the SSC magnets being built have this installed, but the design work is never really complete, Tom said.

"You do something like this, and the magnet size changes so you keep working on it," he said. "Most of these projects aren't something where you come in one morning and you dot the last



Thomas Nicol

"i" and cross the last "t" and it's done."

Since the support system has applications beyond those for the SSC, Tom's work designing support systems might last longer than he anticipated. The fabrication of low temperature magnets for industrial and medical uses, dewars for storing liquified gases at low temperatures and over-the-road trailers for transporting low temperature materials are some of the possibilities.

"Clearly, there are other superconducting magnet projects going on around the world," he said. "Various parts and pieces of it or some different configuration of the same system may be useful."

Vacuum conditions and leak detection go hand in hand, said **Frank Juravic** (TS/ Material Ctrl.), and in order to run the accelerator and its cryogenic support system, between 120 and 150 leak detectors are required to perform the complicated and sensitive task of vacuum leak checking.

The task of leak checking is complicated by the fact that the Tevatron uses helium as its primary coolant, and the trace gas used in leak detectors is also helium, Frank said.

"When you have liquid helium running through lines, it masks your leak if you use helium (in the leak detector) because there's no way that you'll see it," he said. "You have to use another trace gas in order to find leaks."

If the Main Ring tunnel became filled with helium, leak detection with existing equipment would be impossible. After studying the principles of mass spectrometry—the technique of identifying a substance's chemical composition by separating its gaseous ions according to weight and charge—Frank realized that certain changes would have to be made to the current equipment to convert the leak detector to a neon trace gas and still achieve the same sensitivity.

Continued on page 3.

One Sunday afternoon, Frank came in to work intending to replace one of the factory-supplied magnets in a leak detector with another magnet. Not wanting to waste time changing the detector's vacuum system by installing a new hanger, he moved the existing hanger for the magnet out of the way, put a larger magnet in its place, and stuffed a Kim-Wipe box underneath it.

"I opened up the standard leak for neon at what I assumed would be the acceleration voltage and ionizing current, and voila, it was there," he said. "The type of sensitivity I was looking for."

When Frank came in on Monday, he used a hanger to affix the magnet he had hurriedly rigged with the Kim-Wipe box the previous day, but the sensitivity had mysteriously disappeared.

"But by building a new hanger with Glenn Lee's (AD/Mech Support) help where I could move the magnet up and down, I lowered it an eighth of an inch, and there it was again," he said.

By making a few mechanical changes, Frank had taken an off-the-shelf product designed for helium and retrained it to use neon.

At the time of the discovery, Frank didn't know what mechanism made the newly-designed gaseous leak detector work. He only knew

that moving the magnet by one-eighth of an inch did the trick.

The revelation that the normal techniques of gas separation were not in use with the new setup came when he applied for the patent he received in August 1988. Frank discovered that the new technique permitted neon to achieve higher sensitivity than was previously known without any redesign to the helium baffling system. Oxygen and nitrogen were also detectable with the new technique as well, Frank found.

Ninety-nine percent of the leak checking done on-site is still performed with the aid of helium as a trace gas, but to Frank that only means the remaining one percent can be checked with his leak detector.

"To me," Frank said, "the key to the whole thing is that we don't ever have to worry about having an environment, whether it be an internal or external environment, where helium hinders our leak checking."

Working at Argonne in the early 1970s, Thomas Droege (RD/Col. Det. Dept.) spent a good portion of his time developing proportional chambers for use in detector elements. He needed a power supply to provide high voltage to the chamber wires to enable par-



Frank Juravic

ticle detection, and after arriving at Fermilab one year later, he built a few of what was later to become the high-voltage DC power supply and distributed them for use.

"Everybody liked them, so we went out on a fabrication contract to Keebler Associates," Tom said. "We made fifty on the first run... and they've been making them ever since."

Success with the first high-voltage DC power supply was quick, said Tom, who completed the design quickly in order to implement its use. The company who built the units went on to produce about 2,000 of them, and a wall full of them can be found on the bottom floor of CDF and in photographs of almost any Fermilab experiment.

"Just look at a picture and look for red splotches," he said. "If there's a red splotch with a meter on the front of it, that's this power supply."

Tom never applied for a patent with the original de-

sign, but he managed to duplicate his original success in 1989 when he received a patent on a more modern, higher-efficiency design. One major improvement is that the old design had exposed parts while the new design "pots" its high voltage parts in a compound to prevent the current from arcing. This single innovation makes the power supply safer and more reliable than its predecessor.

"I always felt that I should have spent more time making (the first design) a higher quality thing if it was going to be used that much," Tom said. "I know that when I gave the design to Keebler he said 'How many do you think I'll sell?' And I said one hundred, and he's sold maybe one hundred a year ever since."

Over 1,000 of the "old" power supplies are in place at Fermilab, and at about \$800 each that amount was significant enough to warrant patenting the "new" power supply design this time before private industry began production of it. Keeping the cost of manufacturing the power supplies down was also a factor, Tom said.

"When you design something for high energy physics, there's a great pressure to make it as good as possible; everybody wants all sorts of bells and whistles," Tom said. "Very quickly, you
Continued on page 4.

Laser printer cartridges now recyclable

Business Services is pleased to announce that it has established a recycling contract for laser printer cartridges. At this time, the contract is only for EP (stock no. 1315-0350) and EP-S (stock no. 1315-0355) cartridges.

In order to efficiently gather used cartridges and prepare them for shipment, the Support Services Property Office located at Site 38 Warehouse II Annex has offered to be the central drop-off point.

The program requires that employees save their used cartridges in the original containers with packing materials. You may bring the cartridges to the Property Office at your convenience. Departments are also encouraged to establish

local drop-off points in their own respective areas. Once ten or more cartridges are accumulated, pick-up arrangements may be made through the Dispatch Office. Dispatching drivers for smaller quantities of cartridges would not be cost-effective.

After the required skidload of cartridges are accumulated at Warehouse II, the Shipping Department will arrange for their return to the vendor.

As with all recycling programs the monetary gain is insignificant, however the dividends to our environmental future are immeasurable. Please give this your cooperation and support.

Laser age hits Property Office

A familiar item throughout the Fermilab site has been the sequentially numbered metal tags attached to Capital Equipment Items. Soon to be seen on this type of equipment will be the new bar-coded metal tags.

Fermilab's new tags will combine the old world of visual numerical identification with the new age of laser scanning technology and, in the process, will offer both speed and accuracy in conducting the Capital Equipment Inventory.

The first metal bar-coded tag was assigned on June 6, 1991 using Tag No. 74250.

In the near future, the Property Office will field an inventory team to re-tag 24,380 items now in use throughout the Laboratory.

Look for updates on this subject and other notes of interest from your Property Office in future issues of *FermiNews*.

—Ray Solfisburg,
Property Office

Patent continued from page 3

get a device like this so expensive that nobody can afford it.”

To this effect, he resisted the urge to add any superfluous whistles and bells. In the final analysis, Tom said he needed to design something that could be sold cheaper commercially than someone could build it.



Thomas Droege

The most visible plateau on the horizon for inventors, in Tom's opinion, is the cooperation between the national laboratories and industry.—Brian Dick

Cla\$\$ified ad\$

Motorcycle, 1978 Suzuki 750 GS, includes fairing and trunk. Runs well. \$800. Call Joe, X4190 or (708) 896-5848.

1977 Chevy Malibu 2-dr coupe. Runs great, looks good, well-maintained. 107k miles, new brakes, new seat covers. Available after July 29. \$500. Call Katsu, X3822, X3225, or (708) 910-0178.

28' 1982 Carver Mariner Cabin Cruiser boat. Twin 220 HP Crusader 305 cu. in. V-8s. Nicely outfitted, slipped on IL River at Seneca. \$42,100. Wayne Krass, X8202, or (708) 892-2671.

Bikes, women's 3-spd, \$20, men's 10-spd, needs back rim, \$10. Call X3011 or (708) 557-2523.

18 hp Evinrude outboard w/ 6-gal. tank. Good con., \$550 obo. Call Greg X4596.

Exercise bike, Sears Ergometer. Like new, \$60. Call Joe X4190.

New Blaupunkt "Newport" AM/FM/cassette car stereo,

\$180; A.O. Smith 40-gal gas hot water heater, used 1 year, \$180; Murray 20" gasoline lawnmower, \$75; Jenkins upright piano, \$250; 8-gal. Console humidifier, \$25. Call Dan X4605, (815) 756-6558 or FNAL::Kaplan.

Complete color darkroom set, \$1200 obo. Like new. Sig Kougat aerobical remote control plane, \$175 obo. Beige tweed couch, good condition, \$100 obo. For more info, call Mark X4382 or (708) 898-6365.

"Columbia Twosome" bicycle built for two, \$100. **Women's 27-in. 10-spd bike** with generator and lights. Excellent con., \$60. **Men's 26-in. 10-spd bike**, \$30. **Parks water softener**, can be installed by a "do-it-yourselfer," \$100. Call Jeff Utterback X3880 or (708) 556-3721.

Offering riding privileges for two horses stabled on site in return for help with horse care. Call Roy Thatcher, X3144, (708) 665-8246

Tuition Reimbursement Program flourishes at Fermilab

Eager for an engineering degree? Considering computer classes? Are you burning to study business—but broke? Take heart. Full-time, regular Fermilab employees can attain their educational goals without sinking into life-long debt.

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.

The classes and degree programs employees may elect to take are varied and plentiful. "Usually, people go for something that will enhance the job they're in, or they're interested in gaining skills that would enable them to switch positions," says **Karin Etter** (LS/Trng/Bnfts/CPN), who helps counsel employees interested in educational growth. The possibilities for educational and career enhancement are almost unlimited, but Fermilab does ask that an employee's program of study be job-related or related to a position to which the employee could reasonably aspire.

The first step an employee considering future training should take is to find out which courses are available, and when and where classes can be taken. Supervisors and group leaders can make suggestions, and Karin is available in the

Benefits Office to help Lab employees sift through the plethora of area programs to find out which might be right for them. Karin maintains a stockpile of college catalogues and course schedules in the Benefits Office, WH15E. Karin, along with **Debbie Wyland** (LS/Trng/Bnfts/CPN), who will handle the administrative work of tuition reimbursement, are newly in charge of the program.

Each employee, after selecting a course of study, must complete an "Educational Support Request" form, which is available from Debbie. (A tax form is also required.) The employee's supervisor or group leader, and in some cases the Section/Division Head, must approve the request form. The employee then forwards the form to Debbie in Personnel Services, MS 113, for processing.

Once courses are completed, the employee must submit a grade report (grades must be passing) and receipts for tuition, fees and books. Cancelled checks are not acceptable.

For employees who cannot cover education costs "up front," the Tuition Reimbursement Program offers an advance option. "It's an unusual policy, but almost everyone applies for it,"



Karin Etter (l.) and Debbie Wyland

Karin says. "We're trying to make it as easy as possible for people who want to develop themselves." Full-time, regular employees who have completed their probationary period may take advantage of the advance option. Any payment made before grades are submitted is considered an advance, and if the course is not satisfactorily completed, the employee must repay the Lab.

Fermilab will reimburse employees for a maximum of ten credit hours each term. Coursework must be started and completed while an employee is in active employment status.

Karin and Debbie encourage employees to take advantage of the Tuition Reimbursement Program, which contributed \$375,000 for employees' educational growth in the last fiscal year. Karin notes that individual employees are not the only ones who benefit from additional education. "It provides the Lab with better trained, more skilled em-

ployees," she says. "It keeps people from getting stale, and in some areas it's essential. It's necessary for people to stay on the cutting edge of their field."

Nalrec sponsors Great America trip

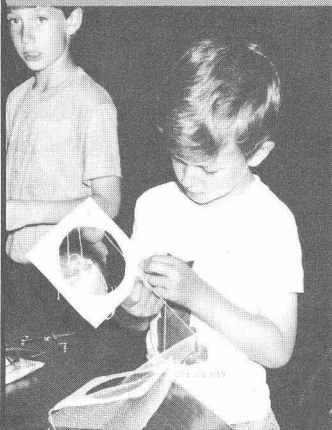
Nalrec is sponsoring a family fun day at Great America entertainment center in Gurnee. The \$20-per-person cost includes admission to the amusement park and an all-you-can-eat barbecue. Children three years old or younger can come along at no charge. The trip will take place Sunday, July 21 from 10 a.m. to 10 p.m. For more information, call Connie Kania, X3353, no later than July 12.

Join the giving team

A blood drive, sponsored by the Heartland Blood Center, will take place Wednesday, July 17 in the Wilson Hall 1 West conference room. No appointment is needed; just stop in any time between 9 a.m. and 2 p.m.

Solar science for kids

Thanks to Fermilab, 219 area children are sun savvy. The children participated in the Education Office's spring *Classes for Kids*, a program designed to give elementary school children an introduction to "hands-on" science. The theme of this year's program was solar energy.



This was the second year Fermilab offered the classes, which met on Saturday or Sunday afternoons in May. Last year's pilot program attracted twenty-one students. This year, the Education Office sent announcements to every elementary school in Kane and DuPage Counties. "We received 395 requests," said Kris Ciesemeir (LS/Education Ofc.) "We were only able to offer enough classes for 219."

Local science teachers, trained by the
Continued on page 7.

Liz Quigg creates high-tech kid stuff

Liz Quigg (CD/Programmer) has the world's most sophisticated computing equipment at her fingertips. Four different monitors, piles of programs, compact discs, videodiscs and the most powerful Macintosh on the market clutter her desk. Obviously, only a highly trained, well-educated adult could work with this technological labyrinth of hardware and software.

But when Liz works, she tries to think like a child.

Liz is currently creating interactive, multimedia learning stations for the new Science Education Center, scheduled for completion in January 1992. The Education Office plans to have four computer kiosks featuring four different multimedia programs, designed to teach young visitors about accelerators, scattering experiments and collisions, detectors and the structure of matter. Children will be able to learn about a myr-

riad of subtopics within these subjects simply by touching a computer screen.

"The programs are not linear," Liz said. "The person using them doesn't just sit back passively." She believes that interacting with computers should be "as intuitive as possible," and that panels offering dry instructions about what to do next are not the best approach when trying to interest children. "Touch is the most intuitive way to work with a computer," Liz says.

For these reasons, the prototype station—on accelerators—that she has already developed is 100% child-friendly. The opening screen displays a familiar, colorful aerial view of the Main Ring. Notable points on the Fermilab grounds—the Cockcroft-Walton electrostatic generator, the beamlines, the Tevatron and others—are marked with arrows and boxes on the Apple color monitor with a touch

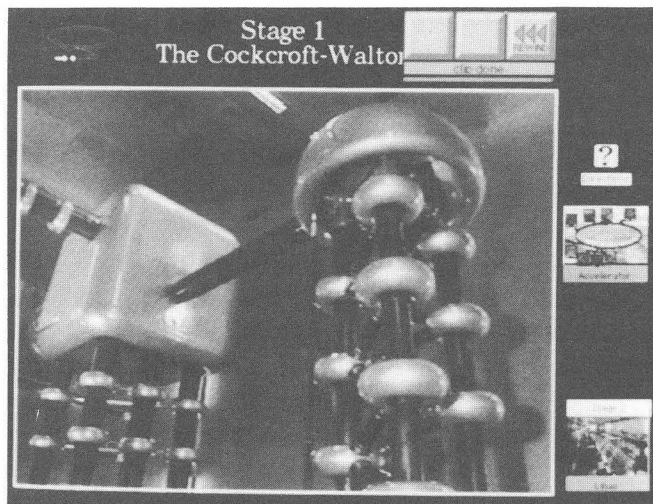
screen from Microtouch Systems. Want to know more about any subtopic? Just touch it, and you'll get both

Liz Quigg has the world's most sophisticated computing equipment at her fingertips. But when Liz works, she tries to think like a child.

a video and an audio lesson about whatever you selected.

The learning doesn't stop there. As Fermilab experts talk about the selected subtopic, or as graphic images combined with footage from the last two *Welcome to Fermilab* videos create simulations of collisions and other phenomena, a child might have questions. Using her well-developed skill of "child-think," Liz has anticipated what those questions might be and included additional boxes to be touched for more information. The object is to teach, not to puzzle or frustrate. "If something might arouse curiosity, you want to have a link," Liz says. "So, things keep branching off."

Building Liz's programs is much more complicated than using them. "The technology is changing so fast," Liz said. "You really have to learn to work with the hardware." Three computer
Continued on page 7.



Screen from a prototype introducing accelerators

monitors on her desk hide different video boards. For the "full-motion video" coupled with animation to look its best, Liz said, "I have to experiment with boards to see what works."

The computer screen is actually double-layered. The "video layer" comes from a videodisc (*Welcome to Fermilab*), which resembles a silvery record album. Such a disc can hold both moving and still pictures. The "graphic layer" is the result of Liz's expertise with SuperCard and Macromind Director, an animation program. Both programs allow Liz to access the full-motion video.

Sound effects and digitized voices are also included. "We want to engage as many of the senses as possible," Liz explained—the better to hold a child's attention.

Liz's interest in multimedia began while she was in graduate school. She majored in physics as an undergraduate, then worked as a programmer at Fermilab from 1974-1987. She then moved to California, and enrolled in Mills College's Interdisciplinary Computer Science graduate program. At Mills, she and other students created interactive video projects as their theses.

Liz is producing yet another interactive video project, also for middle-school children. Funded by the Illinois State Board of

Education through Friends of Fermilab, a group of science teachers is developing a curriculum about the Fermilab prairie. The curriculum will include

a videodisc and software about the plants and animals that inhabit the grassy fields surrounding the Lab. Liz has already developed "Bird Call Concentration." A grid appears on the computer screen, and the student touches a square on the grid as if turning over a card. Instead of seeing a card's face, however, the student hears a distinctive bird call. The student then tries to match the bird call with one from another square. When a match is made, the computer flashes the name and a color picture of the bird whose calls the student matched.

The calls, lifted from compact discs, are remarkably accurate. The Cornell University Library of Natural Sounds provided calls of the swamp sparrow, the brown-headed cowbird, the meadowlark and other feathered Fermilab friends.

Although Liz is the one often seen buried beneath computer equipment, she emphasizes that multimedia development does re-



Liz Quigg tries out her creation.

quire teamwork. **Fred Ullrich** (LS/Visual Media Services) and his staff contributed expertise in video production, and **Mitch Adamus** (AD/RF) and **Finley Markley** (TS/Engineering) helped inform Liz about "prairie culture." **Peter Kasper** (RD/Facilities Dept.) was the resident bird pundit. Liz also credits physicists—from the graduate student passing by her office to Director **John Peoples**—and colleagues who were willing to offer opinions on the screens. Teachers and staff from the Education Office, Liz claims, are invaluable.

Liz's interactive, multimedia programs are never really finished, never really perfected. "A project like this evolves," she said. As field-tripping children have passed through the Lab, they have offered suggestions and criticisms. Their input, Liz maintains, is most important. "You can sit at your desk and work on this for hours," she said, "but there's nothing better than kids' opinions."

Solar science continued

Hands-On Science Outreach's DuPage/Kane County Office, taught twenty sections of students. Four- and five-year-olds, in a program titled "Here Comes the Sun," learned about shadows, rainbows and sun safety. Kindergartners and first graders made their own sundials and sun print pictures in "Bubbles to Rainbows." In "Hot Stuff!," second and third graders constructed food dehydrators and solar water heaters. Fourth, fifth and sixth graders went "Out of This World" making an earth speedometer, a solar cooker, a water distiller and more.

The curriculum of *Classes for Kids* was developed by Hands-On Science Outreach and funded by a grant from the National Science Foundation. According to Kris, the program teachers added depth and detail to the prepared curriculum.

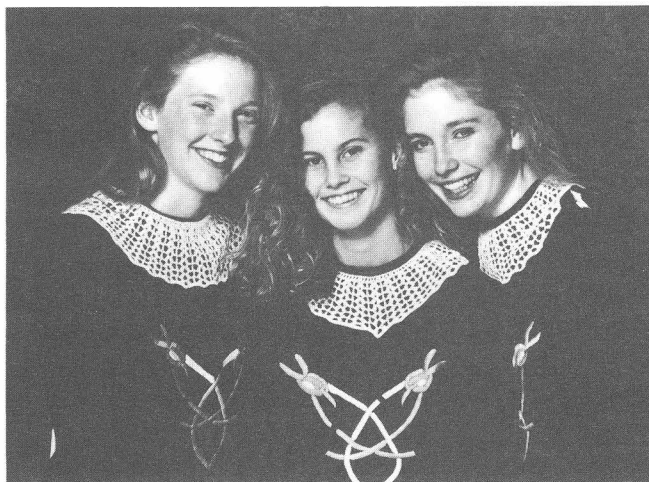
Currently, the Education Office is seeking ways to make *Classes for Kids* even better. "We've sent evaluation forms to all the students and their parents, and the teachers evaluate the program too," said Kris. "We're doing a thorough investigation to find out how to improve."

Fermilab features Ethnic Dance Showcase

Encounter a rare opportunity to sample cultures from around the world through one of the most beautiful and expressive of art forms—dance. Come to Ramsey Auditorium and see **Ensemble Espanol Spanish Dance Theatre, Trinity Irish Dance Company** and **Muntu Dance Theatre** unite in Fermilab's Ethnic Dance Showcase. The show will take place July 27 at 8 p.m.

Experience the drama and rhythms of Spain as Ensemble Espanol Spanish Dance Theatre takes the stage. The flash of flamenco dancing, as well as regional folklorica and Spanish classical ballet, will be featured, all in a blaze of castanets and exotic costumes. Ensemble Espanol Spanish Dance Theatre, in residence at Northeastern Illinois University, is renowned for its highly researched, authentic performances of the dances of Spain.

The Trinity Irish Dance Company has made quite an impact in the world of Irish dancing. This Chicago-based group captured the world title in Irish dancing in Galway, Ireland in 1987. Their regular St. Patrick's Day appearances on Johnny Carson's *Tonight Show* have brought them international attention, which is sure to continue with the group's recent motion picture debut in the Universal film *Backdraft*. Irish dancing, though hundreds of years



Trinity Irish Dance Company performs July 27

old, is relatively unfamiliar to most audiences. Trinity helps keep this ages-old Gaelic tradition alive, wearing authentic Irish costumes complete with ancient embroidered designs and hand-made lace.

Muntu Dance Theatre celebrates the human spirit through traditional and social African and African-American dance. Some of their pieces convey the simplicity and purpose of ritual dances just as they were performed centuries ago, while others incorporate more contemporary influences. Muntu performances blend the best in talent and theatrical flavor: professional dancers and musicians, authentic masks and instruments, and wondrous hand-made costumes. Muntu, from the Bantu dialect, means "the essence of humanity."

Admission to the Ethnic Dance Showcase is \$8. For further information or telephone reservations, call

840-ARTS weekdays between 9 a.m. and 4 p.m. At other times an answering machine will give you information and a means of placing ticket orders.

Correction

Steven Glenn Johnson, winner of a URA scholarship, is not the son of Glenn Johnson (AD/EE Support), as was reported in the June 21 *FermiNews*. Steven is the son of **Glenn Johnson** (AD/Controls Group).

July movie schedule

Explore Europe with two movies from across the Atlantic. Admission is \$2, and movies are shown in Ramsey Auditorium at 8 p.m.

The July schedule is as follows:

Friday, July 12: *Danton*. France, Poland, 1982.

Friday, July 26: *Bagdad Cafe*. Germany, 1988.

Housing deadline approaches

The deadline for receipt of requests for fall/spring on-site housing is July 12, 1991. Responses will be mailed out by August 10, 1991. The starting date for fall/spring occupancy is September 1, 1991. For further information, please contact the Housing Office at X3777, VAX mail FNAL::HOUSING or our facsimile #708 840-2823.

FermiNews is published by the Fermilab Publications Office, MS 107, P.O. Box 500, Batavia, IL 60510 708-840-3278

FNAL::TECHPUBS

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Circulation: S. Hanson

Photography: Visual Media Services

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

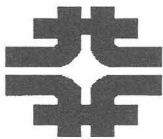
The deadline for the Friday, July 19 issue of *FermiNews* is Wednesday, July 10. Please send your article submissions or ideas to the Publications Office.

Beginning of Run Party 1991

*I Invite All
Employees, Users,
DOE and
Contractors to a
Lab-wide Party to
Celebrate the
Beginning of the
1991 Run.*

Joe Peoples

Location: Users Center Grove
Date: July 10, 1991
Time: 3:00 p.m. to 6:00 p.m.



There will be food, drink, and music.