

## Good-bye Rich—you will be missed

*Rich Orr is one of the Fermilab originals. I had first heard about him in the mid '60s from my colleagues who had known him as a graduate student at the University of Washington. Rich's reputation for charming the ladies had preceded him eastward and had reached the east coast, (where I was working) by the end of 1968!*

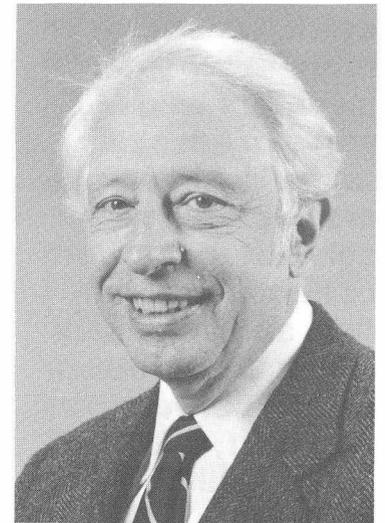
*When I came to Fermilab a few years later, I discovered that Rich had the ability to charm everyone, not merely the fairer sex. He was the person who was put in charge of those organizations with crumbling morale—and equally crumbling buildings!*

*Bob Wilson had immense faith in Rich and it was well placed. In his first few years, he was Head of Meson Department, Main Ring Manager, Deputy Head of Research Services, Head of Neutrino Department, Deputy Head of Research Division, Head of Business Services, "Ambassador to Washington," and the list goes on.*

*In every case, there was a difficult job to be done and Rich always managed to persuade the people who worked with him to do the job. Together they did it very well.*

*When Leon Lederman arrived at Fermilab to take over the reins from Bob Wilson, he immediately saw the need to get the lions, tigers and biting dogs in the Energy Doubler project to lie down peaceably—so it was not surprising that he turned to Rich Orr. Apparently this habit sticks with directors. When I became Director, there was a need for an Associate Director for Administration and I talked Rich into doing it. However, I suspect, this was a little bit like the fable of the fisherman's wife—you get three wishes!! Apparently mine was the fourth wish, and after too short a time in the job, Rich has retired.—John Peoples*

Associate Director for Administration Rich Orr officially retires from Fermilab on May 31 concluding a 21 year career at the Laboratory. During that time period, Rich has positively effected both the projects he headed and the people he led.



As associate director, Rich was responsible for all administrative functions at Fermilab, including Business and Laboratory Services and the Budget Office. He was also a member of the National Energy Strategy Advisory Committee, the Brookhaven National Laboratory Visiting Committee and the BNL Superconducting Synchrotron Light Source Review Committee. In addition, he was chairperson of the Fermilab Collider Project Management Group as well as the Laboratory Coordinating Group. Coupled with his busy Laboratory schedule, Rich also serves as a member of the Board of Directors of Sci-Tech, a museum located in Aurora and he teaches a course called *Concepts in Physics* at the School of the Art Institute of Chicago.

During the two-year period before assuming his present responsibilities, Rich was in charge of the Fermilab Magnet Test and Development Facility. He also managed the Fermilab effort in support of a 250 MeV medical proton synchrotron. From 1979 through 1986, he served as the Head of the Accelerator Division and Project Leader for the design, construction and initial operation of the 900 GeV superconducting proton synchrotron now known as the Tevatron. For this effort, Rich received from President Bush the 1989 National Medal of Technology. He shared this distinguished honor with Helen Edwards, Dick Lundy and Alvin Tollestrup.

From 1970 to 1979, in addition to working as a staff physicist, he held the titles of Assistant Director, Associate Head of the Research Division and Head of the Neutrino Laboratory.

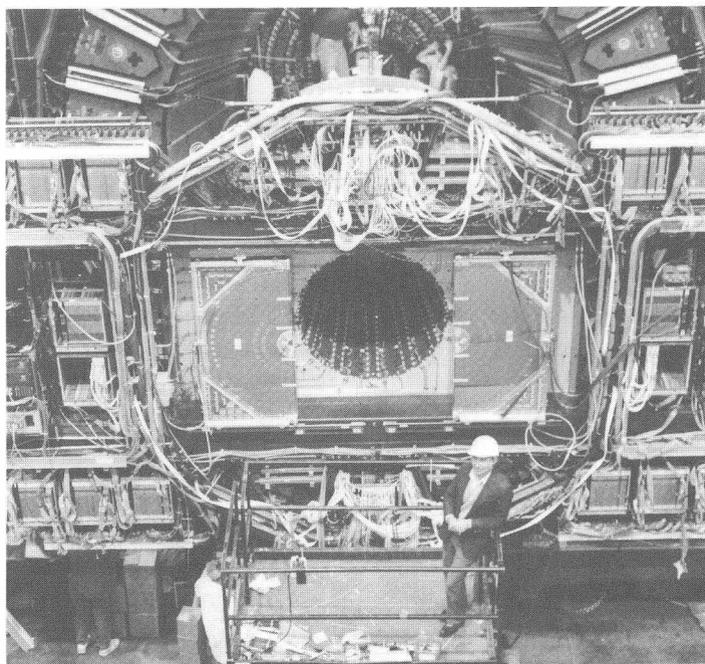
This is only a brief summary of Rich's very notable career at Fermilab. We wish him well.

### Inside...

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- **Wonders of Science spells magic for kids** 7

# Necessity: the mother of invention

Fermilab honored 13 employees at a dinner held April 18 to recognize patent recipients. The event, which brought together inventors whose areas of specialty range from computers to cryogenics, celebrated the work of Fermilab scientists and engineers who had patents issued between August 1, 1988 and July 31, 1990.



**Muzaffer Atac positioned in front of the CDF detector which contains his drift chamber design.**

On one level, the dinner re-galed the work and commitment of an entire community. On another more individual level, Thursday's gathering hailed the headiness and perseverance of the inventor.

Inventions are the lifeblood of Fermilab's research program and are the new ideas that put a competitive edge on a very sophisticated program of scientific research. Moreover, inventions are a vital step on a road that can lead to royalties and wider use of Fermilab technology.

While these inventors work in conjunction with others as a part of the ongoing team research at Fermilab, they also work alone within their solitary world of ideas. It is there that they struggle with the questions and problems that arise in the course of their day-to-day work: usually, how to conceptualize and build a device or instru-

ment to fix, alleviate or circumvent a given problem. And it is there that they find the answers to these problems and dilemmas.

Some of the solutions to these daily problems are highly localized and have applications only suited to work done at Fermilab. But some have the potential to be used outside the Laboratory in business or industry.

In the first of a three-part series, *FermiNews* profiles three Fermilab inventors whose work led to the issuance of patents.

Physicist **Muzaffer Atac** (RD/Col Det Dept), has been working on drift chambers since he joined Fermilab in 1968. Working on instrumentation, he has applied these drift chamber techniques to high energy physics experimental research. Drift chambers are used to

detect particle trajectories, and during normal usage their 10,000 wires can age by polymerization or corrosion.

During the avalanche process in the detection of particle tracks, electrons gravitate toward drift chamber wires and multiply in number. Dissociation products of gases used in drift chambers eat away at the wires, causing corrosion, or form "whiskers" on the wires in a process known as polymerization. The dissociation process can render a \$5 million drift chamber, like the one used in CDF, useless.

Knowing the effects of the polymerization process, Muzaffer set out to halt the aging process by formulating a new gas mixture. Along the way, he discovered that drift chamber wires also corrode. After years of experimentation, he hit on a mix-

ture that prevents both from occurring.

In August of 1989 he received a patent for his work with wire chambers. This was Muzaffer's second patent, and he currently has two patents pending.

"If (aging) happens, you have to replace the wires, and that's a very costly process," he said.

To counter the aging process in drift chambers, Muzaffer formulated two gas mixtures: One of argon ethane ethyl alcohol to prevent polymerization and another of argon ethane isopropyl alcohol to combat corrosion.

"I narrowed it down to this mix," Muzaffer said. "It was a lucky break."

The process, however, was not as simple as it sounds. Muzaffer spent years and developed about one dozen gas mixtures before settling on the right combination.

No one had found such a completely non-aging gas mixture until then.

The mixture might have an application apart from its use in drift chambers, namely cleaning metal surfaces to a high-degree, Muzaffer said. Proof of the mixture's effectiveness is that CDF's central tracking has been running since 1987 without any evidence of aging.

"My invention is not really a product to sell, but it does help high energy physicists **continued on page 3**

# Solving problems through innovation

prevent a costly replacement of drift chambers," Muzaffer said.

"I take pride in what I've done for the science," Muzaffer said.

What **Kelly Knickerbocker** (CD/DA Electronic) and **Alan Baumbaugh** (CD/DA Electronic) needed was big, fast storage.

High-rate data flowing from detector events to imaging systems has to be stored on 8 millimeter video helical scan tape for analysis, but the Exabyte tape can only be written to at a certain speed. The problem was that data flowed in 20 seconds of every 60 seconds, so they needed to buffer the data by taking enough information during the 20 seconds to keep the tape drives busy for one minute.

Images that are 1,000 pixels by 1,000 pixels take up one megabyte of storage. Even after being compacted by a

factor of 20, 50,000 bytes of storage are used per image.

"It's a lot of data, especially if you're recording a lot of images," Alan said. "We needed a large buffer memory, and we designed this FIFO."

FIFO stands for first in/first out buffer memory, and while the design is not revolutionary it is the way the electronic components are used that earned Alan and Kelly a patent in February of 1989.

Earlier memory buffering systems would have dissipated 2 kilowatts of power when in stand-by mode and 10 kilowatts under normal operating conditions.

"We decided that was unacceptable," Alan said. "If you have a crate of electronics that's dissipating 10 kilowatts, you have serious cooling problems."

Not being thermal engineers, Alan and Kelly looked



**Kelly Knickerbocker (l.) and Alan Baumbaugh (r.) display first in/first out buffer memory (FIFO), a technology for which they received a patent.**

for an alternate approach. They found it in low-power, low-speed dynamic memories and decreased their power dissipation by about two orders of magnitude. Rather than moving data around at high speeds, they moved the pointers at high speeds so only very small

parts of the circuit needed to be fast. What they ended up with was an inexpensive and reliable system.

"It was more of an interesting combination of ideas to get something done rather than using the latest technology," Kelly said. "It was a very clever way of doing something with low-cost components and a way of arranging those components to get the highest possible speed out of them."

While Alan and Kelly do not expect to see any revenue generated from their invention, they have had inquiries from other laboratories about the technology developed here at Fermilab. Possible uses for FIFO buffering systems include medical resonance imaging systems and telecommunications.

Could they repeat their earlier success? "It's always possible," Kelly said. — *Brian Dick*

## Quality corner

### QA committee initiates "star" search

Have you been involved in a program or project at the Lab which you think exemplifies quality? If you have, the Quality Assurance Committee (QAC) wants to hear from you!

The QAC is initiating a search for suggestions for a new poster program which will highlight Fermilab projects, programs and employees.

Two years ago, the QAC adopted a commercial poster program designed to increase awareness among employees regarding the importance of quality performance and management. In reviewing this program, the Committee suggested that an in-house program be initiated to replace the current commercial program.

"The members of the Committee think that Fermilab employees exemplify a qual-

ity workforce. They would like to replace the current posters with photos which spotlight Lab employees and the quality work they perform," said Mark Bodnarczuk, Manager of the Office of Quality Assurance and Value Engineering.

So—we want to hear from you! Send your suggestions about what would make a good poster depicting quality "Fermilab style" to Mark Bodnarczuk, MS 200,

BITNET Bodnarczuk @ FNAL.

Suggestions should include a proposal for both the photograph and the caption.

There is no limit to the number of suggestions an individual or group may submit. Suggestions will be reviewed by the Quality Assurance Committee for final selection. ■

## Benefit notes

### Alert—Parents of 1991 college graduates

College graduation is around the corner for some employees' children. If your children are enrolled in the Lab's medical and dental plans, their coverages terminate on graduation day, unless they are enrolled in graduate school and are under age 23. If your children do not have group medical and dental coverage elsewhere, they can elect to continue on the Lab's plans. Please call the Benefits office at x4362 or x4361 for the details and an election form. ■

## Mileage allowance

Effective May 1, 1991 the mileage allowance for business use of personal automobiles increased to twenty-five cents per mile. This per mile rate is paid instead of actual expenses (such as fuel, oil, etc.) and is for authorized travel on and off site. ■

## Congratulations

Sue & Michael Herren (RD/ Operations) on the birth of their first child, Shelby Michael. Shelby was born May 3, 1991 at 2:10 p.m. in Copley Hospital in Aurora. He weighed 7lbs. 6 ozs. and was 19" long. ■

# Johnny and Jane are home !

From halfway around the world they come. Soldiers in khaki, some in dress blues, and countless others in fatigues — an appropriate word that describes more than just the clothes they wear. After months in Saudi Arabia, fatigues aren't something to be put on in the morning — it's something these men and women fall asleep with every night. Being tired had become an ingrained fact of life for America's Persian Gulf veterans weary from a tour of duty that included a 42-day war with Iraq. Being heroes has not.

Already, some of the more than 500,000 Persian Gulf War veterans have arrived home and more are headed back to the United States. Large cities are the first stopping point for these war-weary veterans as throngs of people turn out to celebrate the return of native sons and daughters with ticker tape and parades. From there, the next stop for these men and women is home - usually small town America and its more personal celebrations in high school gymnasiums and during summertime backyard barbecues.



For most soldiers, the welcome back is just the icing on the cake. Making it home was cause enough for celebration.

Many Fermilab employees know someone, regardless of how distant the association, who served overseas in the war against Iraq. To bring readers up-to-date on friends, co-workers, and loved ones involved in the Persian Gulf war and last reported on in our March 15 issue, here's the latest *FermiNews* ...

**Myrtis Jenkins (DO/Safety):** Myrtis's son, 33-year-old Air Force Reserve Staff Sergeant Theodore C. Martin, spoke with his mother in early May to tell her that he would be coming home soon. The medical services supervisor and his unit packed up their hospital and shipped out of Saudi Arabia the first weekend in May. Although he can't wait to get home, Myrtis said Theodore will be stopping first in Spain or Germany before heading home for a belated birthday celebration.

**Harvey Falk, Jr. (BS/FM/T&M Constr):** 35-year-old Major Harvey Falk III, son

of Harvey Jr. and an Air Defense Officer stationed in Saudi Arabia before the fighting broke out, returned home on a 30-day leave around Easter but returned to Jetta almost two weeks ago. His assignment in the Coalition Coordination Communications and Integration Center was interesting and challenging, according to his father. Harvey III is now working with the Saudis to equip them with Patriot missiles as part of the Patriot procurement program and will probably remain in Jetta until his tour of duty ends in early 1992. Harvey III will be reunited in Jetta with his wife and family, currently living in New Jersey, sometime after school lets out this spring.

**John Venard (Directorate):** John met his son Mark, a 26-year-old First Lieutenant with the 2nd Marine Division, in Jacksonville, North Carolina in late April when his unit was shipped back to the States. Since then, Mark returned home for a brief leave and celebration with friends and family on May 3, but will remain on active duty for about another two and one-half years. Mark is considering a career in the military, his father says.

**Marilyn Smith (Directorate):** While Marilyn has not seen her brother, Army Staff Sergeant Steven Stroud, since he recently returned to his home base in Fort Benning, Georgia, she says they have been in touch and that Steven is well. He has **continued on page 5**

## Employees celebrate their return

taken some time off, Marilyn added, and is re-outfitting himself with new clothes after losing 25 pounds during the course of the Persian Gulf War.

**Eleanor Thomas-Grumbach** (LS/EEO): Eleanor's daughter Sheila, a nurse and a Captain in the Navy, returned home to Fort Sill, Oklahoma in March. Although Eleanor said she has only spoken with her daughter since her arrival, she said she plans to see Sheila some time in June for a possible get-together with her family.

**Kenneth Stanfield** (Directorate): Ken and wife Nelly (AD/Mech Support) met son Eric Stanfield (RD/DO Const) in Cleveland, near the home base of the unit he was assigned to, on Mothers' Day. Following a reception and decommissioning, it's back to the reserves for Eric, who served as a helicopter mechanic and crew chief in the 7th Corps of the 316th Medical Evacuation Unit. Ken says it was exciting to see Eric, and that his son's unit was surprised at how quickly the entire incident was resolved.

**Steve Chappa** (RD/EE Dept): Fermilab employee Steve was released from active duty as a Marine reserve corporal on April 31 and has just returned to work after a two-week vacation. Co-workers say they kept in touch with Steve while he was overseas via the letters he wrote and sent from his base camp. Fortunately, Steve said in his most

recent letter, things went so well during the war that he never got to see any action, although he wonders what it would have been like.

**Cyndee Chopp** (RD/EE Dept): Cyndee's cousin Charles Boyd, an Air Force Sergeant who served in the Gulf since August, is back home in Idaho again, she says. Although Cyndee has not spoken with Charles, her extensive family keeps her up-to-date on his activities and tells her that Charles is planning a visit to the New Lenox area sometime in the near future.

**Brian Ellison** (RD/Cryo Dept): Both of Brian's cousins, Charles, a Marine stationed in North Carolina, and Charlie, a member of the 82nd Airborne Division, are reported to be back in the states, Brian says. A party has been planned for sometime this summer at their grandparents' house.

**Marge Pitz** (LS/Employment): Marge's nephew, Dr. Kenneth Pitz of Manhattan Kansas, returned to his home Army base of Fort Riley sometime around April 14, Marge said. The Major was greeted with a family celebration and will probably head east in July for a visit.

**Annie Rogers** (RD/EE Dept) and **Glenda Boston** (BS/ES/Commun CTR): Annie's son and Glenda's brother, Marine Sergeant Levert Fowlers, served in the front line of the First Marine Division as an infantry gunner and returned home

in late April for a one-week visit. Levert was "just glad to be home," Glenda says, and is now back at his home base in South Carolina.

**J. Dwight Featherston** (RD/Exp Areas Sup): Terry, Dwight's son and a Captain in the Air Force, arrived home in Myrtle Beach, South Carolina March 21. Terry's tour of duty as an A-10 pilot sent him on more than 40 missions into the skies over Iraq and Kuwait, Dwight says. After all the excitement and exhilaration of combat, Terry spent some time on-leave from the service visiting family and touring New England with his wife.

**Carol** (BS/Accounting) and **Ronald Davis** (RD/Exp Areas Sup): Carol's brother Norman (brother-in-law to Ronald), returned to work with the Illinois State Police in April after being stationed in Riyadh, Saudi Arabia since January. Air Force reservist Norman was promoted to senior master sergeant and marched in the May 10 Operation Desert Storm parade in Chicago. He was happy to return home, Ronald says.

**Katie Falkner** (LS/Food Services): Son Terry, a United States Army private, left Saudi Arabia ten days after the war with Iraq ended. From there it was on to Germany, and in July Katie says her son will be shipped to Missouri. Terry has a 90-day leave planned and looks forward to visiting his family when he returns to Aurora.  
— *Brian Dick*

## Lab to hold summer tours

Fermilab continues its tradition of summer Sunday tours in 1991 with programs scheduled for June 9, July 14, August 11 and September 8. Reservations will be taken for up to 150 persons per outing and can be made by calling the Public Information Office at (708) 840-3351 between 8:30 a.m. and 5 p.m. weekdays. The tours are free and open to all ages.

Each two-hour summer Sunday tour will begin with an orientation to Fermilab on the atrium level of 16-story Wilson Hall at 2:00 p.m. Visitors will then have the opportunity to tour two incredibly massive and unique scientific instruments — the 4,500-ton CDF and 5,500-ton DØ detectors built expressly for analyzing near speed-of-light collisions between matter and anti-matter.

The colossal detectors, an integral part of 2 high energy physics experiments at Fermilab, are not normally accessible to Laboratory visitors, and physicists will be on hand for discussion and to answer questions. Some on-site driving is required to visit the detectors.

Fermilab regularly offers guided tours for groups of 10-40 people by appointment on weekdays. The Laboratory is also open seven days a week from 8:30 a.m. to 5:00 p.m. for self-guided tours. ■

## \$10,000 computer contest

The Johns Hopkins University is conducting a nationwide search for Computing Applications to Assist Persons with Disabilities which will run through February 1992. This Program is made possible by grants from the National Science Foundation and MCI Communications Corporation.

The National Search is a competition for ideas, systems, devices, and computer programs designed to help the more than 25 million Americans with disabilities. The competition is open to all residents of the United States. Amateurs, computer professionals and students are invited to compete for

hundreds of prizes and awards including a \$10,000 Grand Prize. Entries may address any physical, mental or learning disability and are due by August 23, 1991.

Regional events, competitions and exhibitions will be held across the country throughout 1991. Regional winners will compete for the grand prize at the national exhibit to be held at the Smithsonian Institution in Washington, D.C., February 1-2, 1992.

"Putting ingenuity and technology to work for people is our primary goal," says Paul Hazan, Project Director of the National Search.

"Through this Search computer professionals have a unique opportunity to apply their creativity and expertise to address urgent human needs and make a significant difference," he said. "Applications are only limited by the imagination of the designer."

To obtain a flier giving details of the competition and how you can participate, write to:

Computing to Assist Persons with Disabilities

Johns Hopkins National Search, P.O. Box 1200, Laurel, MD 20733. ■

## FORE!!!!

First Golf Outing of the Season



Fermilab's Golf Committee is pleased to announce that the first golf outing of this year will be at Randall Oaks, 37W361 Binnie Road, Dundee, IL. Tee off time starts at noon on Friday, June 14, 1991. The cost to play 18 holes is \$17 per person for green fees and \$20 per cart for two people. There will be contests for closest to the pin and longest putt on six holes. The cost to participate in the contests will be \$3.

Make your reservations early and register your foursome by calling Ed Crumpley, x4640 or Paula Cashin, x4361, by June 3, 1991. One-half day approved vacation time required to play. ■

## Monthly health and fitness tip

### Using the Heimlich Maneuver

The Heimlich maneuver is the best method for helping choking victims, according to the U.S. Surgeon General. Without aid, victims who had food stuck in their throats and are unable to breathe or speak will die in about four minutes.

Perform this simple maneuver if the victim cannot speak or breathe, begins to turn blue, signals he is choking by putting his hands to his neck or collapses.

If the victim is sitting or standing:

1. Stand behind the victim, wrap your arms around waist.
2. Place fist with thumb side against abdomen

slightly above navel and below rib cage.

3. Grasp fist with other hand and press into victim's abdomen with quick upward thrusts.

4. Repeat several times if necessary.

If the victim is lying face up:

1. Kneel astride victim's hips.

2. With one hand on top of the other, place heel of bottom hand on abdomen, above navel and below rib cage.

3. Press into abdomen with quick upward thrusts.

4. Repeat several times if necessary.

**CAUTION:** Don't practice the maneuver on someone who isn't choking. After a

rescue, the victim should see a doctor for possible injury.

Source: National Safety Council ■



*Fermilab's Science Bowl Team competed in the First Annual DOE/Intel Foundation National Science Bowl in Washington, D.C., from April 20-22. The competition was challenging, with the SSC Science Bowl team from Lubbock High School emerging as the victor. Coach Bill Conway departed Washington saying, "Just wait until next year!" Students (from l.) Joe Madrigrano, Julie Summers, Mark Hoffman, Dave Rickard and Elise Wolfram (not pictured).*

# Wonders of Science, 1991

For the seventh consecutive year, Friends of Fermilab sponsored the *Wonders of Science* show for 3rd to 6th grade students. The *Wonders of Science* is Fermilab's contribution to National Science and Technology Week celebration. The theme for this year's celebration was "Creating New Frontiers."

Over 1,300 people attended two shows on Saturday, April 27. All elementary schools from Kane and DuPage counties were asked to select two outstanding science students from grades three through six. The students were then invited to attend the Wonders of Science show where they enjoyed the intriguing performances of six outstanding area science teachers. Lee Marek of Naperville North High School, Bob Lewis of Downers Grove North High School, Mike Offutt of Barrington High School and Bill West of Naperville Central High School presented



***Students from DuPage and Kane counties discover the "wonders of science" as they assist Lee Marek with a chemistry experiment***

scientific principles intermingled with much fun, humor and excitement. The children played with balloons representing molecules in motion, cheered the firing of the air cannon and laughed as speakers were covered with silly string. Is this science?

Student was given activity kits so they could share some

of their newfound knowledge and enthusiasm with their fellow classmates. They also received a copy of *Wonder Science* magazine, compliments of the Pre-High School Department, Education Division of the American Chemical Society.

Ken Stanfield, Deputy Director of Fermilab, was the Master of Ceremonies for

both shows. Robin Dombeck, Outreach Coordinator of Fermilab's Education Office assisted in demonstrating the activity kits to the students. The program was coordinated by Laura Vazquez, science teacher, under the guidance of Kris Ciesemier, Program Leader of Fermilab's Education Office.

Thanks to the efforts of our presenters and our many Friends of Fermilab volunteers, the children left buzzing with excitement about science as it came alive for them in Ramsey Auditorium.

For the third consecutive year, funding for the Wonders of Science show was provided by the Furnas Foundation, Inc. —*Laura Vazquez, Kris Ciesemier, Stanka Jovanovic*

## Teacher honored for improving education

JoAnn Johnson, a physics teacher at Wheaton North High School, Wheaton, IL received the Association of Science and Technology Centers (ASTC) Honor Roll of Teachers award at ceremonies in Washington, D.C. and at Fermi National Accelerator Laboratory (Fermilab) during National Science and Technology Week, April 21-27, 1991.

This award recognizes teachers who have worked in cooperation with science centers to improve science education. JoAnn was se-

lected for her contributions to the DOE Honors, Educational Assistance Limited, and Topics in Modern Physics education programs at Fermilab, for piloting materials for Fermilab hands-on activities that travel to schools, and as a committee member for development of interactive teaching stations for the Science Education Center at Fermilab.

On Wednesday, April 24, 1991, JoAnn and other award recipients from science centers around the nation were the honored guests

at a variety of functions held in Washington, D.C. She and her husband, Fred, were feted at a breakfast on Capitol Hill sponsored by Senator Barbara Mikulski, Chair of the Senate Appropriations subcommittee which funds the National Science Foundation. The Franklin Institute Science Museum, the Maryland Science Center and the New York Hall of Science provided hands-on science exhibits to focus attention on partnerships for awardees and their elected members of Congress. —*Kris Ciesemier*



***JoAnn Johnson accepts ASTC Honor Roll of Teachers Award from Marge Bardeen, VP of Friends of Fermilab at the 1991 Wonders of Science program.***

## Cla\$\$ified ad\$

**Praktica 35mm Camera**, manual, includes: (1) .5-10m lens, (1) .33-10m lens, (1) wide angle to short telephoto lens, (1) doubler(X2) lens, and filters. \$250 or best offer. Call Jim at x4039 or 3141.

**Men's Free Spirit 10-speed bicycle, \$90. Men's Schwinn Continental 10-speed bicycle, \$90. Wood burning stove, \$80. 30 gallon hot water heater, \$85. Bench top table saw, \$100.** Call Jim at x2263 or 584-6698 after 5:00 pm.

**Imagewriter II printer** with Mac Plus cable, paper, less than 1 year old, in excellent condition. \$370. Call Alex at x4626 or 462-9132.

**Large handmade wood desk**, with two large drawers and chair. \$125. Call Ken at x2837 or 859-3188.

**New Blaupunkt "Newport" AM/FM/cass. car stereo, \$200; A.O. Smith 40-gal. gas hot water heater, used 1 yr., \$200; Murray 20 in. gasoline lawnmower, \$100; Jenkins upright piano, \$300; 8-gal. console humidifier, \$25.** Call Dan x4605 or 815-756-6558.

**'88 Ford Mustang LX**, pow. str., A/C, AM/FM stereo, 5-sp. new tires, new front brakes, orig. owner, ex. con., priced to sell. Call Tom at x2948 or 815-436-9607.

**Warrenville house for rent**, 2 bdrm., 1 bath, 2 car garage, fenced yrd. Stove, frig, washer/dryer included. Avail July 1. Call Mary 708-557-2728.

## Fermilab Arts Series presents

### Gordon Bok and Bob Zentz in concert

Saturday, June 15  
8:00 p.m.  
Ramsey Auditorium  
Ticket Information or  
Reservations: 840-ARTS

Two outstanding folk performers meet in an exceptional reunion to create an unforgettable evening of music. They draw the audience into a folk tradition rich in engaging melodies and memorable lyrics, accompanying themselves with a fascinating collection of instruments. Join Gordon Bok and Bob Zentz on Saturday, June 15 at 8:00 p.m. in Fermilab's Ramsey Auditorium for one of their rare concerts.

Gordon Bok, "the poet laureate of those who go down to the sea in ships," (TIME), has been singing and playing the guitar since he was a child. The sea flows through his veins. Bok learned many of his stories and songs from friends and co-workers in

### Nalrec news

Nalrec has been busy planning some great summer time activities, so mark your calendars and join in the fun.

Everything is ready for the Old Timer's Steak Fry to be held on May 31. We're planning a terrific evening which will include raffling off four White Sox tickets and four Cubs tickets; a great band called "Dealing"; delicious food and as always superb company.

Hey you baseball fans—another Fermi night at the ball

shipyards and on sailing vessels. He performs traditional sea songs of many countries, ballads of Maine and the Maritimes, contemporary songs, and guitar instrumentals of many kinds. Known for designing and constructing a vast collection of instruments, his concerts showcase his six and twelve-stringed guitars, "cellamba" (a bass viola da gamba with a cello body) and "Bok whistles." Bok has appeared in concert with the Paul Winter Consort and the Indianapolis Symphony Orchestra and has served as both artist-in-residence and faculty member of the College of the Atlantic.

Bob Zentz has it all: a bag of strikingly attractive songs, a pleasing voice which sounds almost conversational in its naturalness, and a mastery of a variety of stringed instruments. These include guitar, banjo, hammer dulcimer, autoharp, as well as the concertina. He astounds listeners by play-

park is in the works! We're going to try again to schedule an outing to see the Kane County Cougars. It should be a real "hit." It's a really nice ball park and there are no bad seats in the house.

Nalrec is also planning a river trip to be held June 22. It's an opportunity to take a ride down the beautiful, peaceful Fox River and enjoy good food and fellowship. Watch for the details.

—Charlotte Smith

ing as many as 15 different, sometimes exotic, instruments during a concert. Zentz's contagious love of folk music wins the hearts of audiences around the world. His music shop, Ramblin' Conrad's in Virginia, attracts folk musicians from across North America. Zentz captivates audiences with traditional music, such as sea chanteys, ballads and Celtic tunes, along with his own songs and those by contemporary songwriters who write "within the tradition."

Admission to the Bok/Zentz concert is \$10. For further information or telephone reservations, call 708-840-ARTS weekdays between 9:00 a.m. and 4:00 p.m. At other times an answering machine will give you information and a means of placing ticket orders.

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