FermiNews

November 1, 1991 Vol. 14, No.18 Fermi National Accelerator Laboratory

Accelerator and Research Division announce appointments

Challenging projects and research opportunities spur divisional changes

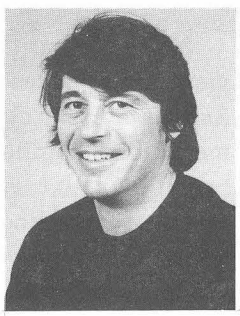
Recent organizational changes in the Research and Accelerator Divisions are giving technical people the opportunity of management service while at the same time providing opportunities for experienced managers to get back into the research field. This realignment of peoplepower is accomplishing two objectives vital to the continued growth of the research program at Fermilab. It is maintaining a fresh flow of talent into middle and top division and department slots, and it is providing dedicated research time to former division and department heads.

Some of those researchers assuming new managerial appointments view undertaking new responsibilities as one part of their service obligation to the Laboratory. All no doubt agree that moves in both directions keep the Fermilab physics program healthy by ensuring that a continuum of learning flows from basic research to administration and back again.

Regina Rameika named Research Division Deputy Head

G. Rameika

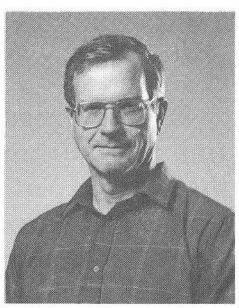
Regina Rameika was appointed Deputy Head of the Research Division. Gina replaces Hugh Montgomery. The Division, headed by **Peter Garbincius**, is currently focusing its attention on bringing the fixed target run to a smooth finish. "The current run has been very successful so far," said Peter. This is a very important issue to Gina from both a manager's and experimenter's viewpoint because she is assuming her new position with the Research Division while also serving as cospokesperson for experiment E800. At the end of the fixed target run, the Division will be preparing for the start of the collider run and working to ensure that research and support group staffing is properly allocated. Along with these duties, one priority for Gina in the upcoming months will be training and education in the areas of quality assurance and environment, health and safety. "The new culture has made us look very critically at what we do and how we do it," said Gina. "We see ES&H and QA as very compatible with the research that we do. It is my job to incorporate these standards in a productive way."



H. Montgomery

Hugh Montgomery, who Gina replaces, will co-lead a group with Mike Tuts of Columbia, working on the DØ upgrade. The upgrade, a program to improve detector performance as luminosity and bunch spacing in the Tevatron changes, will take place over the next several years. After review by the Physics Advisory Panel, the group began detailed design work with Hugh devoting time when he could find it. "I'd been working with the group for some time...after work and in my spare time," he said. As Deputy Head of the Research Division, Hugh's duties were primarily managerial. "It had less direct technical content," according to Hugh. The new position will afford him greater technical involvement and a return to physics.

AD reorganizes as physicists return to research



J. Marriner

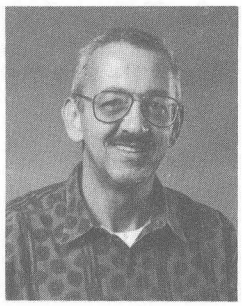
Also leaving administration to return to an active research role is **John Marriner.** Formerly head of the PBar Source, John will take a one-year leave from the Accelerator Division to devote his efforts full-time to the CDF experiment. Part of his CDF involvement will include writing software for muon chambers being added for the next collider run. John came to Fermilab in 1974 as a graduate student. His thesis neutrino experiment was conducted in the 15-foot bubble chamber. John later joined the Laboratory staff in the Physics Department and worked on a Proton Center hyperon experiment. After joining the Accelerator Division, John was in-

Appointments continued on page 2.

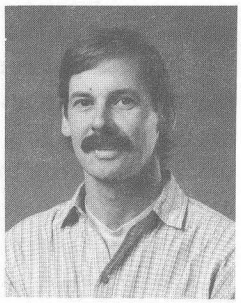
Appointments continued

volved in the TeV I project and commissioning of the Antiproton Source. "It is time for a change," said John. "I am looking forward to an opportunity to again devote my efforts to research."

The new head of the PBar Source is **Mike Gormley**. Deputy head is **Mike Church**. Mike Gormley came to Fermilab in 1977. He collaborated on experiments E87, E400 and E401 which were photoproduction experiments in Proton East. While serving as Head of Accelerator Controls, his group redesigned the control system at the same time the Tevatron was being built. Later, Gormley joined the Antiproton Source Department and worked on targeting for antiproton production and devices for collecting the antiprotons. Now under his new leadership, the PBar Source Department will continue working to improve antiproton production and collection. According to Mike Church, two significant improvements to the PBar Source will be made at the end of the fixed target run. These include the debuncher stochastic power upgrade and the stack tail kicker upgrade. "We hope these improvements help us to raise the luminosity for the collider run," said Mike Gormley. As Deputy Head of the Department, Mike Church will be planning PBar Source studies for the next collider run and will also be conducting accelerator studies during down time between the current fixed target run and the next collider run. Mike Church joined Fermilab in 1986 and is the physicist-in-charge of E760. He will continue his involvement with the experiment.

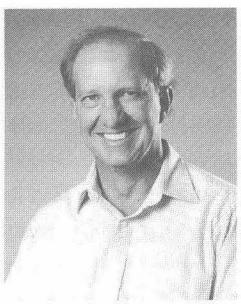


M. Gormley



M. Church

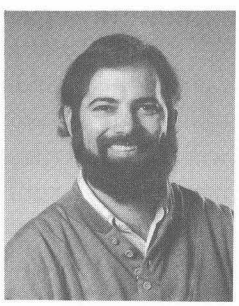
Mike May is the new head of the Mechanical Support Department. He replaces **Richard Andrews** who was recently appointed Associate Head for Support of the Accelerator Division. Mike, a mechanical engineer, has been with the Laboratory since 1969. He began his Lab career in the RF Group. This group installed the rf cavities for the Booster, the Main Ring and the Tevatron. Mike then joined the Conventional Devices Group. As Deputy Head of the group, he and Mike Harrison headed the installation of the Tevatron warm straight sections located at CØ, EØ and AØ. After joining the Mechanical Support Group, he worked on the Z/N project with Helen Edwards. On this project the joints between the Main Ring magnets were modified to improve impedance. Mike looks forwards to the new challenges facing the Mechanical Support Department which is responsible for maintaining the mechanical well being of the entire accelerator system. New projects on the horizon include the installation of the low-beta quadrupole magnets and the completion of the Linac Upgrade.



M. May

The new head of the Instrumentation Department is **Alan Hahn**. The Instrumentation Department develops and maintains the low-level portions of the Main Ring and Tevatron RF systems; conducts advanced accelerator physics experiments and develops systems that give the Accelerator Operations Group the ability to know what the beam is doing. "It is our job to take instrumentation from the prototype stage and make it operational," said Alan. One

Appointments continued on page 7.



A. Hahn

Benefits notes

Supplemental program available

Fermilab has again made arrangements with Corporate Benefit Systems, Inc., (CBS) to offer the Supplemental Universal Life Insurance program for you and your family. This program is voluntary and available to all active employees who have completed at least six months of service with the Laboratory. A letter and brochure describing the program will be mailed to the mail stations of employees hired between June 1, 1990 and May 15, 1991. All other employees hired before June 1, 1990 were given the opportunity to join the plan in prior years.

If you wish to meet with the CBS representatives to ask questions or join the program, they would be happy to do so. Please contact the Benefits Office at x3395, x4361 or 4362 to schedule an appointment for Wednesday, November 13, 1991, the date the representatives will be here.

If you are not going to be at the Lab on Wednesday, November 13, 1991 and wish to meet with the representatives, call the Benefits Office to make other arrangements.
— Paula Cashin

Macs amuck lessen logo look

The Fermilab logo has become a well-known symbol to many. Users, employees and visitors quickly recognize it. But with the advent of personal computers loaded with very user-friendly drawing programs, the logo is becoming less and less recognizable. Many employees are now drawing their own logos, which according to designer **Angela Gonzales** (Directorate), bear little resemblance to the original. "All logos are designed for the utmost aesthetic appearance and should be recognizable—not just vaguely recognizable," said Angela. "If anyone can redesign it, it is not a logo anymore."

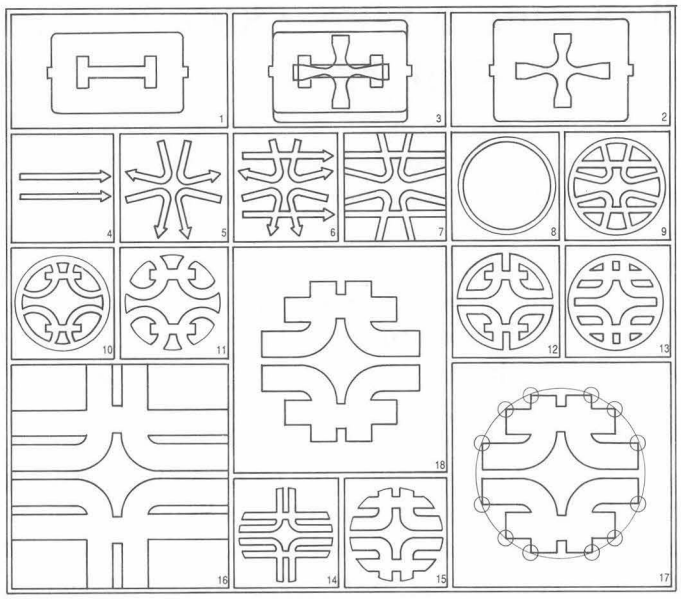
The Fermilab logo was adopted in 1967. Director Robert R. Wilson had the idea for the design and staff artist Angela Gonzales developed it. It evolved from Bob Wilson's desire to combine the lines of the bending-magnet lamination with the quadrupole-magnet lamination. The logo was officially used for the first time on the spine of the *Design Report* published in 1968.

"The proportions are very specific," said Angela. "The corners of all points form a circle." For those with a drawing program and a desire to recreate the logo, the aperture card drawing copy of the original blueprint can be obtained from Visual Media Services' Duplicating, located in the WH catacombs. The card will provide all measurements and proportions and is cataloged under LogoType, 0122.9 MC-1050. Proportions are applicable to both small and large applications.

Camera-ready copies of the logo in various sizes can be obtained from Angela, WH2SE, Visual Media Services and the Publications Office, WH6NW. "I am always happy to give anyone a logo who wants one," said Angela. Camera-ready logos can also be scanned for use with a personal computer. When scanning, however, Angela cautions that the corners often turn out very squared and not rounded. If you have a computer drawn logo and are not sure if it is correct, Angela would be happy to look at it or give you a copy from which to work.

Macintosh diskettes with the Fermilab logo will be available from Visual Media Services and the Publications Office beginning December 1, 1991.

The Fermilab logo is not the only one that Angela has designed during her career at Fermilab. She has designed logos for the Neutron Therapy Facility, FermiTec and Nalrec only to name a few. "I would be happy to design a logo for a new project or activity that needs an identifying symbol," said Angela.



The evolution of a logo: 1) Bending-magnet lamination. 2) Quadrupole-magnet lamination. 3) Both laminations combined. 4) Bending-magnet aperture configuration. 5) Quadrupole-magnet aperture configuration. 6-7) Lines combined, representing a chalk drawing by R.R. Wilson on his blackboard, summer 1967. 8) Decision to confine the design to a circle. 9-15) Rejected solutions. 16) Drawing to determine proportions of white to black areas: 1:3. 17) Drawings to confine the design in a circle; the small circles indicate points where design intersects circle. 18) Final version. — 1987 Annual Report

Author Guidelines available

The Publications Office has published a pamphlet titled *Author Guidelines*. The new *Guidelines* defines the three types of technical papers published by the Laboratory, outlines the steps for submitting and processing a report and explains copyright and contract acknowledgement obligations. The pamphlet also includes distribution information and policies on publications for experimenters.

Any employee, user or contract worker who plans to publish a paper through the Fermilab Publications Office or who plans to submit a paper to a journal or professional publication should reference a copy of this pamphlet. Clerks, secretaries and administrative assistants who assist with technical reports that are processed through the Publication Office or are submitted to a journal should also have a reference copy of the *Guidelines*.

A copy of *Author Guidelines* can be obtained from the Publications Office, WH6NW, x3278, x3887 or FNAL::TECHPUBS. The Publications Office will be happy to fill phone or mail requests.

Ring racers bike, skate, run for lunchtime glory

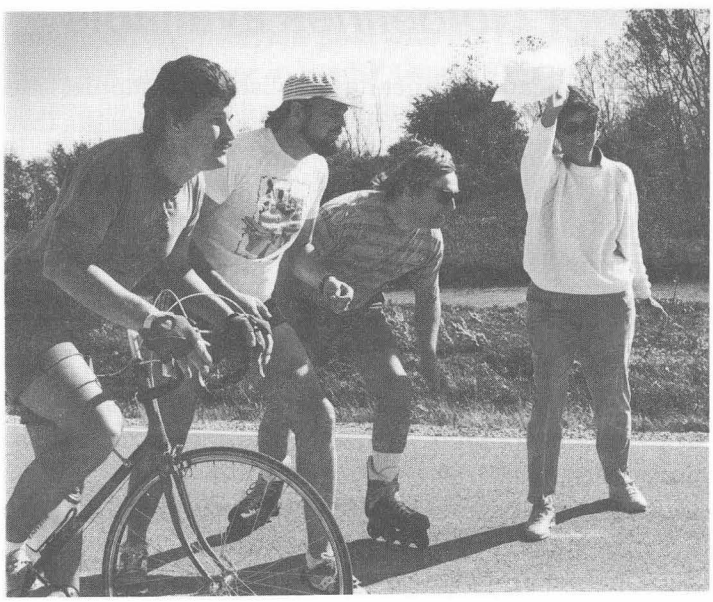
You've probably heard conversations like this one before. Three Lab employees are sitting at a lunch table talking...

"Yeah, I like to run the ring road at lunch time," says one. "Well, I used to run the ring road, but now I rollerblade around it," another says. "That's all interesting, but cycling is really the way to get around the ring," says the last.

Remarks like those were all it took recently to set a tri-sport challenge between Visual Media Services' **Al Johnson, Reidar Hahn** and **Jim Shultz**. The challenge was to run one lap, skate two laps or cycle three laps around the ring road. After a quick estimation of conditioning, time and distance, and some hard bargaining to set the game rules, the date was set and the race was on.

With Reidar on skates, Jim on foot and Al on a bike, the race began at noon on October 17 with pride the only stake.

The results: Jim came in first with a time of 32:01, Al came in second and Reidar third. "Let's do it again," they agreed. The unanimous reaction of the racers: "Maybe on a day when it's not so windy." —*Fred Ullrich*



Jan Olsen (LS/Vis. Media Services) waves the white kim-wipe signaling the start of the race. Competitors are: (l to r) Al Johnson, Reidar Hahn and Jim Shultz.

AVS to hold course

The American Vacuum Society (AVS) will offer a one-day course in the analysis and application of partial pressure analyzers in December of 1991 or January of 1992 at either Argonne, Fermilab or an off-site location. The course is intended for engineers and technicians who are or may be working with partial pressure analyzers (PPAs) residual gas analyzers (RGAs) and mass spectrometers in vacuum systems dealing with materials modification, material analysis, fusion and applied problem solving.

Course objectives will cover ion formation, mass separation and ion detection schemes; the interaction of PPA parameters with each other and with the vacuum system; the formation and interpretation of mass spectra; and actual applications of PPAs, RGAs and mass spectrometers.

The cost of the course is $225. Questions may be directed to Bob Ferry at Argonne 708-972-6914, Gerry Czop at Fermilab 708-840-3915 or Hans Luedi at Midwest Vacuum, Inc. 708-323-2142.

If you are interested in attending, specify preferred date and time on the application below and mail or fax the form to Midwest Vacuum, Inc. at 201 E. Ogden Ave., Suite 15-1, Hinsdale, IL 60521, 708-323-5399/ fax 323-2142.

Detach and send

Partial Pressure Analyzer Course application

(Send ASAP, December/January course only)

Last name _____

First name _____

Company _____

Address _____

Dept. _____

City _____

State _____ Zip _____

Phone _____ Fax _____

Date preferred:

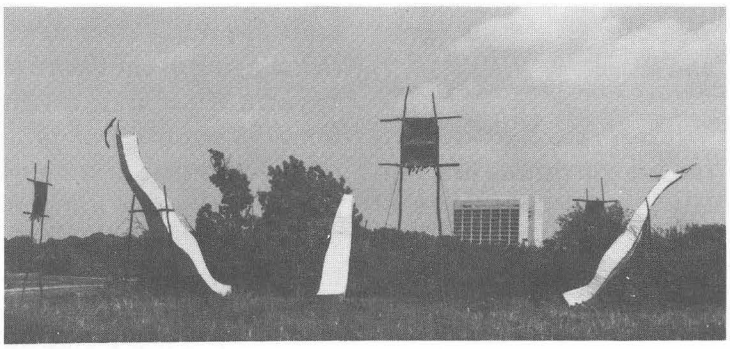
❑ Dec. 4 ❑ Dec. 11 ❑ Jan. 8 ❑ Jan. 15

Fall starts; art departs

It was almost as if the trees were trying to say something. When the sculptures that had dotted the Fermilab site all summer disappeared two weeks ago, their leaves began to fall.

The work of more than 100 artists from around the country wrapped up its five month showing at Fermilab officially on October 15, but like the leaves a few pieces lingered a little longer. At this writing, most have been collected, although a few quite possibly might remain, sort of like overlooked Easter eggs. After an entire season spent driving, walking and bicycling around them, the ubiquitous pieces of art almost seemed to become part of the permanent Fermilab outdoor art collection.

If the sculptures that toured here needed to be summed up in a phrase, *three-dimensional art* fits neatly and offers the most delimiting explanation for all of the pieces. Bronzes, kinetic steel, aluminum/neon and concrete works, to name but a few species, formed the body of work that greeted employees and visitors from their placement in May to their departure in October.



Utopia, near the Kirk Rd. entrance, was one of the titled pieces on display.

When guests and I traveled around site, many often made in-depth critical observations about the sculpture, based, obviously, on their vast knowledge of art history and interpretation. Not uncommon were introspective questions like: "What is that?" and "Can they show that in public?" The answers I always gave to those eloquently phrased questions were: 1)Art, and 2)I'm not sure, but I'll check into it.

The committee that put together the exhibition, the Central Time Zone Sculpture Organization, cites "a renewed appreciation of the unique contribution that public art can bring to society, and the resulting need for an exchange of information and ideas" as the impetus for its *Matter Over Mind Equals Sculpture 1991* grassroots exhibition. "The program is designed for all those who share this interest and enthusiasm," the group claimed.

Response from the Fermilab community seemed in sync with the aims of the event's organizers. "It was an interesting first outdoor show to have," Fermilab Art Gallery Director Saundra Poces said, noting that the exhibit probably drew interested aficionados to a place they would have otherwise overlooked. Internally, the sculptures united employees by giving them a common ground on which to stand and voice their opinions, she said.

"It caused some communication within the Lab," Saundra added, saying that "It brought a feeling of camaraderie among the employees and gave them something to talk about. Some were offended by certain pieces, but others liked them."

Now that most of the pieces are gone, perhaps it would be a good time to reflect briefly on this summer's "exchange of ideas." When exchanging ideas, however, always keep in mind that clarity and specificity go a long way toward achieving effective communication. Also keep in mind that this practice apparently is not one shared or acknowledged by abstract artists. With so many abstract exhibits spread over the grounds, it would be presumptuous of me to assume that anyone could remember the name of all the sculptures, but let me assure you that I do.

One sculpture that I recall vividly was in the Village near Sauk Circle. I believe it was called "UNTITLED." There was another in the vicinity called, I think it was "UNTITLED" as well, and then there was one directly in front of the high-rise that was also "UNTITLED." So there. I do remember the names. — *Brian Dick*

DOE-HQ telephone # change

The DOE Germantown campus commercial telephone number prefix will be changed from 353 to 903 effective November 9, 1991.The current FTS telephone number will stay the same, 233, until next year. DOE will publish the date and new FTS number prior to the change.Please call the Telecommunications Department, x3788, if you have any questions.

Harper's index

Estimated life expectancy of an automobile crash-test dummy, in crashes: 30

Fall prairie burning at Fermilab

If you have occasion this winter to look out over the reconstructed prairie within the Main Ring, you may be surprised to see a uniformly blackened surface instead of the usual mat of dead brown vegetation. Fermilab's Prairie Committee decided to burn the prairie in the Fall, rather than in the Spring. In addition to the prairie burn, which will include roughly three-quarters of the total area within the ring, we will be conducting forest burns on a moderately large scale for the first time.

Fire has played an integral role in the maintenance of the prairie ecosystem since the recession of the glaciers in this area more than 10,000 years ago. Our ancestors back to *Homo erectus* have been using fire for nearly 2 million years, and evidence of fire use by nomadic and agrarian cultures exists on every continent but Antarctica. In North America after the turn of the twentieth century, cultural changes resulted in the conversion of large expanses of prairie to exotic (European) grasses, which do not sustain fire as readily as the prairie species. The nomadic lifestyle of native Americans, which allowed extensive use of fire, was replaced by more sedentary habits, demanding control rather than propagation of fire. Overgrazing and constant haying decreased available fuel still further, and the once vast areas of native grasslands were fragmented by roads, farms and cities.

Fire in the North American prairie results in a rapidly growing, thick cover of grasses and prodigious amounts of seed for the next generation. At the same time, it cleanses the prairie of "weedy" species that degrade the plant community. Fire dramatically decreases the success of woody invaders because prairie plants grow about two-thirds of their biomass below ground in their root systems, where fire cannot destroy them. This contrasts with forest systems in which only 5 - 20% of the biomass is under the soil surface.

Although effects of fire on prairie plant communities are empirically observable, some results appear contradictory, and study of the mechanisms of fire-induced change is sparse. Fire interacts with soil, climate and the effects of animal communities in complex ways to develop and maintain prairies. It is known that fire affects different species in different ways; and there are hundreds of species of grasses and forbs to consider.

The reconstruction of hundreds of acres of prairie at Fermilab in just 15 years is a feat for which the responsible volunteers can be proud. Most of the Fall prairie burning will take place in the Main Ring where there are approximately 390 acres of prairie reconstruction ranging in age from 6 to 15 years. These areas are far from the condition of natural prairies that dominated the landscape two hundred years ago. Without periodic fires, they would almost certainly revert to scrubby fields dominated by exotic species.

The advantages of the use of fire in forest management are not as obvious or as universal as in prairies. Records of land surveys in northern Illinois from the 1820s show that the most widespread type of forest was savanna, dominated by white, black and bur oak. These savannas, or "barrens," were typically very open, with fewer than twenty mature trees per hectare, and with grasses as the understory. This type of community, like the prairie, was maintained by fire. For the same reason, other exotic species will move in and take over the community unless periodically controlled by fire, and the grass species cannot survive competition from other species if there is not ample sunlight.

Most of the forest remnants at Fermilab could not be converted to savanna, even with intense management efforts. Oaks have been replaced by maple and cottonwood, and exotic weeds and shrubs have begun to invade. What fire will accomplish in these areas is the regeneration of understory flowers, and a decrease in scrubby vegetation such as buckthorn and briar. For most of the forested areas at Fermilab, the use of fire is a means of "cleaning out" nuisance vegetation.

Up to now, prairie fires at Fermilab have been conducted in the Spring. If there is adequate dead vegetation for fuel and if the weather cooperates, Spring burning results in greatly improved production. Fall burning appears to be less effective at stimulating the flowering of native grasses, although more effective for legumes such as prairie clover. There is some evidence that Fall burns are more successful than Spring burns in excluding woody vegetation.

In the past, attempts to extend burns into the woods have been unsuccessful in the Spring, due to the wetness of vegetation on the forest floor, and the flush of green, wet vegetation. Burning in these areas is likely to be more successful in the Fall before leaves become matted and soaked with snow. In the Main Ring, the "window of opportunity" for burning is narrowed because of the increasing presence of ground-nesting birds such as Meadowlarks and Savannah Sparrows. Burns must precede the nesting cycles of the birds to avoid destroying nests. In 1991 a small colony of great blue herons, black-crowned night herons and common egrets took up residence in the center of the ring. These birds

Burn continued on pg. 7

Burn continued

are extremely shy, and in order to insure their success, it is necessary to minimize the disturbance in the vicinity of their colony during the nesting period, which begins in mid-February, and extends through July. Fall burning will avoid disrupting the birds and will take advantage of optimal fuel loads in the forests.

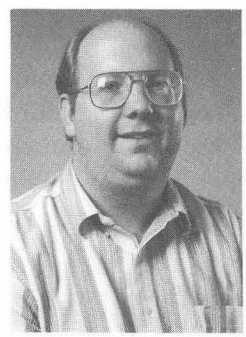
Fire seems intuitively to be a menacing, violent force. However, from an ecological point of view, ecosystems such as prairie and savanna depend on the violent action of fire for their very survival. An integrated management plan including prescribed burning is essential if we are to cultivate the diverse ecosystems at Fermilab that were present in pre-settlement times. *—Rod Walton, ParkNet Coordinator*

Congratulations to:

Sara and **Elvin Harms** (AD/Operations) on the birth of their first child, Samuel Robert Harms. Samuel was born August 23, 1991 at 2:03 p.m. at Delnor Hospital in St. Charles. He weighed seven pounds, five ounces and measured 18 inches long.

Appointments continued

such operational system is the Tevatron beam position monitor. Others still in the prototype or test stages are the Tevatron synchrotron light system and the Booster, Accumulator, Main Ring and Tevatron flying wire system. Involvement in instrumentation came out of Alan's research background. Prior to joining the Laboratory, Alan worked on neutrino oscillation experiments with reactors at Grenoble, France and Goesgen, Switzerland. As an Assistant Professor at the University of California at Irvine, Alan collaborated on the double beta decay experiment which recorded the longest measured halflife. Alan joined Fermilab in 1989 and has been part of the E760 experiment assisting with the design of the phototubes for the calorimeter and writing software for on-line calorimetry. Under Alan's leadership, the Instrumentation Department will face the challenges of new and continued projects which include bringing the Linac Upgrade project to a successful conclusion and supporting the existing accelerators.



G. Jackson

Alan replaces **Gerry Jackson**. Gerry will remain with the Department and focus his talents on accelerator physics research activities. He will concentrate his efforts on his Wilson Fellowship project, which is the design and installation of a bunched beam stochastic cooling system for the Tevatron collider. The new system is designed to increase the luminosity lifetime of the collider. Gerry will also conduct research to diagnose and cure beam instabilities in the Main Ring and Tevatron. "This has been a problem since 1975 and we will finally be able to address [it] in a systematic manner and find solutions," said Gerry. This is being done in preparation for the accelerator upgrades. Along with his research involvement, Gerry will also serve as Deputy Run Coordinator for the upcoming collider run, instrumentation liaison to the Main Injector project, a representative to the ad-hoc committee on improved radiation monitors and the Division coordinator of the Accelerator PhD. program. As coordinator of the PhD. program, Gerry will organize the "Sacherer" seminars for the graduate students. Gerry will also continue to serve on the Minority Summer Institute Science and Technology committee headed by **Finley Markley**. This committee recruits minority summer students and candidates for the Graduate Fellowship Program.

"The recent appointments were the result of department heads requesting an opportunity to devote their time to research and having that request granted," said **Steve Holmes**, Accelerator Division Head. Summing up an underlying attitude of those involved in the recent organizational changes, Research Division's Gina Rameika said, "I am ready to involve myself for a time in administrative duties. The opportunities at Fermilab have been good. I have been given dedicated research time as well as an opportunity to do service work for the Lab."

Nalrec news

There was a great time had at the October 26 Children's Halloween party in the Barn. Costumes and treats were super thanks to **Sherri Melby.** Mark your calendars and plan to attend the following Nalrec-sponsored activities.

- November Turkey Party - Friday, November 15 from 5:15 p.m. to 9:30 p.m.
- Children's Christmas Party - December 8, 1991.
- Christmas Dinner Dance - December 21, 1991 at the Fox Valley Country Club. Cost, $15 per person.
- Nalrec New Year's Eve Party - December 31, 1991 at the Fox Valley Country Club. Cost, $20 per person.

Famous fire dog and talking hydrant visit Lab

During National Fire Prevention Week children are often reminded about fire prevention and safety from their teachers and parents. But the children at the Fermilab Children's Center recently got the message from two bigger than life characters.

With help from the Batavia Fire Department and Fermilab Firefighter **Steve Lusted**, Sparky the Fire Dog and Pluggy the Hydrant visited the Center on Friday, October 18. They reminded the tykes not to play with matches or other combustible substances, how to stop-drop-and-roll, the importance of home fire safety and how to make a safety check of their home smoke alarms.

The children were mesmerized with the walking, talking, blinking hydrant and the famous dog often seen on televsion but never before in their classroom. The children of the Fermilab Play Group also visited with the duo at the Fire station during the week.

Fire fighter **Neil Dal Cerro** said that Sparky and Pluggy were well received by the children. The Fermilab Fire Department, headed by Fire Chief **Fred Cload**, plans to make this special visit an annual event.

Cla$$ified ad$

Vehicles

1979 **Jimmy**, Pwr. steer., brakes and drs. Call 708-377-3211.

Miscellaneous

Cherry buffet, stand. size, 4 drs. and 2 drwrs. Call 708-896-3211.

Brown braided rug,9 ft. x 13.5 ft., $150. **Mid-size dog hse.,** $30. **20 pt. Kenmore dehumidifier,** $65. **Genesis 4 water softener** by Plano Soft, $750. Call Dave at x4533 or 708-552-1320.

Biker II bicycle helmet. Used, in good cond., $25. Call Dallas at x3664 or 312-528-6951.

1956 ES-135 Gibson Arch top electric guitar, exc. orig. cond., $600. 1951 **Valco tube amp**. Great orig. sound, $125. **Shotgun,** 1961 Noble 410 automatic, $150. **Black powder revolver**, Colt Walker replica .44 cal., expertly finished, $200. Call 708-879-0435, evenings.

Real estate

For sale by owner, new cust. blt. home in great northwest Batavia location. Three bdrms., 2.5 baths, fam. rm. with fireplace, patio, lots of upgrades, $159,000. Call 708-377-4465.

Warrenville town house for rent, Thornwilde subdiv., five min. from Lab, 3 bdrms., big living/dining room, eat-in kitch., 1.5 baths, fireplace, AC, garage, all appliances, new carpet, new no-wax, newly painted, $850 per mo. Call x4597 or 708-983-0279.

Low impact aerobics

Join the Fermilab aerobics classes and work out for cardiovascular benefit, muscle toning and flexibility. There will be low-impact routines, arm/waist exercises, floor work and stretching.

The classes will be held on Tuesday, Wednesday and Thursday from 5:30 to 6:30 p.m. Our 12-week session will run from Tuesday, October 29 thru Thursday, January 30. The classes will be held in the exercise room at the Recreation Facility.

There is a $1 fee per class and a current gym membership is required. To register, call Jean at x3126 or Sherri at x4544. Call and register TODAY!

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The deadline for the Friday, November 15 issue of *FermiNews* is Wednesday, November 6. Please send your article submissions or ideas to the Publications Office.

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