FermiNews

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Education a Priority in Summer at Fermilab

While the ties that bind basic research and education are strong at Fermilab year-round (as witness the success of the various Friends of Fermilab programs and the Saturday Morning Physics classes), summer brings an influx of students and teachers to the Lab, where they avail themselves of the educational opportunities afforded by Fermilab's research activities. In this issue, and the next, of FermiNews, *we present a look at some of these programs.* *See also page 4.*

Target: Science and Engineering

Students today are faced with complicated career choices and seldom have the opportunity to weigh those choices in any detail. Fermilab, however, has been helping area high school students explore careers in science and technology for almost 10 years, through a summer program called Target: Science and Engineering. The Target Program, administered through the Fermilab Equal Opportunity Office (EOO), provides minority high school students with a chance to discover what it's like to work in a scientific environment.

The program began in 1980, when the Department of Energy (DOE) allocated internship funds which enabled minority high school students to spend their summers working in DOE-supported research laboratories. The goal of the program was to provide students with both academic enrichment and practical employment experience. Because minority students are traditionally under-represented in science-related fields, it was hoped that the program would encourage minority students to pursue an education in science or engineering.

Today's program is still dedicated to those original goals. The six-week program allows students to earn a stipend while supplementing their high school math and science courses with hands-on projects. Lectures and tours expose students to areas of science and industry they may not have known existed. In a computer lab, students brush up on computer skills before attending college, and in counseling sessions, students learn strategies for apply-

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Teachers Learn in Summer Research Program

Participants in Fermilab's Summer Research Program for Teachers. Top row, l. to r.: Dane Camp, Ray Dagenais, Paul Madsen, Richard Kick, Robert Pacyga, Joel Klammer, and Michael Hand. Second row, l. to r.: Willam Burt, Nathan Unterman, Michael Salisbury, Neil Michels, Roger Demos, and James Mashek. Third row, l. to r.: Frank Burzynski, George Eblin, Donald Whelpley, Yvonne Richter, and Anthony Marturano. Bottom row, l. to r.: Charles Osborne, Randall Zamin, Harold Mulderink, and Kenneth Leszczynski.

Fermilab's Summer Research Program for Teachers began in 1983 with seven teachers from local schools. This summer, the program has grown to include 19 teachers from area schools, as well as one teacher each from Pennsylvania, Minnesota, and Nebraska. Travel and housing funds for out-of-state teachers were provided by the Department of Energy's (DOE) Office of Energy Research in order to make the opportunities at Fermilab available to a larger set of teachers.

The 22 teachers got hands-on experience with a wide array of Fermilab endeavors in a broad spectrum of the Lab's elements, from safety and computing to theory and accelerator operations. Each teacher was assigned a Fermilab staff member as a supervisor.

Each of the teachers received a Certificate of Recognition and a congratulatory letter from DOE Secretary James D. Watkins. - *Arlene Lennox*

The Bard Reduced in Next Arts Series Entry

If the mention of Shakespeare sends tremors up and down your spine, consider the study of the Great Bard through the eyes of the Marx Brothers, Monty Python, Benny Hill, and the Three Stooges! What you'll get is an evening fast moving and fun, full of madness and merriment, hilariously witty and original. **The Reduced Shakespeare Company** flips, cartwheels, and quips its way through the tragedies, comedies, and histories of England's most famous bard in their presentation of "The Complete Works of William Shakespeare (Abridged)" at Fermilab's Ramsey Auditorium at 8:00 p.m. on Saturday, September 23, 1989.

This witty send-up of Shakespeare has an international reputation not only for reducing Shakespeare's 37 plays, but also entire audiences to a "quivery mass of helpless hysteria." Jess Borgeson, Adam Long, and Daniel Singer, who make up The Reduced Shakespeare Company, send this warning out to their audiences:

The Reduced Shakespeare Company

"This show is a high-speed, roller-coaster-type condensation of all of Shakespeare's plays, and is not recommended for people with heart ailments, back problems, English degrees, inner-ear disorders, and/or people inclined to motion sickness. The Reduced Shakespeare Company cannot be held responsible for expectant mothers!"

From the Fringe Festivals in Edinburgh and Los Angeles, to Australia, to the breadth of the United States, The Reduced Shakespeare Company has amassed a large and enthusiastic following. Students of Shakespeare will find The Complete Works "a triumphant battle against the boredom of the classics;" scholars and lovers of Shakespeare will find that these three "Bardian Stooges" really know the poet they're sending up; and actors such as Shelley Duvall and John Voight say, "These guys are great!! I wish that someday I could work with the Reduced Shakespeare Company!"

See "The Complete Works of William Shakespeare (Abridged)," a mixture of drama, comedy, acrobatics, and some of the fastest costume changes you are ever likely to witness, for a $9 admission. Information and ticket reservations for the program can be obtained by calling ext. ARTS weekdays, between 10:00 a.m. and 12:00 noon, or 1:00 p.m. and 4:00 p.m.

- Tammey Kikta

PC Hard-Disk Backup Saves Data and Time

Frequently (especially of late) the personal computer (PC) carry-in repair facility at the Feynman Computing Center will receive a PC with a hard-disk-drive problem. The problem may be the interface or the hard drive itself. The first question the technician asks is always whether or not the hard-drive data is backed up. In a good number of instances, the answer is no or not recently. The customer then pleads with our technician to retrieve his/her data. The answer is, sometimes. We can do a few things to save the data on a bad drive, if we can access the drive at all using diagnostics to get in through the back door.

If you use and depend on your hard drive, back up your files regularly. If your data is critical, back up once a week or more.

There is never a good time for a hard drive to go out. Save yourself from that empty feeling that comes with losing many hours of work, not to mention the time required to regenerate your files on a new hard-disk drive. Much less time is needed to restore files from a floppy disk than to completely rebuild files.

The hard-disk backup utility is usually found with the installation and utility floppies that arrive with your PC. *- Dick Adamo*

Correction

A vicious attack by VDT gremlins resulted in the following errors on page 3 of the July 28, 1989, *FermiNews* in the story on the "Fireside Chat":

During June accelerator studies, magnets were ramped to 1021 GeV excitation level in F-Sector, and peak horizontal dispersion was lowered by 20% in the Main Ring. The Accelerator Division hopes to deliver 20 inverse picobarns during the next Collider run.

FermiNews regrets the errors.

In Memoriam

Miguel Awschalom
1927-1989

Miguel Awschalom, one of the founders of Fermilab, died at his home in Batavia, Illinois, on August 11,1989.

Awschalom was born in Buenos Aires, Argentina, on December 20, 1927. He was raised and did his elementary and secondary education there. He came to the United States to attend Rutgers University and received his bachelor's degree there in 1950. He went to graduate school at the University of Rochester and received his Ph.D. in 1955. After two years as a research associate in nuclear physics at Louisiana State University, he joined the Princeton-Pennsylvania Accelerator and began work in radiation physics and health physics. He was active in the design and construction of that accelerator.

Early in 1968, Awschalom came to the National Accelerator Laboratory (now Fermilab). He headed the radiation physics section and was responsible for the successful design of the accelerator shielding. He made a major contribution in the development and analysis of the curved accesses used for neutron attenuation. He also made significant contributions to more general studies of shielding and to radiation physics.

After the construction of the original Fermilab, he, Robert Wilson, and Donald Young spearheaded the concept of the Fermilab Neutron Therapy Facility (NTF). Awschalom headed the construction of the facility and was the chief physicist from 1975 to 1985. This facility has treated approximately 2000 cancer patients. The Fermilab facility has provided the standard by which all subsequent neutron-therapy beams have been designed. Awschalom played the leading role in this development, as well as an important role in the development of the first protocol for neutron dosimetry.

In the minds of Awschalom, Wilson, and Young, the NTF had started out to be a proton therapy facility. Awschalom did not lose interest in protons. He stimulated a national workshop at Fermilab of people interested in proton therapy. Out of that workshop grew the Loma Linda Proton Therapy Facility project. Awschalom had much more knowledge and experience in medical physics than the other Fermilab participants and he helped to guide the design, inventing and developing a number of devices that are part of the final facility. He worked with great intensity on the Loma Linda Project until his long-standing illness overwhelmed him in 1988.

He was a forthright person who argued and worked intensely toward his goals. His dedication to therapy and to good physics was evident in all his accomplishments. At the same time, he was a devoted husband and father, very proud of his sons' endeavors in medicine and physics. He has left his mark with them, with the successful Neutron Therapy Facility, and with his important contributions to the Loma Linda project.

In Memoriam

Anthony M. Frelo
1938-1989

Anthony M. Frelo, Supervisor of the Fermilab Photography Unit, passed away on August 14, 1989, after a protracted illness. He is inextricably entwined in the history and spirit of Fermilab.

Anthony Frelo, who was born and raised in the Taylor Street section of Chicago, found an interest in photography at an early age, and continued his involvement on a professional level in the army and, later, at a studio in Chicago.

His first assignment with the then National Accelerator Laboratory (NAL) in 1967 (his Fermilab I.D. number was 009) was to pick up Robert R. Wilson, then NAL's director, at Wilson's Hyde Park home and transport him by car to the NAL offices at Oak Brook. Tony soon became the official (and at the time, only) NAL photographer. He compiled a visual history of every aspect of the progress of NAL, from the excitement and camaraderie of the Oak Brook days, through the intense hands-on development of a new accelerator when NAL shifted its operations to the Village, the monumental physical feats of building the Main Ring under the Illinois prairie, and the elation when NAL's machine attained its design goals ahead of schedule and under budget. Tony's photographs were always more than mere records; they are informed with his feeling for the human aspect of the events he saw through the camera's eye.

As Fermilab moved into the era of the Energy Doubler and the TEVATRON, Tony supervised the work of a succession of photographers, always demanding from them the highest of standards, always wrapping his technical expertise in his affinity for people.

The thousands of photographs Tony Frelo created of and for Fermilab are a vibrant legacy.

He is survived by his son, Anthony, Jr.

Memorial donations may be made to the American Cancer Society.

Undergraduate Honors Summer Program

Every summer at Fermilab 20 to 25 college students from the United States and around the world are introduced to the field of particle physics through the Undergraduate Honors Summer Program. The program is funded by the Fermilab Physics Department and coordinated by Drasko Jovanovic *(CDF)*.

"The purpose of the program," said Jovanovic, "is to inform and perhaps induce students to take particle physics as a subject in graduate school. The program gives students an introduction to a whole field that they wouldn't otherwise be exposed to." While most students involved in the program are physics majors, a smaller number of computer-science and engineering majors also participate.

Out of 200-300 applications every year, Jovanovic selects the 100 best-qualified students. "And then it becomes very hard, because about 100 of them are really good," he said. A maximun of two students from the same university may attend the program, and this demographic screening, along with students' experience, abilities, and interests, goes into determining the 25 finalists. Jovanovic then matches each of the 25 students with a participating Fermilab research associate. "The number 25 is not arbitrary," said Jovanovic. "That is the number of research associates at the Lab. We like to keep one student, two at the most, per associate. It would be nice if we could take more students, but we can't."

Writing computer programs and building or running tests on lab equipment are some of the activities students may perform. Chris Lobello, from Illinois Benedictine College, is working with E-771, building a test station for CAMAC. After performing an internship at Fermilab in the spring, his supervisor asked him to apply for the summer program.

"One very good aspect of the program is the laboratory experience and the exposure it gives you to experimental physics," said Lobello. "The Fermilab people do a good job of making sure students gain a basic understanding of physics. You pick up a lot of knowledge in some very specialized areas. It's hard to go back and sit in a classroom."

In addition to their work, students are encouraged to attend the weekly undergraduate lectures coordinated through the Summer Internships in Science and Technology Program, sponsored by the Fermilab Equal Opportunity Office. "It's a good introduction to the field to also go to all the other lectures, even if you may not understand everything," said Jovanovic. Students also meet with Jovanovic each week for short informal lectures and advising.

Jovanovic feels that the presence of summer students at Fermilab creates a university-like environment. "There is a certain amount of youthful enthusiasm that students communicate to the Lab," he said. The summer students also give Fermilab staff a chance to exercise their teaching skills. Jovanovic explained, "Since most of our staff here does not teach, the program may partially fulfill that function. In any process of education you also hone your understanding of an issue as you explain it to someone else."

Jovanovic advises students to develop a familiarity with other domains of physics as well. Though a supervisor may re-hire a student for the following summer, students may only participate specifically in the Undergraduate Honors Program once. If they wish to do more physics work, Jovanovic suggests they explore other areas of physics. "I strongly encourage them to apply to other labs, such as Bell Labs," said Jovanovic. "They should not necessarily see particle physics as the only field open to them."

However, some students from the program have remained in particle physics and have even returned to Fermilab to do graduate work. Richard Benson, a graduate student at the University of Minnesota, is doing his doctoral work at the Lab. He is enthusiastic about his work on E-706 (direct photon production), and his experience with the Undergraduate Honors Program.

"The program gave me an opportunity to meet other people doing phyics," said Benson. "I've worked at the Oak Ridge and Brookhaven labs, but, to me, the most interesting work is being done at accelerators." As a summer student at Fermilab in 1983, Benson had just graduated from Reid College in Oregon. He worked on a neutrino experiment under Karol Lang, who is now at Stanford.

Jovanovic feels that the program creates a sense of good-will toward Fermilab. Benson echoes this sentiment, saying, "The program left me with a very positive feeling about Fermilab and the research being done here."

- Christine Grusak

"Target" cont'd from page 1

ing to colleges and choosing a career.

During the program, students may work in an office or technical area with Fermilab scientific personnel. While not engaged in actual research, the students do experience what it is like to work in a technical field. For many, this is their first job of any kind. "If your first experience with working is the positive experience we hope to provide, it can be very motivating," said Dianne Engram of EOO. "With good science or math back-

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Stress Management Begins with You

How often have you heard or said: ''It's the boss' fault'' or ''It's the project or the job'' when it comes to looking for a source of stress? We tend to blame our level of stress on the world around us, when the truth of the matter is, it's really the way that we perceive these environmental stimuli. Stress is a constant in our lives, and each of us must learn beneficial methods of coping with these stressors so that they do not become *dis*-stressors. In short, we can learn to handle sources of stress instead of allowing them to dictate our behavior and level of comfort.

Learning to cope with stress essentially means examining how we relate to others. How are our relationships with those in our lives, our family, friends, and, yes, our co-workers? Are these relationships strong, warm, and supportive? If not, we need to ask ourselves what we can do to improve the relationship. Look closely at your troubles, dissect and analyze them. Usually, careful examination will reveal the true causes of your troubles.

While stress has its negative form, causing frequent anxiety, irritability, elevated blood pressure, and even depression, all stress isn't necessarily bad. Stress can work for you in a positive form by stimulating you to perform at your peak. Learn to recognize the difference.

Often, we are the biggest cause of our own stresses. The way we handle change and the demands of everyday life determines our stress level.

People can be taught to change their perceptions and to view things differently and in a more positive manner. You may not be able to change your boss, the job, or the project, but you can change the way you perceive the situation. This alone reduces stress and enhances performance. Learn to take control of your own problems, and recognize the changes you can make within yourself. You may find that the boss isn't so bad after all, and that the project has become a stimulating challenge.

If stress is creating problems for you, feel free to contact Fermilab's Employee Assistance Program at ext. 3591 for assistance in stress management.

- Eleanor Thomas-Grumbach

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grounds, the students learn about some of the jobs to which they can aspire."

Afternoon sessions are devoted to one-on-one work with the students. In addition to the computer lab and counseling sessions, students work on special science projects chosen from a list of abstracts sent with their letters of acceptance. At the end of six weeks they present their projects in a paper and a formal presentation.

''The premise of the program is that these are talented minority students,'' said Engram, ''but because of constraints on funds for public education, they may not have had the opportunity, time, or resources to develop something that their imagination and their talents would enable them to develop.''

Finley Markley (TS/Engineering), who works with several Target students each summer, agrees. ''We get some very smart kids in that program.'' Though they may not be able to contribute directly to the research at Fermilab, he stressed that the students "can and do make a positive contribution through their employment." He notes that the students learn a great deal about critical thinking during their six-week internship. Accustomed to math and science problems where the object is to arrive at a known answer, students must learn to discover the answers on their own. Said Markley, ''You give them a problem, and they suspect that you know what the answer is, and that they'll be required to find it. Of course, that's not the case. To actually find something out is a whole new experience for them, and I think it really opens up their eyes.''

Students also learn about the reality of scientific research, something few high school science labs can offer. ''They learn just exactly how much work it is. They can compare the time you spend cutting insulation, soldering wires, and doing all sorts of dirty work to assemble experiments, to the time you spend taking data, and the time you spend trying to understand what you got,'' said Markley.

Far from discouraging the students, however, this look at reality seems to motivate and interest them. "The main thing that I hope we accomplish, and I think we do accomplish,'' said Markley, ''is to give them a much better idea of how science is done in a practical way.'' *- Christine Grusak*

The Film Society

The film *Immoral Tales*, a collection of visual short stories that explore sexuality through the ages, will be shown at 8:00 p.m. in Ramsey Auditorium on September 8.

Man of Flowers, a comedy that examines the role of art in the modern world, will be shown at 8:00 p.m. in Ramsey Auditorium on September 22.

In the Library

New Books: New books are on display in the Fermilab Library for one week. A sign-up sheet is provided for checking out these books. New books will be mailed to the requester at the end of the display period.

Remember: A list of new books is available on the VAX Cluster. To access this list:

$ Setup NEWBOOKS
$ NEWBOOKS

E-mail requests are accepted at FNAL::LIBRARY.

Missing Books: Please help us in our search for stray Fermilab Library books. Return them to the Library at MS 109, WH3 Crossover.

Searches: Many online databases are available for keyword and author searches. Call us at ext. 3401 for information.

- Paula Garrett

Activities Office

Have you ever wished for discount coupons for hotels and other amenities while vacationing? A display rack in the Activities Office, WH 1E, is loaded with various discounts for Fermilab employees.

Included are Disney's Magic Kingdom, Santa's Village, Williamsburg Hotel, Rodeway Inns, Florida Discount Guide, Wisconsin Dells, Eyeglass/Contact Lens, and Sam's Wholesale Club, just to name a few.

Stop by at your leisure and check them out! - *Jean Guyer*

Percentage of American commuters who eat breakfast in their car: **25**

Average number of months in an American's lifetime that are spent opening junk mail: **8**

- from *Harper's* Index

Congratulations to:

Ratio of American children to American cats and dogs: **1:2**

Ratio of G.I. Joe dolls to American G.I.'s: **50:1**

- from *Harper's* Index

Cla$$ified Ad$

FOR SALE

Miscellaneous

G.E. CLOTHES DRYER, electric, 220 volt, (cord not included), 18-lb heavy duty, approx. 7 years old. Automatic, timed, and permanent-press cycles. Avocado color. $50. Call Betty or Ray at 879-2488.

MAN'S SCHWINN CONTINENTAL BICYCLE, 22-in. frame, good condition, $100 or best offer. FOUR GOODYEAR VECTOR TIRES, 195 75R 14, all-season radial, 6/32-in. tread depth. 3 tires ready to go, 1 needs patch. $50 or best offer. Call John at ext. 4991 or leave a message at 697-8872.

MAN'S MYATA TRIPLECROSS BICYCLE, 1989, 18 spd., all-terrain, 2 months old, like new! $425 or best offer. Call Amy at ext. 3235.

NINTENDO TAPES, used: "Gauntlet," "Zelda II," "Cobra Command," "Metroid," and "Blaster Master." Call Gerry at ext. 3930 or 365-2961.

VERTICAL FABRIC BLINDS, two pairs 75 in. wide x 84 in. long, and one pair 84 in. wide x 84 in. long. Camel color. $70 per pair. Call Marilyn at ext. 4366.

BABY CRIB, Italian, beautiful. Original price: $250, asking $140. Call 971-8341.

SHELL LAKE FISHING RIG, 16 ft long x 5 ft wide, tri-hull, fiberglass, light green, with 25-h.p. Evinrude, electric start, short shaft, new marine battery with case, Hilander trailer, capacity 3000 lbs, 1-7/8-in. ball, heavy-duty winch, Buddie bearings, new spare tire, 2-6-gal. fuel tanks, and many extras. Plenty of leg room, very comfortable fishing boat, clean, fine and dandy condition. $2500 or best offer. Call Dan at ext. 2738 or 879-6180 after 6:00 p.m.

MIYATA VALLEY RUNNER (ATB), chromemoly frame, alloy wheels, sealed alloy hubs, 18-spd. index, Deore biospace crank, excellent condition. Originally $450, asking $225. Super trainer (fits ATB), $50. V-I pro helmet (small), $10. Call Amie at 892-5936.

UTILITY TRAILER, w/spare tire. $100 or best offer. Call Don at ext. 3465 or 897-1635 after 5:30 p.m.

LARGE DESK, 4 ft x 8 ft, white formica top resting on two brown bookshelf cabinets, $125. CARRIER WINDOW AIR CONDITIONER, 5000 BTU, 9.0 EER, like new, $160. BONUS TICKET, good for round trip on United Airlines anywhere in the continental U.S. or Canada, $250. Call Rob at ext. 3016.

Motorized Vehicles

1977 DODGE ASPEN WAGON, automatic, 95,000 miles, good running condition, $500 or best offer. Call Mike, ext. 2136 or 208-1751.

WANTED

ROOMMATE to share a 2-bedroom apartment. $275 per month, gas heat/stove included. One-month security deposit. Unfurnished, but has dishwasher, wall-unit A/C. Available at the end of August. Call Eddie at ext. 4943 or ext. 2118.

LOST

SEVEN SOFT-COVER AND ONE HARD-COVER COPIES OF THESIS by Thomas K. Kroc. Please send to MS 341 or call ext. 4743.

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