

## Industrial Affiliates Feature Technology Transfer

Certain areas of science (Fermilab's basic research, for instance) have traditionally received governmental support simply because, like certain areas of our cultural life (the arts, for instance), their long-term benefit was and is recognized as being good for the society.

Times change, economics change, and the layman's traditional question, "But what is basic research doing for me now?" has, to a degree, become the funding agency's question as well. Fermilab's Office of Research and Technology Applications (ORTA) was established to help provide some answers to that question.

Headed since its inception by Dick Carrigan, the primary mission of the ORTA is to track applicable results of the R&D done by Fermilab's physicists and engineers and, as stated by Fermilab Director Leon Lederman in his introductory remarks to the 1986 Fermilab Industrial Affiliates (IA) meeting, "improve communications between academic and industrial research."

The Fermilab Industrial Affiliates are private-sector companies who receive regular mailings of Fermilab technical bulletins, attend periodic seminars conducted by Fermilab staff, and (the centerpiece of the Affiliates' year-round activities) participate in a two-day meeting of the minds among the Affiliates and a series of speakers whose reports on their activities represent the cutting edge of physics and physics-related research.

The Director's opening remarks to this year's meeting (the sixth to date) reiterated a point he made at the Annual Users Meeting. "Fermilab is a national laboratory, but in every sense it really is the off-campus facility for some 70 universities in the United States...56 [of which] are formally organized in a consortium called the Universities Research Association...[which] manages the Laboratory under contract with the Department of Energy. We really are a central location where you can see some of the work, at least in our field, carried out at most of the major research universities in the United States."

The Director went on to discuss the thrust of IA meetings which have focussed on the SSC as an example of large, pure research in need of industrial participation ('84); practical applications of speculative physics ('85); and, this year, the "less exotic" topic of the roundtable discussion: "Science, Economics, and Public Policy."

In reviewing topics presented, and insights gained, from the previous IA meetings, the Director noted that, while expectations prior to the first IA meeting ('81) were that Fermilab would transfer new technology to industry which would then immediately find ways to apply those new ideas in the marketplace, it was soon evident that the process of technology transfer itself was one which needed attention.

Fermilab Associate Director Dick Lundy welcomed the Affiliates, and then Peter Limon of the SSC Central Design Group presented the current status of the SSC; Fermilab Deputy Director Phil Livdahl gave a detailed report on Fermilab's work on a prototype proton accelerator for medical treatment for Loma Linda Hospital in Southern California (the date of the IA meeting happened to coincide with the 25th anniversary of the first use, at Harvard, of an accelerator for medical applications); and Dick Carrigan enumerated some of the many technologies available at Fermilab and described the interface between the Laboratory and the IA.

The moderator for this year's roundtable was Dr. David Morrison, president of IITRI. Panelists were Mr. Norman Metzger of the National Academy of Science; Dr. George Pake, Group Vice President for Corporate Research at Xerox and a member of the SSC Board of Overseers; Dr. Alan Schriesheim, director of Argonne; and Mr. J. Edward Steinmueller of Stanford. (*Note: A report on the roundtable will appear in the July Fermilab Report; a complete transcript will be available in the coming months from the ORTA.*)

Following the day's session, Dr. Pake returned to the podium as this year's after-dinner speaker and delved into the

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subjects of the worth of basic research, and technology transfer within the corporate structure. Noting that "all of us [in industry] are dependent on the output of research labs" Dr. Pake covered such topics as the objectives of corporate basic research (from the "search for new technological concepts of commercial value" to research which "builds a fundamental base of knowledge"); how Xerox selects areas for research investment (evaluation of the "ripeness of the field for research exploration...Is the magnitude of the investment within available resources?...Is there adequate hope that research can be transferred downstream?"); and the criteria for, and methods used in, the transfer of technology from a Xerox research group to a Xerox product marketing group.

Dr. Pake pointed out that Xerox's long-standing experience with basic research has led to "new products, new departments created by new products, and research that is shared with other corporations who can utilize new technologies Xerox develops but can't use." He predicted an on-going "national pay-off from high-energy physics research," and cited the SSC as an example of a national research policy which "for the near- and long-term benefit opt[s] for the broadest and deepest knowledge man can obtain. Nothing is more pragmatic than technological leadership."

Friday's session began with a look at SSC instrumentation needs presented by Murdock Gilchriese of Cornell, followed by Fermilab's Marv Johnson who described advances in large-scale electronic systems for particle physics. Randal Ruchti, from Notre Dame, described the video image intensifier system used by a group including Alan Baumbaugh and Kelly Knickerbocker of the Fermilab Research Division to study Halley's comet. Tom Nash of Fermilab's Advanced Computer Program Group, and Donald Weingarten of IBM brought the Affiliates up to date on the use of supercomputers in particle physics. Chris Hill of Fermilab's Theoretical Physics Department spoke on new developments in particle theory, and Leon Lederman closed the meeting with word of the new Illinois Mathematics and Science Academy. The Affiliates were also given informational tours of the Advanced Computer Program, and Industrial Buildings housing SSC magnet development work.

In his remarks opening the meeting, the Director stated the three questions

which Fermilab research attempts to answer: What are the fundamental objects of matter? What are the fundamental forces of matter? How does the Universe work? On the way to those profound answers, research facilities like Fermilab face an unending series of challenges, not the least of which is a return on investment to the society which supports the search. Industrial Affiliates meetings, and transfer of Fermilab-developed technologies, represent an innovative attempt to answer the challenge.



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Percentage of corporate R&D funded by the government in Japan: 1.8

In the United States: 32.3

Portion of fourth-quarter GNP growth in 1985 accounted for by IBM's Sierra mainframe computer: 2/5

- from *Harper's* Index

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## NALREC Wins Awards

The National Employee Services and Recreation Association (NESRA) has awarded a Certificate of Excellence in their National Competition to NALREC and Dominick Carullo for the "Lucky Fifties Night".

The posters that Angela Gonzales designed for the 1985 "End of the Run Party" won first place in the Promo Contest for the National Competition, and the poster she created for the "Annual Christmas Dinner Dance" won third place.



## Letters ...

*FermiNews* will print letters to the editor from employees in response to articles appearing on these pages. Letters for publication will be selected by the editor.

Only signed letters will be considered. *FermiNews* reserves the right to edit for space while preserving each letter's intent. Submit to: Letters, Fermilab Publications Office, MS 107.



The Users Center will be closed all day on Monday, June 23, and Tuesday, June 24, due to electrical work.

## Lab Arts Series Features Two Bands and All That Jazz

Dixieland and big band swing are the perfect way to "jazz it up" on a summer evening, and the Fermilab Arts Series annual Jazz Showcase offers the perfect opportunity. At 8:00 p.m. on Saturday, July 12, 1986, Franz Jackson's Jazz Entertainers and Jay Burkhart's 18-member "Jazz Cradle" perform in Fermilab's Ramsey Auditorium.

Franz Jackson, who plays saxophone and clarinet, toured with Fats Waller and Cab Calloway among others, before forming his own band in the late 1950s. Jackson has performed in Chicago at Rick's Cafe Americain, the Grant Park Jazz Festival, and at the Ravinia Festival. His sextet, the Jazz Entertainers, features singer Jeanne Carroll who has made four USO tours with Jackson, and "the world's fastest drummer," Barrett Deems, who has thrilled our Fermilab audiences in the past.



Franz Jackson

Jay Burkhart, distinguished Chicago band leader of the 1940s and 50s, has recently reassembled his eighteen-member "Jazz Cradle." The original band bred many of today's outstanding jazzmen while performing at ballrooms and nightclubs in Chicago and the midwest. The band also

backed such "name" bandless leaders as Claude Thornhill and Vaughn Monroe. In concert at Fermilab, the group, which includes 11 original members of the "Jazz Cradle," will perform the works that have made Burkhart a recognized master in Chicago Jazz.

Admission to the Jazz Showcase is \$6, and we encourage you to reserve your seat today as tickets are selling rapidly. Tickets are available at the Reception Desk in the Atrium of Wilson Hall weekdays from 10:00 a.m. to noon, and 1:00 p.m. to 4:00 p.m. Phone reservations can be made at ext. 3353, and are held for a maximum of five days awaiting payment.

- Jane Green

## Showcase Reminder . . .

Tickets are still available for the Storytellers' Showcase on Saturday, June 21, 1986, in the Ramsey Auditorium. Among the evening's entertainment will be:

Cowpoke stories by Glenn Ohrlin, guitarist and a 1985 National Heritage Award winner; Tales from Northern Illinois by Jim May, director of the Illinois Storytelling Festival; Tall tales and songs by Art Thieme; and Traditional American and Indian stories by the Twelve Moons storytellers.

Admission to this spellbinding program of stories and songs is \$6. Please note that some material may be too direct for younger children.

Tickets are available at the Reception Desk in the Atrium of Wilson Hall weekdays from 10:00 a.m. to noon, and 1:00 p.m. to 4:00 p.m. Phone reservations can be made at ext. 3353, and are held for a maximum of five days awaiting payment.



## Film Society . . .

On Friday, June 27, 1986, at 8:00 p.m., the Fermilab International Film Society will present *And Then There Were None* in Ramsey Auditorium.

"Agatha Christie's classic mystery novel is adapted and directed with utmost care to provide playful black comedy, stylish puzzlement, and splendid acting."

Tickets are \$2 for adults; children 12 and under are admitted for 50¢. Tickets are available at the door.



## Shop Contest Winners Chosen

On May 30, 1986, Fermilab hosted a Machine Tool Proficiency Contest open to all high school and vocational school students currently enrolled in machine shop courses. All schools within a 30-mile radius of the Laboratory were invited to compete.

The idea of this competition was to promote interest in vocational training in general, and specifically in machine shop, since many schools are reducing the number of machine shop classes available to their student bodies.

This competition was conceived by Dick Lundy, Fermilab Associate Director. Machine Shop Superintendent Earl Bowker assisted Lundy in setting the criteria and selecting the prizes. Projects were judged on dimensional accuracy, complexity, workmanship, and originality.

Fourteen students from three area schools participated in this year's competition: Jay Hendrix, Alex Nagron, Giles Nielson, and Brian Otto of Indian Valley Vocational School; Larry Bergquist of Mid-Valley Vocational School; and Dave Call, Pete Claus, Vic DeFlippis, Pat Glenn, Sean Kirkpatrick, Collin MacDonald, Jason Oliver, Mike Sizemore, and Daryl Witte of Naperville Central High School.

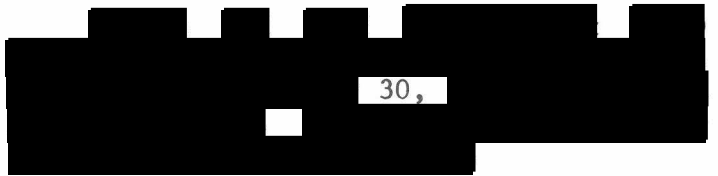


*The winners of this year's competition were from left, Giles Nielson of Indian Valley, second place for an engraving vise; Larry Bergquist of Mid-Valley, first place for a chess set; and, Collin MacDonald of Naperville Central, third place for a die stock and "C" clamp.*

- C. Matthews

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## Congratulations To . . .



home.



## NALREC Offers Cubs Trip

Join NALREC on June 16, 1986, for the baseball game of the century, when the Philadelphia Phillies meet the Chicago Cubs.

The bus will leave Wilson Hall at 1:00 p.m. sharp, so a half-day's approved vacation is required. The cost of this fun-filled afternoon is only \$17, which includes refreshments, choice seating, sandwiches, and the bus trip to and from the game.

For more information, call Joe Morgan on 4181, Ed Justice on ext. 3361, Rose Callaghan on ext. 4445, or John Jones on 4191.



Attention all soccer fans! The World Cup Soccer matches are being televised through June 30, and you can watch the games of your choice on the big-screen TV in the Users Center.

Stop by the Users Center to check the playing schedule, or phone "E.T." Hill on ext. 4562 after 4:00 p.m. for schedule info. While you're watching, enjoying our usual nachos, pizza, and free popcorn, as well as your favorite beverage.

**FOR SALE:**

**AUTOS:**

1984 FORD THUNDERBIRD. Fuel injected V-6, AM/FM stereo cassett, a/c, elec. widows/mirrors, PS, PB, pale yellow w/dark gray inter., newer tires; \$7700. Call Pat, ext. 3201 or 898-8957.

1984 FORD F150 PICK-UP. A/C, Explorer package, excel. cond., 20,000 mi.; \$6700. Call ext. 3773.

1978 FORD LEISURE VAN. 93,000 mi., set-up for camping, runs well; \$2000. Call Tim Griffin, ext. 3377 or 897-4176.

1978 CHEVETTE 2-DR. HATCHBACK. Garaged & well maintained, 3000-mile oil changes, steel belts w/many miles left, original owner, 97,000 mi.; \$650. Call R. Thompson, ext. 3401.

1975 DODGE DART SWINGER. New ignition system, battery, alternator, runs well, auto, PB, PS, 6-cyl., some rust, good second car; \$500. Call Deb, ext. 2289 or 844-1636.

1975 FORD PINTO. Rusty, but runs well, w/V-6 engine; \$500 or best offer. Call Tim Griffin, ext. 3377 or 897-4176.

1975 TORONADO. \$850 or best offer. Call Pat, ext. 3201 or 898-8957.

1965 CADILLAC DEVILLE CONVERTIBLE. 429 C.I.D., good cosmetics, good, reliable runner, used for daily transportation, American; \$2250. Call Curtis Crawford, ext. 4454.

**MOTORCYCLES:**

1982 SUZUKI. GS450TXZ motorcycle and luggage rack, 2400 mi., good cond.; \$850 or best offer. Call Keith Chadwick, ext. 3137.

1981 SUZUKI GS 450T. Plexifairing, 1100 mi., always garaged, excel. cond.; \$800. Call Jim, 897-3557 after 5 p.m.

1979 KAWASAKI KZ-400. Luggage rack w/backrest, low miles, excel. cond.; \$650. Call 293-7272.

1979 YAMAHA XS-750. Special vetter fairing w/lowers, luggage rack w/backrest, low miles, excel. cond.; \$1275. Call 293-7272.

1977 HONDA 750K. Windjammer, custom seat, runs very well, needs new muffler; best offer. Call Tom Zimmerman, ext. 4982 or 584-8001.

1976 HONDA 750. 2000 mi. on engine, new battery; \$550. Call Jim, 897-3557 after 5 p.m.

1975 YAMAHA RD-350B. Good cond.; \$390. Call Glenn, ext. 4726 or 232-4291 evenings.

1975 HONDA 750 CC. Black, w/custom seat, tank, and exhaust, low miles, excel. cond.; \$750. Call Karl Whitten, ext. 3685.

**REAL ESTATE:**

WOODRIDGE CLUB CONDO. 2 bdrm, balcony w/pool & courtyard view, C.A.C., gas heat & stove, dishwasher, garbage disposal, new stand-up combination freezer/refrigerator, and carpeting, by owner; \$40,000. Call Ron, ext. 4114 or 658-9032.

HOUSE FOR SALE. 3 bdrms, 2-car garage, large living room & dining room, full basement and attic (insulated); aluminium siding, trim, and gutters less than 1 yr. old; quiet neighborhood in Aurora, asking \$49,000. Call TJ, ext. 4777, or 898-3395 evenings.

**MISC:**

SIX WEEK OLD KITTENS. 5; adorably marked, 3 calico/2 blue and white, free to good homes. Call Edie, ext. 3621 or 393-3357 evenings.

1983 JEN-AIR ELECTRIC STOVE. Convection/conventional standard 30", w/4 burner top & optional grill top, self-clean, smoked glass door; \$800. Call Pat, ext. 3201 or 898-8957.

For the following items, call Mark, ext. 4776, or (312) 695-3263: Office chair, swivel & tilt back, adjust. height, on casters, \$100; Rubbermaid vinyl chair mat, \$25.

For the following items, call 983-9586: Sears air conditioner, 5000 BTU window, 7.5 EER, used 2 mo., \$175; Sears dehumidifier, 20 pint/24 hr., adjustable control w/auto shut-off, excel. cond., \$100; Exercise unit, DP Body Toner 500 rowing machine/multi-gym, adjustable hydraulics, \$80; Bookcases, 36"Wx48"Hx9D" or 30x48x9, 5 shelves stained teak, \$10 each; MacGregor gym mat, 4 ft.x 8ft.x 2 in. foam w/vinyl outside, 2 handles, \$30.

FRIGIDAIRE AIR CONDITIONER. 11,000 BTU, 3-speed, 24 hr. digital timer/clock, auto cool, temp. control, 110 plug-in, 14-7/16"H x 24-1/2"W x 24-5/8D; \$450. Call Cindy, ext. 3452.

For the following items, call Steve, ext. 4432: Schwinn Continental woman's 10-speed bike, great shape, upright handle bars, generator light, small front basket, fenders, spare tubes, \$100; sandbox tire, \$10.

SEARS MODEL 5030 DEHUMIDIFIER. 30 pint, auto shut-off, auto humidistat; \$125. Call Bob, ext. 4467.

For the following items, call Ronald Rioux, ext. 3128 or 231-1083: 9 piece Rataan furniture & lamps; tuxedo couch; Esstey console organ, 2 full keyboard w/18 pedals; 2 window aircond.; mahogany end tables/coffee table; 6 yr. crib w/spring & mattress; high chair; 32' alum. extension ladder; lawn mower; toboggan; misc.

CROWN GRAPHIC 4x5 CAMERA. Many accessories, carrying case; make offer. Call Bob Shafer, ext. 4894.

For the following items, call Mike, ext. 4334: 300 baud modem, uses RS232 interface, brand new in box, \$18; Boy's motorcycle helmet, good shape, \$5.

For the following items, call Alla, ext. 3401, or 879-3199 evenings: Fruitwood bedroom set, includes full-size bookcase headboard, mattress frame, dresser w/mirror, chest, \$125; child's bicycle seat, \$5.

For the following items, call Marilyn, ext. 4366: Ethan Allen 10-piece dining room set, 6 yrs. old, color: nutmeg; Duxburry-style chairs, excel. cond., \$1600; 3-piece family room furniture: wing back sofa, loveseat & chair (red plaid sofas, solid red chair) excel. cond., \$550.

**WANTED:**

Ride needed from DeKalb/Rochelle area or Old Farm area in Naperville, will share costs, need to arrive between 8-9 a.m. and leave between 4-6 p.m. Call Ernie Prabhakar, ext. 4951 or (815) 562-8996.