

Lederman is a "Nobel Guy"!!

"When the phone rang at 5:45 this morning," Leon Lederman told a press conference on October 19, 1988, "I turned to my wife [Ellen] and joked, 'It's probably the Nobel Prize committee.' "

It was.

Dr. Leon M. Lederman, Fermilab's Director, has been named one of three 1988 Nobel Laureates in Physics for the Columbia University Neutrino Group's discovery, in 1962, of the muon neutrino at the Brookhaven National Laboratory AGS accelerator. Lederman shares the \$390,000 award with his two co-leaders on that experiment, Melvin Schwartz and Jack Steinberger. All three will receive their awards on December 10, 1988, in Stockholm, Sweden.

Lederman's first reaction to the call from Stockholm was laughter; he then began calling family members with the news. The day's festivities began in earnest when a small group of well-wishers, including Accelerator Division Head Helen Edwards and Alvin Tollestrup, Co-spokesman for CDF, arrived at the Lederman home at 7:00 a.m. with champagne.

Once at work, the Director fielded phone calls in his office from the press and colleagues while a celebratory crowd of Fermilab staffers filled all the available space on the east side of Wilson Hall's second floor. At about 10:00 a.m., Lederman faced the press in 1 West.

"Of all the recognitions one can get," he began, "there's something very spooky about the Nobel Prize. It has its own special aura, because people like Albert Einstein and Enrico Fermi and so many others who we venerate so much and who are our intellectual heritage are all part of this group [of Nobel Laureates]. Clearly it's a sobering experience.



"It is also a great day for the field of elementary-particle physics and for Fermilab, because this award recognizes exactly the type of work that we're doing here today. I think this is just the first of a large number of Nobels that will be won at Fermilab. Be patient!

"In the case of this particular discovery, finding the second neutrino was the first step in organizing the fundamental particles

into a picture which we sometimes call the Standard Model. The other important thing is that the neutrinos themselves became a tool that has been used for subsequent research. Hot and cold running neutrinos became a standard in big laboratories for learning about the fundamental structure of matter.

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Director to Retire on July 1, 1989

Leon M. Lederman, Fermilab's Director since June 1, 1979, has notified the Universities Research Association, Inc., Board of Trustees that he will retire effective July 1, 1989, upon completion of his second five-year term. Lederman has accepted a position as Frank B. Sulzberger Professor of Physics at the University of Chicago, where he will return to teaching and research, with an emphasis on creating science-education programs that will address this country's declining aptitude in the sciences.

At the press conference on the morning Lederman was awarded the Nobel Prize in Physics, he told reporters, "I was offered another five-year hitch here

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A Standing Ovation for the Director

An overflow crowd of Fermilab staff and users in the Ramsey Auditorium greeted Leon Lederman, 1988 Nobel Laureate in Physics, with a sustained standing ovation at 4:00 p.m. on the afternoon of October 19.

Wearing a large brass medallion inscribed "Nobel Guy," a token of esteem from his colleagues, and looking up from the stage, Lederman said, "The biggest thrill of all is standing in front of you and seeing how we all share in this truly tremendous event.

"The rewards of a life in physics are ample. It's true that back then, when we recorded our data with quill pens and used slide rules, it was easier [to do physics] than it is now, but I don't think the fun of doing physics has changed."

Lederman then launched into an anecdotal recollection of the Neutrino Group's exploration for the second neutrino (see the upcoming September/October issue of *Fermilab Report* for the full text).

"Getting a reward like this is really a lot of fun," he concluded. "It made my whole day. I recommend it. But the nice thing is that recognition of [high-energy physics] is implicit in this [award]; the field of high-energy physics is appreciated globally, and the U. S. is still in the game of high-energy physics. I hope it will bring a lot of attention to the TEVATRON and to our Collider program."

The Experiment That Won the Prize

In an ingenious experiment at the Brookhaven National Laboratory AGS (alternating gradient synchrotron) accelerator, the seven-member Columbia University Neutrino Group discovered that there is not one kind of neutrino, but two, the second kind being emitted in the decay of the pion. (In the last 10 years, particle-physics researchers have come to believe that there is also a third kind of neutrino awaiting discovery.) Ever since the Neutrino Group's pioneering work, neutrinos have been used as a kind of penetrating X-ray in the search for quarks, the inner structure of the nuclei. Today, particle physicists believe that the three kinds of neutrinos, together with six quarks and three charged particles called leptons, constitute the basic system of elementary particles that make up the Universe.

In 1960, Leon Lederman, Melvin Schwartz, and Jack Steinberger calculated that the AGS might provide high-energy neutrinos in the quantity needed to carry out a search for the second neutrino, and to observe the rates of weak interactions at high energies. In a 1963 article in *Scientific American*, Lederman writes that, "The [experiment] proposal was received enthusiastically by the Brookhaven staff, and in collaboration our two groups began setting up the experiment with the support of the Atomic Energy Commission [precursor to today's Department of Energy]. Associated with Schwartz, Steinberger, and me in the experiment were Gordon T. Danby [then] of the Brookhaven accelerator department, two [then] Columbia University graduate assistants, Konstantin Goulianos and Nariman Mistry, and Jean-Marc Gailard, [then] a visitor from the French high-energy physics laboratory at Saclay.

"The search for the second neutrino was based on the . . . reasoning [that] the AGS produces large numbers of high-energy pions. The neutrinos arising from pion decay would be born with muons; therefore, they would be of the muon type, if there really were two types. The neutrinos would collide with neutrons (and protons), with two possible consequences. If neutrinos were of only one type, they should react with neutrons to produce *equal numbers* of electrons and negative muons. If there were two kinds of neutrinos, the kind generated in our experiment should be unable to produce electrons and we should observe only muons." This supposition was borne out by the team's detector, a 10-ton spark chamber and 45 feet of armor plate (trivial in size by comparison with some of the apparatus used in today's experiments) designed to exploit the energies delivered by Brookhaven's 30-billion-volt AGS.

"Without an understanding of neutrinos," Lederman told *FermiNews*, "there would be no understanding of the patterns of elementary particles and no understanding of the way stars and galaxies evolve. It may be that neutrinos (depending on whether or not they carry a tiny mass) account for 90% of the mass of the Universe, also called Dark Matter."

(Material for this article came from Chuck Brown [Physics Dept.], Chris Hill [Theory Dept.], and Drasko Jovanovic [Research Div.]

Butler, White Appointed Computing Dept. Associate Heads

The Computing Department has been growing in size and responsibilities. Moreover, the complexity of issues and opportunities have increased as well. These changes are evident in the Laboratory's ongoing computer operations. In this environment, the need for more and better communications and planning has gone up dramatically. In response to these developments, Joel Butler and Vicky White have been appointed as additional Associate Heads in the Computing Department.

Joel Butler will concentrate on Central Computing Applications. Jack Pfister continues as Associate Head,

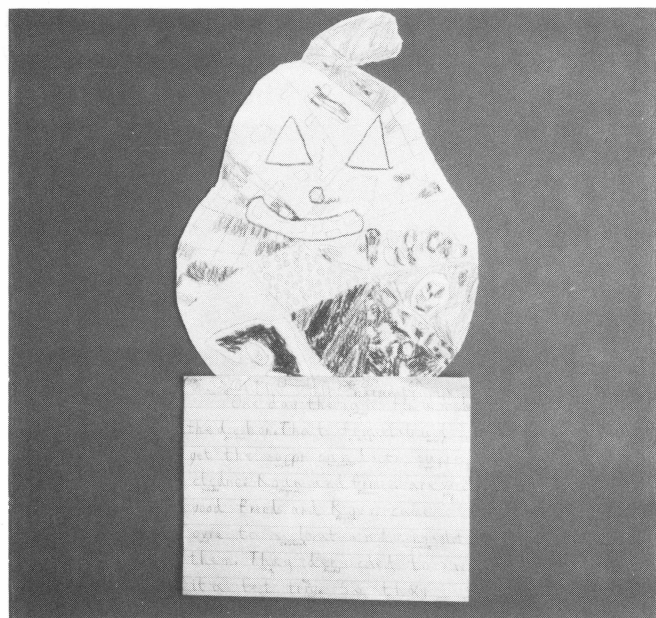
concentrating on Communications, Systems, and Operations.

In the Online and Data Acquisition area, Vicky White will concentrate on Software and User Group Liaison. Peter Cooper continues as Associate Head, concentrating on Hardware and Vendor Liaison.

We hope that these changes will lead to increased department responsiveness, planning, and flexibility. After all, it is our support of you, our users, which measures our success. - Jeffrey A. Appel

A Superconducting Supercolliding Supernatural Scary Story

Presented for your consideration: a drawing of a jack-o-lantern. Appropriate to the season and to the dark holiday just passed, lovingly colored (trust us) and delivered to one Leon Lederman the week before Halloween by a certain mysterious Philip S. Doctor. Attached to this grinning figment of a small child's imagination is a story of nuclear horticulture, a story of things that go superconducting in the night, a story we reprint here, a story from... The SSC Zone!:



The Super Natural Pumpkin

One day the judges finally made the decision. That Fermilab would get the super conductor super collider! Argonne and Fermi are very good friends and Argonne came over to celebrate and congratulate them. They decided to give it a test try. So they started it and the electron zoomed out. By the time it was almost at end it was at 9.999999 per cent of the

speed of light! It was coming towards the bubble chamber it missed it smashed in to the wall! The protons, atoms, nucleus, electron and quarks collided! A kind of beam flowed out and hit a pumpkin seed. Chapter 2. The seed somehow got planted and grew a pumpkin that looked like no other. A boy found it and made it in to a jack-o-lantern. The end.

- Philip S. Doctor

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but I decided it was time to leave; ten years is enough. The decision was made before the award was announced."

The Universities Research Association, Inc., Board of Trustees will form a search committee to choose a new director. The next issue of *FermiNews* will carry more details on the search procedure.

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"But to me, the most encouraging aspect of an award such as this is that young people will hear about it and be inspired to carry on this most basic type of research. Those are the people who will figure out how to use these tools to solve the problems society faces, such as acid rain and the greenhouse effect. Neutrinos are part of a body of knowledge called basic research, and that body of knowledge will certainly be called upon to supply the technology that will improve the quality of life for the entire planet.

"The TEVATRON and the SSC and many other scientific tools are needed to encourage young aspirants to science to pitch in and help to advance science across the entire frontier."

Davenport Cited by White House as Outstanding Professor

James Davenport was honored with the White House Initiative Faculty Award for Excellence in Science and Technology in Washington, D.C., on September 26, 1988. He was one of 34 professors selected as outstanding among their peers at historically black colleges and universities. The awards were made at the 1988 symposium, "Mandate for Change: New Partnerships in the Mainline Science Community," sponsored by the White House Initiative on Historically Black Colleges and Universities.

Davenport has been Chairman of the Physics Department at Virginia State University since 1967, and Coordinator of Fermilab's Summer Internships in Science and Technology since 1971. For the last

three years, he has served as Coordinator for the Department of Energy-sponsored Nuclear Energy Training Program. This program offers competitive scholarships to highly capable students who are preparing for careers in nuclear energy-related technologies, one of only two such undergraduate programs established at historically black colleges and universities. In the past 20 years, Davenport has taught significant numbers of students who have selected careers in physics and engineering. Additionally, his numerous organizational affiliations have kept him in the forefront of increasing the number of minorities in physics at both the local and national levels. - Dianne Ingram

Golf League Mothballs the Clubs for Another Year

Fermilab's Golf League wrapped up another rousing season. The final tournament was held at Burr Hill Country Club in St. Charles on September 9th, followed by the annual league banquet (prizes! trophies!) at the Kuhn Barn. The first place teams from all three leagues met in a playoff, and the Tuesday Night Fox Valley team emerged as overall League Champions: Gordon (I'm a bowler) Bagby, Tom (Long Ball) Barnes, Steve (Did you see my ball?) Bjerklie, and Michelle (Who me, sandbag?) Gleason).

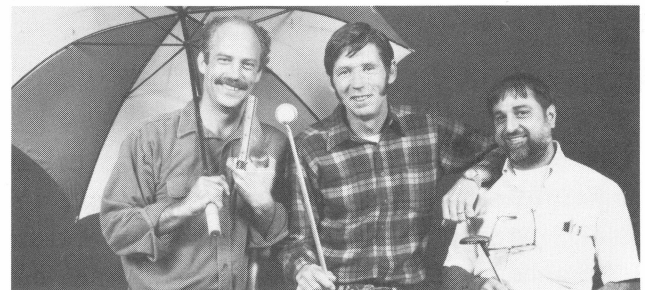
Individual and team trophies were distributed as follows: **Tuesday Night Fox Valley.** Low average: Keith Dillow (40). Most individual points: Steve Baginski (36) and Tom Barnes (36). 1st place: Gordon Bagby, Tom Barnes, Steve Bjerklie, and Michelle Gleason. 2nd place: Steve Baginski, Ron Davis, Kevin McDonough, and Gary Smith. 3rd place: Larry Allen, Ron Currier, Jeff Gannon, and Bob Webber. **Wednesday Night Fox Valley.** Low average: Keith Dillow (39). Most individual points: George Dyche (30) and Dick Killian (30). 1st place: Charlie Briegel, Gene Dentino, Ed West, and Ed Wilmsen. 2nd place: Dick Killian, Vic Kuchler, Bob Wendt, and Ron Zeitler. Third place: (tie) Paul Czarapata, George Dyche, Jerry Dyche, and Al Jonckheere. 3rd place: (tie) Don Fichtel, Dave Hornback, Claudie King, and Darrell Sigmon. **Wednesday Night St. Andrews.** Low average: Bill Booth (43). Most individual points: Kelly Dixon (31). 1st place: Bill Booth, Terry Carroll, Kelly Dixon, and Bob Vanecek. 2nd place: Yasuo Fukui,

Jeff Gordon, Pat Liston, and Dave Warner. 3rd place: Steve Baginski, John Bell, Al Flowers, and Jeff Western.

The 1988 Golf League Committee, Steve Baginski, Gene Dentino, Keith Dillow, Jeff Gordon, Ed LaVallie, and Fred Ullrich, did an outstanding job organizing the outings and the tournament. The 1989 Committee will consist of Larry Allen, Bill Booth, Gene Dentino, Michelle Gleason, Vic Kuchler, and Fred Ullrich. - Michelle Gleason



Fox Valley Thursday Night 1st place and league champs: Gordon Bagby, Tom Barnes, Steve Bjerklie, and Michelle Gleason.



Fox Valley Wednesday Night 1st place: Charlie Briegel, Ed Wilmsen, Gene Dentino, (not pictured: Ed West).

Shanghai String Quartet Will Steal You Away

A fresh voice in the world of chamber music and a talent to watch, the Shanghai String Quartet triumphantly returns to Illinois on Saturday, November 12, 1988, at 8:00 p.m. following a string of national successes.

After gaining recognition in China, the Shanghai String Quartet was awarded second prize in the Portsmouth International String Quartet Competition. In the United States they have studied with the Vermeer Quartet at Northern Illinois University, the Tokyo String Quartet at the Norfolk Chamber Music Festival, and are currently the Ensemble-in-Residence at the Juilliard School of Music where they work with and assist the Juilliard Quartet. Since winning first prize in the prestigious Chicago Discovery Competition hosted by Chamber Music Chicago, performances at New York's Town Hall, Tanglewood, Avery Fisher Hall, and the Ninety Sec-

ond Street Y have earned the Shanghai String Quartet a reputation as one of "the finest young four-somes of the day."

Quartet members Wei-Gang Li (violin), Hong-Gang Li (violin), Zheng Wang (viola), and Kathe Jarka (cello) will demonstrate their musical brilliance in the performance of Mozart's String Quartet in C, K. 465; Bartok's String Quartet No. 3; and Debussy's String Quartet in G Minor, Op. 10.

The opportunity to hear these "four talented young people wildly in love with the idea of making music" is yours for an \$8 admission fee. Reserve your tickets by calling ext. ARTS weekdays between 10:00 a.m. and 12:00 noon, or 1:00 p.m. and 4:00 p.m. Phone reservations are held for five days; due to ticket demand those not paid for within five working days will be released for sale. - **Tammey Kikta**

Fermilab Colloquium Series Opens Superior Season

The 20th annual Fermilab Colloquium series got under way in September with a bang when Michael Turner, of the Fermilab Astrophysics Group, talked about Dark Matter left over from the biggest bang of all. More recently, Paul Langacker delivered a bang-up exposition on the electroweak theory. These are just the first salvos in an outstanding year filled with world-famous speakers.

The Wednesday colloquium is an important part of Fermilab's scientific life, a chance for us to hear about earth-shaking developments in particle physics and accelerators, and learn more about what is going on elsewhere in the physics community.

This year, I have asked the Colloquium Committee (Chris Hill [co-chair], Jim Christenson [co-chair], Frank Nezrick, Rocky Kolb, Drasko Jovanovich, Peter Cooper, and Dick Carrigan), to arrange a superior season. No effort is too great, no expense too immense, when it comes to bringing lecturers from the four corners of the globe and even beyond (we're working on that). I hope everyone at Fermilab, users and staff alike, will attend. Graduate students, in particular, should use this opportunity to broaden their perspectives on physics.

In view of the importance of the series, I have asked Division heads to encourage attendance. Please

avoid scheduling meetings that conflict with the colloquia. Remember the words of your old E&M instructor: "Attendance will be taken. I plan to ask questions later!" If you have an idea for a really great speaker, take your suggestions to Hill, Christenson, or the other committee members. - **Leon M. Lederman**

Publications Office Moves to WH 6NW

The Fermilab Publications Office has relocated to Wilson Hall 6NW. (Keep in mind that the 6th floor has no crossover.) The offices themselves are on the northwest corner of the 6th floor. Racks of newly available technical reports (preprints, FNs, and TMs), as well as the latest issues of *FermiNews*, *Fermilab Report*, and the 1986 and 1987 *Fermilab Annual Reports*, are on display facing the 6W elevators. Comprehensive listings of Fermilab technical reports are accessible in the TECHPUBS data base.

Our extensions (3278, 3887), our mail stop (107), and our DECnet (FNAL::TECHPUBS) and BITnet (TECHPUBS@FNAL) addresses remain unchanged. Please feel free to request copies of technical reports, *Fermilab Report*, *FermiNews*, etc., via Email or by phone.



The Activities Office.

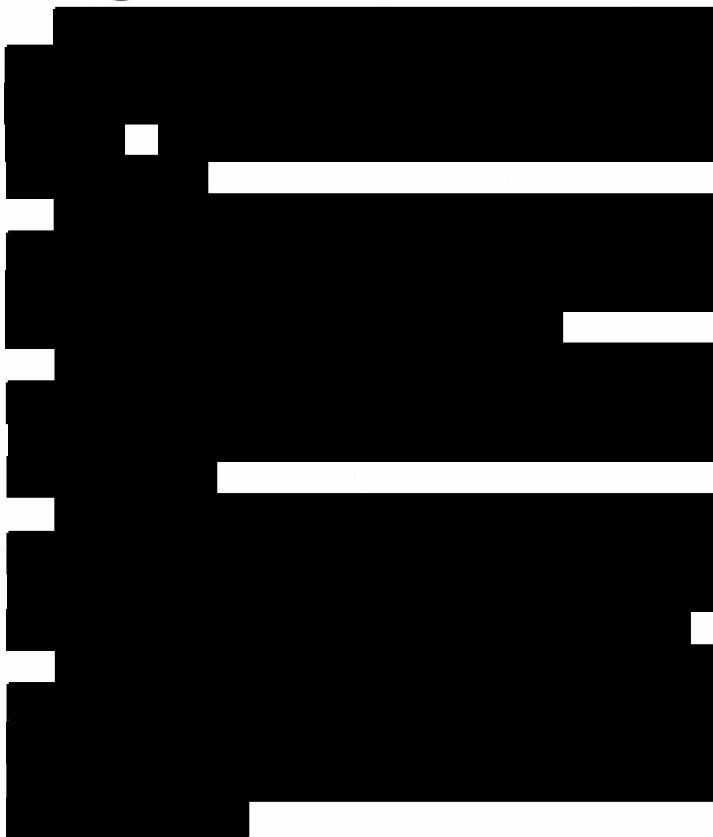
Aerobics Classes

Low-impact aerobics classes are now being offered at the Fermilab gym exercise room. Classes are held on Mondays, Wednesdays, and Fridays from 5:30 p.m. to 6:30 p.m. Classes are open to Fermilab employees and users with gym memberships. The objective of low-impact aerobics is to raise the heart rate for cardiovascular benefit without the jumping and bouncing movements often associated with traditional aerobics. One foot is always kept on the floor. Hand-held or wrist weights can be added for an additional challenge as the exerciser's fitness level improves.

In addition to the aerobics section of the class, floor exercises for toning/firming the abdomen and lower body, and stretches for flexibility, will be included.

If necessary, class size will be limited according to the sign-up order. If, you are interested, please call Jean Guyer at ext. 3126 or page 235.

Congratulations to:



Ratio of television sets produced to babies born each year in the United States: **3:1** - *Harper's* Index

FermiNews Cla\$\$ified Ad\$

FOR SALE

Motorized Vehicles:

1974 KAWASAKI KZ400, \$325. Call Jim Tweed at ext. 2263 or 584-6698 after 5:00 p.m.

VW JETTA, p.s.b., air, AM/FM cassette, sun roof, full warranty thru February 1989. Silver, low mileage, asking \$8950. Call Nelly McDonough, ext. 3090.

Miscellaneous:

MAN'S BICYCLE, 26 in., 10-spd., like-new condition. SEARS KENMORE SEWING MACHINE, Model 32 Zig-Zag, excellent condition. Call Jim Tweed, ext. 2263 or 584-6698 after 5:00 p.m.

ROCKING CHAIR, all wood, very large, cannon-ball style. Paid \$250, asking \$100. Call Steve, ext. 4432 or 879-1452

SNOW TIRES, two H78-15 (P255-75-15) whitewalls on rims for GM mid-size and large cars. Very good condition. \$25. Call Marc at ext. 4189.

WHIRLPOOL NO-FROST REFRIGERATOR/FREEZER, 12 cu. ft., white, 2 yrs old, asking \$425. TAPPAN 30-IN. RANGE, white, 2 yrs old, asking \$275. Call John at ext. 4964 or 627-5573 after 6:00 p.m.

WANTED

LARGE AND SMALL DOG HOUSES. Call Ernie at ext. 3626 or 815-895-6823 evenings.

FOUND

DOG, on Fermilab site, Labor Day weekend. Large. St. Bernard mix, red-brown coat, with collar and broken leash. Yours? Call Sheila VanWankum, 231-1599.

Average number of years that an American spends looking for misplaced objects, in the course of a lifetime: **1**

Percentage of Americans who believe that the Soviet Union is a member of NATO: **16**

Number of Kiwanis Club meetings that take place each weekday: **1300**

Average number of minutes a viewer spends watching a TV program before changing the channel: **3.7**

Percentage of teenagers who say the world is "getting worse": **45** - *Harper's* Index

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