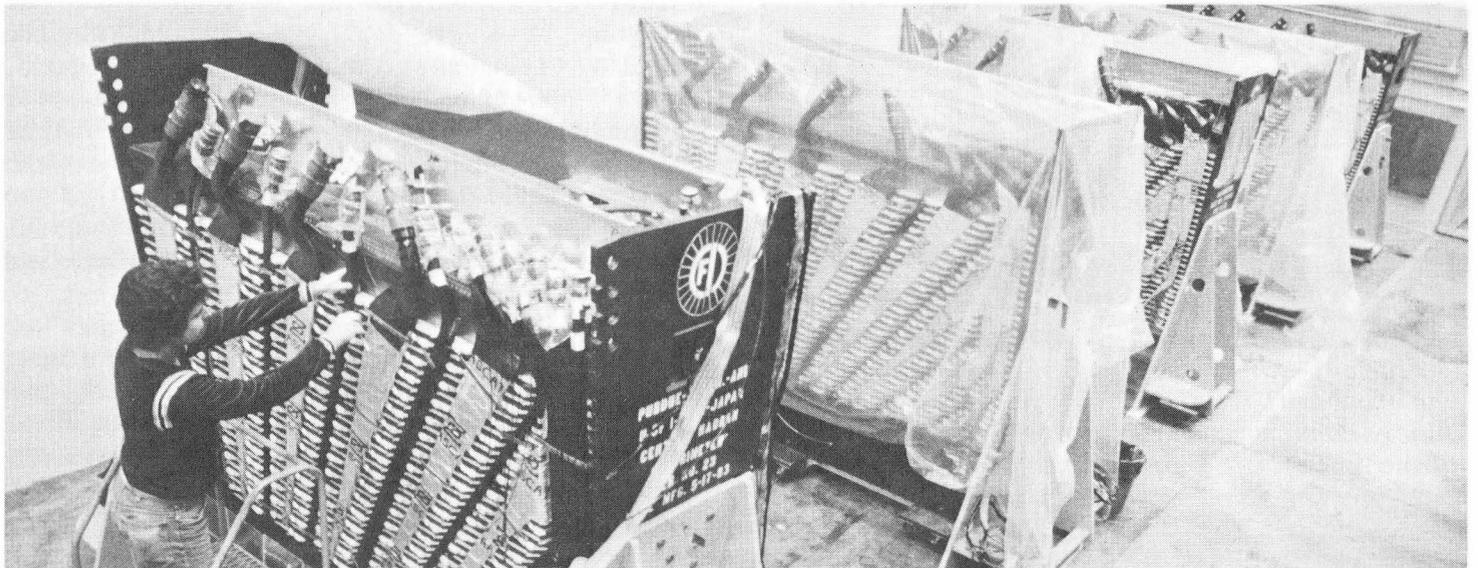


## STATE OF THE LAB: WATCHING '84 AND BEYOND



*Shown above are 5 of the 50 central hadron calorimeter modules currently being assembled in Industrial Building #4. After construction, the modules are tested at Muon in preparation for final assembly as the Colliding Detector in the B0 building.*

### by Leon Lederman

*Somebody wrote a book about thirty years ago and now the year 1984 takes on an ominous, although highly symbolic, aura of significance. Most of this relates to the possibilities of a grim, dehumanizing world. In the book all of this is made possible by technology, the offspring of science, employed not for the enhancement of human dignity and the quality of life, but for the totalitarian mind control of a slave population by an elite ruling class. Things haven't worked that way in much of the world where, in fact, the technology of communications has given ordinary citizens the opportunity for mind-expanding awareness and continuing self-education.*

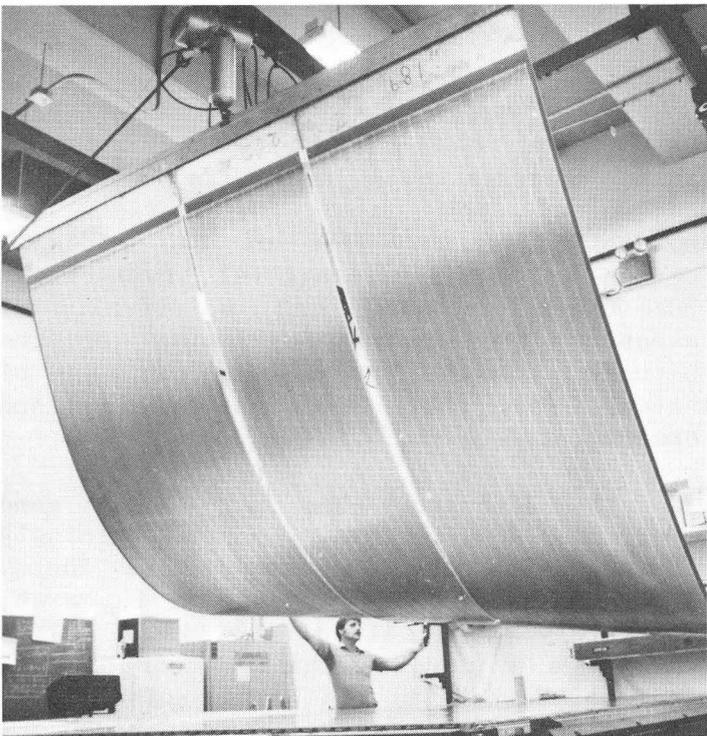
Fermilab, devoted to extending the boundaries between what is known and what is unknown, has a responsibility to make sure that science and its resulting technology are used to enrich the possibilities for life of the ordinary person in all ways--material (technology) but also cultural and spiritual, by exposing the incredible beauty of the natural world as revealed by the laws of nature, by their deep symmetries and orderly structure.

The Laboratory has had a very good year in 1983. This was overwhelmingly dominated by the success of the Energy Saver which was fully installed in March, completely cold (filled with liquid helium which has a windless chill factor of -432 degrees Fahrenheit) in May. The SAVER accelerated particles in July and began its physics program (TEVATRON era) on October 1. The other major construction projects which will complete the TEVATRON are doing very well. TeV I is now really rolling as you can see from the civil construction to

*(cont'd on pg. 2)*



*The steel-work goes up on the west end of the Central Helium Liquifier building. Under construction: a new liquid nitrogen plant which will provide a good deal of the  $L_2N$  for the Superconducting Ring.*



*Ken Gray, tech specialist from Nevis Lab at Columbia, positions one of the 80 drift chambers being constructed for Exp. 652, one of the new generation of experiments designed to utilize Fermilab's Superconducting Beam.*

*(cont'd from pg. 1)*

the south of the Booster or by strolling through the Industrial Buildings (#1,2,3, and Center). TeV II is on course with new beam lines and structures sprouting in the Experimental Areas. CDF (whose future home is the Orange Monster, B-Zero) has advanced significantly (peek into Industrial Building 4) towards producing the world's finest colliding detector. The experimental program is having a slow start but, after all, this **is** about 1984.

Clearly we will be **very** busy. Orwell aside, it is a crucial year in which we will be able to evaluate the SAVER, the world's first superconducting synchrotron, as a powerful and reliable tool for advancing our understanding of the physical universe. Much depends on this, not the least of which is the investment of so many, many years of physical and mental effort by so many people of so many diverse talents. The efforts here reach out to every corner of the Laboratory and we acknowledged this by giving one of our most spectacular all-Lab parties in July. The Department of Energy is enthusiastic about a formal dedication of the new accelerator. This will take place on April 28 and Donald Hodel, the Secretary of Energy, will give the Dedication Address.

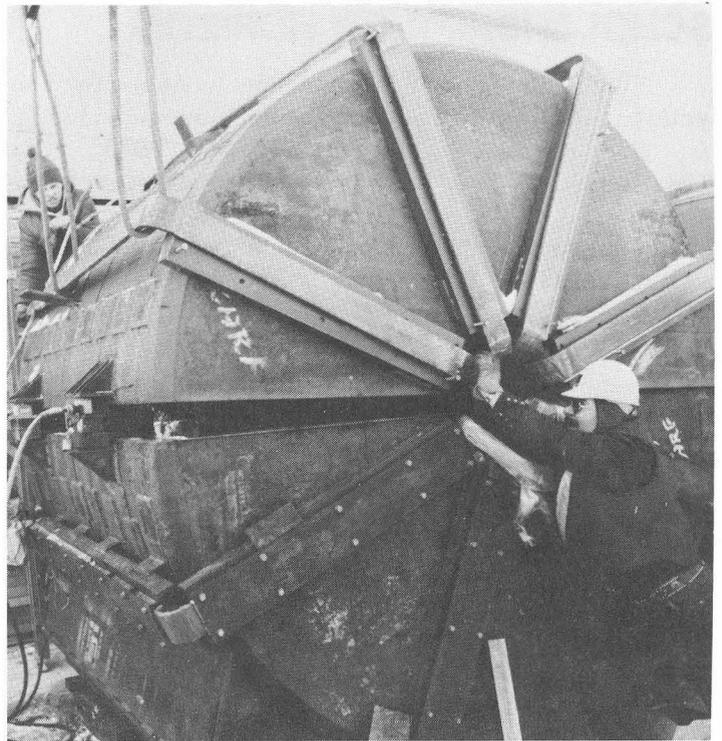
What lies ahead? The Lab's growth to carry out these programs has now slowed (but not stopped completely). We are still heavily into construction but are steadily making the transition back to an operating laboratory. Considering the state of the economy, Fermilab people, relatively, have a lot to be thankful for but nothing that isn't fully deserved. On average, trying to be as objective as possible, I do believe this is a unique institution. If one evaluates ability, youthfulness, morale, the dedication to doing well, the extent to which people reach out to each other, this Lab has no peers. It is the best! That is not to say that we don't have problem areas and things to improve. That's another reason for 1984.

What is far ahead? We must be able to put the vast investment in human resources and in public funds to use by providing beams and all the other required services to our customers--the scientists from over a hundred different places, (even a few from Fermilab!) who have put their own

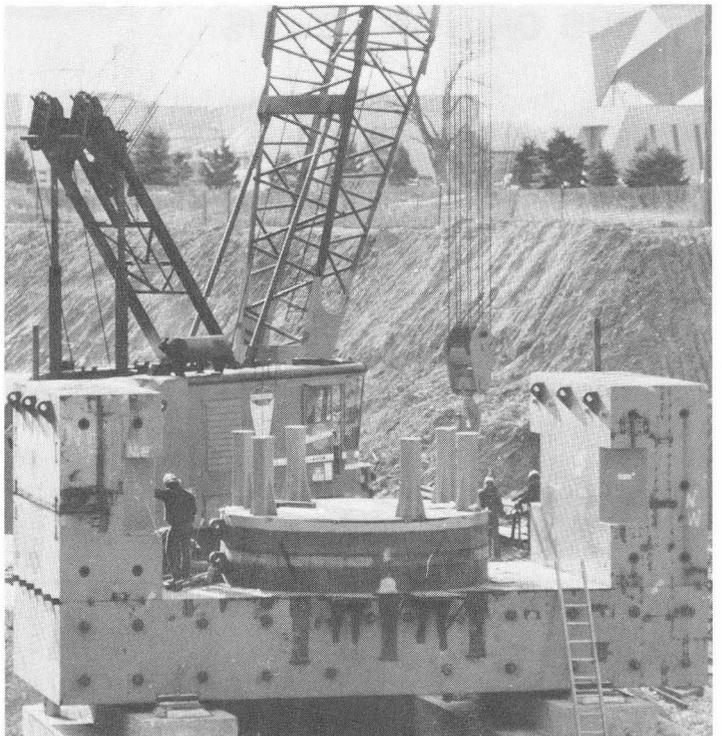
commitment of years and hopes into research at Fermilab. We exist to serve them: to provide the comfortable housing, meals, technical and business services, computers, and equipment, etc., so that they can produce the best science with the TEVATRON. In short summary, we must put our highest priority on exploiting the TEVATRON.

Even further ahead is the possibility of a machine twenty times the power of Fermilab--the SSC. That the national community has recommended this step is not only a comment on the scientific needs of our research but is also a fantastic vote of confidence in what we have done at Fermilab. It is my personal view that Fermilab, its people and its experience, will have to make major contributions if this new proposal is to succeed. Along with our sister labs, we are already squeezing some effort out of our busy schedules in order to help advance this idea. We expect a two- to three-year study period before the government will seriously consider funding the super accelerator. And according to a press release, our own Governor Thompson is already convinced that the new machine should adjoin Fermilab. Well, it's very early for this and no such decision is very likely in 1984.

Finally, and it's always last, there are so many people to thank. It is easier to thank institutions and first comes, yes, the American public who puts up the money (never mind that we believe they are getting a great bargain). There is, of course, the Agency, DOE, entrusted by that public to make sure its money is so disbursed as to achieve the maximum amount of scientific results. And then, last, you, the Fermilab staff whose virtues I've already listed. All that is left is to wish you all a very fulfilling New Year in your work and in your homes. May 1984 confound the old book's predictions and bring **all of us** peace and the freedom to act as proud citizens of a free country.



*Paul Draper (left) of Indiana University, and Paul Podd, chief of the rigging crew, mount coils on the top half of the toroid for Exp. 557/672, a tevatron experiment being readied for a March run in Meson (MPS).*



*Old cyclotrons never die, they just go superconducting. Weighing in at 2,200 tons, the Chicago Cyclotron was moved here in '71; since then it has been converted to superconducting-compatible, and will be used as part of the studies done by Exp. 665 at the new Muon Lab.*

## SCHOLARSHIPS ON HORIZON

Universities Research Association scholarship applications are now available in the training office, Wilson Hall, 15. The deadline for returning them is March 1.

Annually URA sponsors a minimum of 15 scholarships for children of full-time employees. A single scholarship covers tuition and fees to a maximum of \$3,000 per year. It is renewable for up to four years as long as the student remains in good standing at the school.

Students who receive the scholarships are selected on the basis of their American College Testing (ACT) scores. To be eligible for a scholarship, a student must be a high school senior with plans to pursue a four year college curriculum leading to a degree.

Students who are awarded scholarships will be notified around April 1. For additional information call Ruth Christ, ext. 3793.

## TO BUS OR NOT TO BUS. . .

The Regional Transit Authority (RTA) is trying to determine the transportation needs of Fermilab and its employees in this area. Your assistance is needed to complete a RTA survey which will be mailed to every employee. The purpose of this survey concerns the possibility of providing bus service to Fermilab. The RTA will consider providing the service based on employee demand. The survey will be tallied and analyzed by the RTA. The survey should be completed and returned to the Equal Opportunity Office, Mail Station 117, as soon as possible.

### RESERVATIONS REQUIRED

The deadline for receipt of reservations for summer on-site housing is Thursday, March 22, 1984. Housing assignments for summer experimenters will be made in April, and responses will be mailed April 13. The starting dates for summer occupancy will begin May 28. If you have any further questions please contact the Housing Office, ext. 3777.

## LILL BIG WINNER!!



Captain John Lill, Training Officer for the Fermilab Fire Department, has been named State Fire Instructor of the Year. This recognition is from the Illinois Division of the International Association of Fire Instructors.

## LECTURE SERIES HEATS UP

The earth is warming! The earth is warming! But what does it mean? Find out when Dr. William A. Nierenberg discusses the global warming trend caused by the build-up of carbon dioxide in the atmosphere. Nierenberg, who is Director of the Scripps Institution of Oceanography, will present a lecture, "CO<sub>2</sub> and the Next 100 Years: Living in a Global Greenhouse," on Friday, February 17, 1984, at 8 p.m. in Ramsey Auditorium.

Professor Nierenberg served as Chairman of the CO Assessment Committee for the National Research Council. The committee's recently released report, "Changing Climate," warns that the effects of increases in the earth's temperature will be felt by the year 2000. In his lecture, Nierenberg will explain the "greenhouse effect" and discuss continuing research which can help us prepare for the changes that increased temperatures will bring.

Admission to this Lecture Series presentation is \$2, \$1 for senior citizens, and tickets are now available at the Information Desk in the atrium of Wilson Hall, ext. 3353.

FOR SALE:

AUTOS: 1979 FORD F250 3/4-TON PICKUP. 4-wheel dr., PS, PB, AM/FM stereo, 23,400 mi., excel. cond. \$5,500/best offer. Call Terry Hendricks, ext. 4040.

1978 GREEN-GRAY TWO-DR HATCHBACK VOLKSWAGEN RABBIT. Autom. trans., sunroof, AM/FM, fuel inject., rear defr.; like new eng., battery and exst.; garage kept, well maint. \$2,400. Call Aki Murakami, ext. 3172 or 231-1019.

1977 CHEVROLET IMPALA. 68,000 mi., good engine, needs brake work. Best offer. Call Dick Auskalnis, ext. 4167.

1976 8-CYL. 4-DR. CHEVY MALIBU. Good cond. \$825. Call Carl Pallaver, ext. 4248 or 968-7771.

1975 RED VOLKSWAGEN BUG. Mechanically sound, economical transp., low mi., like new battery, starts good. Call Alma, ext. 3387 or evenings 879-3809.

1975 MAROON W/PINSTRIP 350-V8 BLAZER 4x4. Completely recond., no rust, auto. trans., 37-in. Armstrongs w/ chrome rims, 12-in. lift, trusses, AM/FM cass., many extras, must see. \$6,800. Call Cindy, ext. 3452.

1973 4-DOOR HT PLYMOUTH FURY. Auto. trans., PS, PB, mounted snow tires, clean interior, 40,000 mi. \$600. Call Gerry, ext. 3930 or evenings 365-2961.

1972 2-DOOR HT DODGE DART SWINGER. Auto. trans., PS, new tires, good work car. \$300. Call Gerry, ext. 3930 or 365-2961 evenings.

MISC: DELCO FREEDOM II BATTERY FOR VW RABBIT. 56 amp., good winter battery. Call Mark, ext. 4776 or 645-3263.

ELECTRIC BASS GUITAR AND 12-FT CORD. \$45. Call Myrtis, ext. 3642.

TRS-80 COLOR COMPUTER. 16K RAM-Color BASIC; includes joysticks and 3 game cartridges. \$150. Call Gerry, ext. 3930 or 365-2961.

GAME AND PROGRAMMING CARTRIDGES. For R.S. color computer. Call Ron, ext. 4788.

SNOW TIRES. BR78-13 radial white-walls mounted on GM rims. Asking \$60 for the set. Call Ron, ext. 4788.

continued on reverse

FOR SALE:  
MISC:  
(cont.)

For the following items call Sharon Koteles, ext. 3598. Motorola console stereo with AM/FM radio in modern wood cab., asking, \$75; Motorola Quasar 23-in. TV in dark-wood Spanish design cab., needs some repair, asking \$100; 2 H78×15 Firestone snow tires mounted on 15-in. wheels, like new, \$100.

For the following items call H. Barber, ext. 3445. 2 tires mounted on 5-lug rims, 8.55×14 in., \$25 ea.; men's 26-in. 3-spd. light-weight Europ. bicycle, \$55; 1-in dia. tubular steel chrome-plated clothing rack w/4 casters, shelf on bottom, \$12; Westinghouse white electric stove w/ oven and grill, lg. 2-drawer storage capacity, 26-in×40-in, \$55; 2-door tan sheet metal storage wardrobe cabinet w/ shelf and hanger rod, 36 w×20 d× 60 h, \$35.

For the following items call Dwaine C. Johnson, ext. 4921. Cross Country ski equipment: (1) pair women's high, blue leather, 50-mm plastic sole, sz. 39 (7 1/2 or 8) track boots, \$35; (1) pair trak 50-mm bindings, \$15; (1) pair women's low 75 mm, tan leather, sz. 37 (6) Haugen boots, \$10; (1) pair men's low 75-mm tan leather sz. 40 (9) Haugen boots, \$15; (1) pair 75-mm bindings, \$3.

For the following items call Angelo DeAngelis, ext. 3654 or 3653. SKB Model 700 Shotgun, pigeon grade over and under w/ improved mod. and full choked, pro-ported barrells, very good cond., \$625; 8-ft alum./wood constr. insulated pickup truck cap, full-height back doors w/ lock, in good cond., \$300.

LAB-SHEPHERD PUPPIES. Ready Jan. 28. Call Craig Olson 892-1841 after 3 p.m.

MIKASA VOLLEYBALL. VWL210. \$25/best offer. Call Tom, ext. 4645.

WANTED: RETURN OF LOST BOOK. Title: **Japan Style**; lost around booster-gallery area; if found, call George Biallas, ext. 3561.

USED SHOTGUN. Preferably 20 gauge single shot with full or modified choke. Call Merle, ext. 3958 or 964-0185.