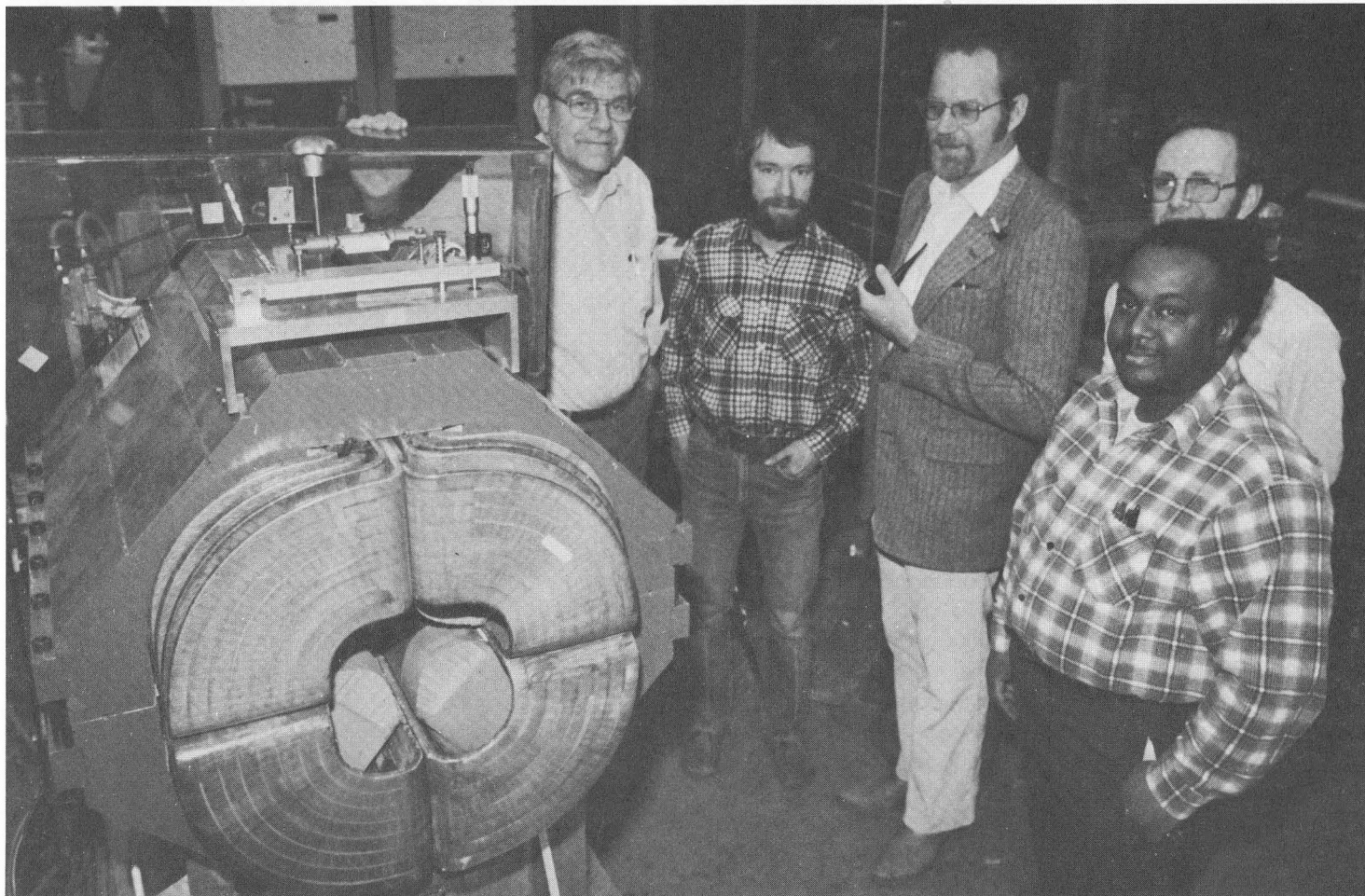


April 6, 1984

FERMI NATIONAL ACCELERATOR LABORATORY

FermiNews

ANTIPROTON MAGNET PRODUCTION UNDERWAY



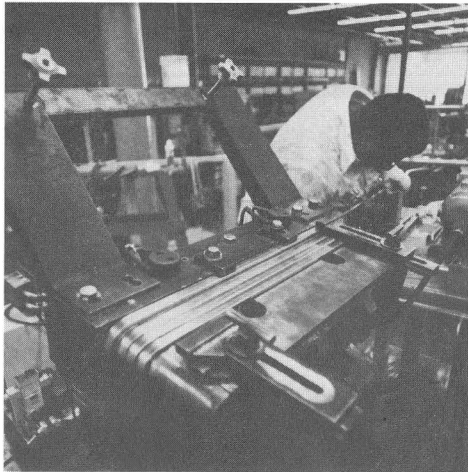
Finished Tevatron I quadrupole. Shown left to right are Fred Mills, Roger Bossert, Peter Mazur, Alan Wehmann, and Roger Cannon; not pictured are Bill Lord, Greg Cisko, Dave Hartness, Keith Dillow, Mike Roman, Shree Agrawal, Luann Smith, Rick Shenk, Kevin McGuire, Jim Pachnik, Julian Plymale, and Dennis McConnell.

Assembly of magnets for the Antiproton Source is underway at the Industrial Complex and at the Paramount Park facility. Jack Jagger and Joe Heim at the Industrial Center and Jim Humbert at Paramount Park are supervising this important work. In the near future, the larger magnets will be assembled in the B0 Assembly Hall as well. The magnets are being fabricated by the Technical Support Section of R. A. Lundy according to specifications given by Fred Mills and the magnet group of the Tev I Section. These magnets will be used in the Debuncher and Accumulator and in the beam lines leading to and from them. The Debuncher and Accumulator will be used to accumulate dense antiproton beams for collision with proton beams at energies as close as possible to 1 TeV in the Tevatron.

The Antiproton Source magnets have several unusual requirements. In order to satisfy these requirements, a prototype program is being carried out by Tevatron I and Technical Support. First, the magnets must operate at constant current. In order to minimize the total of fabrication and operating costs, a larger amount of copper is used than is typical in

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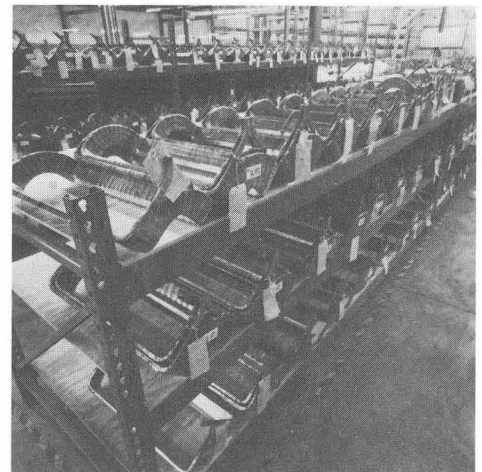
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Phil Hopkins bends coil copper for Tevatron I quadrupoles.



Sheri Smith (foreground) and Terry Bushman wrap Tev I quadrupole coils.



Finished Tevatron I quadrupole coils at the Paramount Park Facility.

Fermilab magnets, which reduces the amount of power used. Second, since the beam must be stored for many hours in the Accumulator, the precision of the magnetic field must be extremely high. Third, in order to accommodate injection, extraction, and stochastic cooling, the storage-ring lattice design poses severe restrictions on the magnets. The beam must be large at some places and small at others, dictating two types of dipoles and two types of quadrupoles of different apertures, small and large. In addition, in order to achieve the desired focal properties of the lattice and stability of the beam, each type of magnet must come in five precisely known lengths (with the exception of the large dipole). The requirements of magnetic-field and length precision demand a detailed understanding of the three-dimensional magnetic field at the magnet ends. To correct the undesirable properties of the field at the magnet ends, an end pack has been developed for each magnet. These are the principal goals of the prototype program. The program leads to an end pack for each magnet that carries all the necessary correction for the magnet and determines its effective length. At present, the prototype programs for the large and small quadrupole are complete and these magnets are in production, while the dipole prototype programs are underway.

Presently, of the 245 small quadrupoles, 110 have been fabricated, and coils for the remaining magnets are approaching

completion. Approximately 50 magnets are being fabricated per month, with assembly taking place at the Paramount Park facility. The magnets are taken to the Magnet Test Facility (MTF) for magnetic measurements. A modern, efficient measurement system has been built by Bruce Brown, Bob Peters, Dave Harding, Alan Wehmann, Mike Gormley and Arlene Lennox of MTF and Tevatron I. The measurements are performed by a dedicated measuring team led by Bill Lord. Three magnets a day can be measured. The data are available electronically to the Tev I physicists immediately, making it possible to accept or reject a magnet while it is still on the stand. Quality of the magnets has been high, with only several magnets outside of specification in the 100 magnets measured so far.

In addition, while the 400 standard magnets are being assembled and measured, another few hundred special Tev I magnets will be built. These are destined for such applications as the D0 overpass, the F17 extraction channel, and the injection and extraction lines in the Antiproton Source. These also include the correction elements for the Debuncher and Accumulator. The high rate of production of magnets is possible because of the tooling design by the Design and Tooling group led by Norb Engler and built by the Conventional Magnet Production group led by Jack Jagger. Nearly all the tooling is complete. These elements constitute the production which

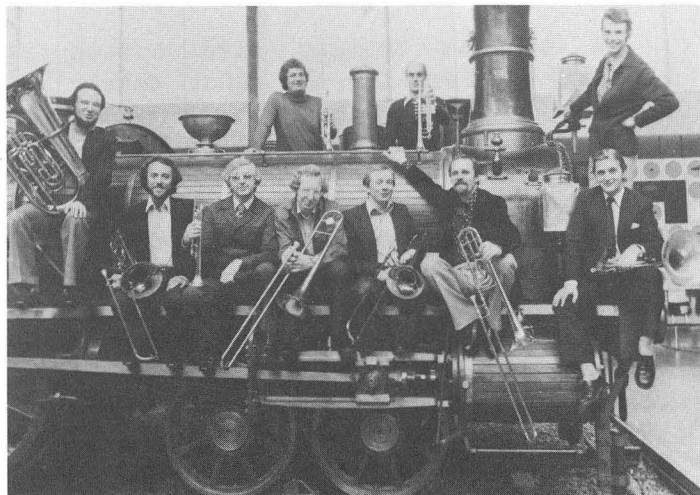
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PHILIP JONES BRASS EMSEMBLE BUGLES IN CONCERT

by Jane Green

At a recent Philip Jones Brass Ensemble concert in Toronto, the members of the Canadian Brass gave the PJBE a standing ovation. In London, the **Times** praised their "magnificently spirited playing," and the **Guardian** proclaimed that "They could justifiably call themselves the Rolls Royce of Brass Ensembles." The highly acclaimed ten-member Philip Jones Brass Ensemble was founded in 1951 and is based in London. On Saturday, April 14, at 8 p.m. this "incomparable" ensemble will appear in Ramsey Auditorium.

The Philip Jones Brass Ensemble's repertory embraces the music of six centuries, including innumerable works written especially for them. They have nearly forty recordings to their credit. In their concert at Fermilab, the ensemble will perform Michael Praetorius' "Terpsichorean Suite for Brass," Leonard Salzedo's "Divertimento for Trumpets & Trombones," Jan Koetsier's "Symphony for Brass, Opus 80," G. F. Handel's "Suite from the Water Music," Oskar Boehme's "Andante & Scherzo," and Jim Parker's "A Londoner in New York."



The Philip Jones Brass Ensemble

Philip Jones is a "first-rate" trumpeter and continues a family tradition of brass playing to the third generation. His ensemble, composed of four trumpets and trombones, tuba, and horn, includes England's leading brass players. Together, they represent a wealth of musical training and scholarship.

This evening of brass music is not to be missed—not only for the "stunning virtuosity" of the Philip Jones Brass Ensemble, but also for their "cleverness in making a concert into a real show." Admission is \$9. Tickets are available at the Information Desk in the atrium of Wilson Hall, ext. 3353. Reservations not paid for in five working days will be released for sale.

LAB SHARES SOCIAL SECURITY COST

by Chuck Marofske

Well over 35 million persons are currently receiving some type of social security benefits. It is likely that almost every family has a member, albeit an uncle, aunt, or grandparent, who is benefiting in some way from this fund. Whether individually we agree with the system or how it is run, social security has become an integral aspect of work life in this country.

I am sure that each of us views with some regret the monies deducted from our payroll checks to support this fund. However, we should all be cognizant that the support of this system goes beyond our own tax. In 1983 the Laboratory paid into the fund over \$3.5 million for its employees as the employer share of cost. That money is paid on our behalf and is a payroll cost and benefit of employment that we do not see in the process of cashing our paychecks.

The upward trend in the cost of this program has not stopped and in 1984 the deductions for Social Security for employee and employer have been increased. The wage base goes to \$37,800, and the tax rate increases to 7% (in 1983 the base was \$35,700, the rate was 6.7%). However, in 1984 there is a 0.3% tax credit for employees against their 1984 taxes; thus, the net amount which will actually be withheld from employees will be 6.7% of wages to \$37,800. Fermilab's contribution will be 7.0% of wages to \$37,800. The 7% tax is broken down into two tax rates—5.7% to Old-Age, Survivors, and Disability Insurance and 1.3% to Hospital Insurance. Under current regulations this will be the only year where there is a difference in the amount of tax paid by the employer and employee.

FERMILAB SPORTS NEWS

Golf . . .

Golf instructions will be offered to Fermilab employees if there is enough interest. The lessons will last 1 to 1-1/2 hours and will cost approximately \$5 a session. For further information, contact Helen McCulloch, ext. 3126.

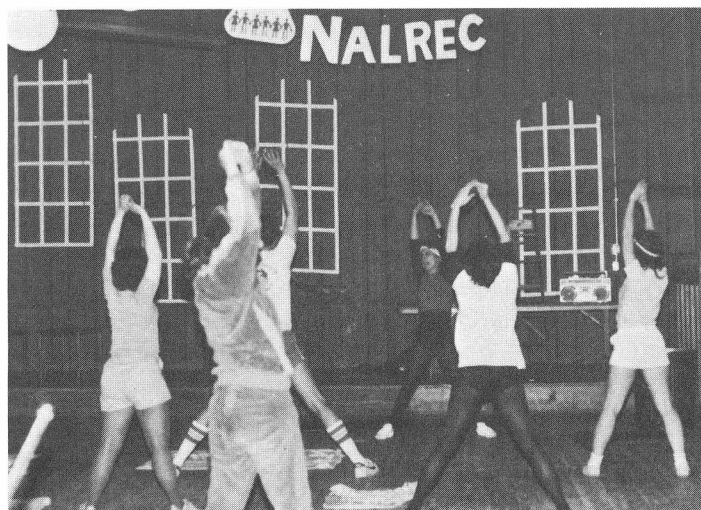
Sign up for the 1984 Fermilab Golf League, Monday, April 16, at noon in the WH1W Conference Room. Cost is \$12 per person. Sign up individually or as a 4-person team. For more information call Gene Dentino, ext. 3838.

Soccer . . .

There are portable soccer goals in the new gymnasium for indoor soccer. Wednesday evening from 5 p.m. to 7 p.m. has been scheduled for this activity for employees who have a Recreation Complex Membership.

Aerobic Exercise . . .

Men and women of all ages enjoy the aerobic exercise classes held every Tuesday and Thursday at 5:15 p.m. in the Village Barn. The price is \$3 per week (pay only one week at a time). For more information call Donna Powers, 357-0721



HOUSING OFFICE SEEKS SUBLEASES

If you are leaving the area for the summer, you may wish to sublease your home to a visiting scientist coming to the Laboratory. If you are interested, please contact Cheryl Bentham or Pam Naber, Aspen East, Housing Office, ext. 3777.

Fermilab is operated by Universities Research Association, Inc. under contract with the U. S. Department of Energy. Ferminews is published by the Publications Office, P. O. Box 500, Batavia, IL 60510, phone (312) 840-3278.

Journals, Texts Sought

In 1983, Fermilab twice asked for contributions of unwanted physics journals and textbooks to be given to universities in Latin America. The response was impressive, with over 100 full boxes of books collected; however, the need in Latin America for physics journals and textbooks is great, and we are again requesting donations. They should be taken to the Users Office, WH1E. For more information, call ext. 3111.

AUDUBON SOCIETY OUTING APRIL 8 by Dave Carey

Ever see a white-fronted goose? Very few people in Illinois have. The best chance to see one will be Sunday, April 8, at 9:30 a.m.

An Audubon Society bird outing is scheduled at Fermilab for that time. We will meet at the east entrance under the arch and spend the morning exploring the lakes and trees south of Batavia Road. We hope to see many varieties of ducks and geese, including teal, mergansers, wood ducks, wigeon, black ducks, and Canadian geese, plus possible phalarope, herons, great horned owl, and red-tail hawks. Bring your binoculars and bird book. For further information, call Dave Carey, ext. 3639.

TEV I MAGNET PRODUCTION NEARS END

(cont'd. from pg. 2)
fills Paramount Park, Industrial Center, Industrial 1 and 2, and soon the east addition of B0.

At the current rate of production, all of the standard magnets will be finished by the end of the summer. If all goes well, the Antiproton Source will be ready for installation of magnets as the magnet production is coming to an end. By fall, the installation of the magnets and vacuum system will be proceeding rapidly. All of these are important milestones on the way to proton-antiproton collisions.

Reminder . . .

Dr. David L. Waltz will speak on "Artificial Intelligence, Society, and the Individual" on Friday, May 4, at 8 p.m. in Ramsey Auditorium.

CLASSIFIED ADS TO BE DISTRIBUTED WITH **FERMINES** APRIL 6, 1984

FOR SALE
HOUSE:

THREE-BEDROOM BRICK/FRAME SPLIT LEVEL IN WINFIELD. Large kitchen, living room, family room w/fireplace, 1-1/2 baths, 2-car garage, energy efficient, dark oak floors, whole-house fan, nicely decorated and landscaped, all appliances stay, Wheaton schools. \$72,000. By owner, Rod, ext. 4460 or 665-3369.

AUTO:

1981 PLYMOUTH HORIZON. 4-door hatchback, 4-speed, 34,000 miles. \$3,300. Call Carl Ohrn, ext. 3719 or 469-4512.

CYCLES:

1980 HONDA CM 400T. Looks great, runs better, new tire, brakes, clutch, and cables. Best offer. Call John Voirin, ext. 3555 after 3 p.m. or 820-1258.

1978 YAMAHA DT 175E ENDURO. 6-speed transmission, monoshock, electronic ignition, excellent condition, 6,000 miles, road legal. \$600. Call Bruce, ext. 3712 before 3:30 p.m.

MISC:

RADIAL ARM SAW. Craftsman 10-in. with table, sawdust collector, and assortment of blades; excellent condition. \$350. Call Ralph Niemann, ext. 4896.

BUCKSKIN FILLY HORSE. 1 year old, halter broke, excellent temperament. On site stall space available for \$10/month. \$350. Call Mark Oropeze, ext. 4596.

TOP PEDIGREE CH. SIRE DOBERMAN PUPPIES. Reds, blacks, and one blue; show and pet quality, backgrounds have all been in the top 20; 1 2-yr old female, very good temperament. Call Edie Loskot, 393-3357 days or ext. 3621 4:30 p.m. - 1 a.m.

AKC LABRADOR RETRIEVER PUPPIES. Males or females, black, excel. temperament, conformation, and intelligence, first quality companions, best in midwest for show, field, or home, sire was "Best of Breed" at October International Show. Call Dennis Sieh, 665-3454 evenings or weekends, ext. 4605 or 4673.

WANTED:

SUBLEASERS FOR SUMMER. If you are leaving the area for the summer, you may wish to sublease your home to a visiting scientist coming to the Laboratory for the summer. If you are interested, please contact Cheryl Bentham or Pam Naber, Aspen East, Housing Office, ext. 3777.

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WANTED:
(cont'd.)

FOLD-DOWN TENT CAMPER TO RENT. Needed last half of June. Call Ken Sievert, ext. 4050 or 985-3188.

EGG INCUBATOR. Must be able to hatch goose eggs. Call Ernie Ernsting, ext. 3254 or 4389 or page 642.