

NAL EXPERIMENT SEARCHES FOR MAGNETIC MONOPOLE

Some of the experimental work being done at the National Accelerator Laboratory continues lines of scientific thought that have been a part of man's intellectual aggregate for many centuries. Democritus in Greece four centuries before Christ, the Aristotelean theories, and, in some sense, many years of the mysticism of alchemy -- all have been part of the train of thought which searched in depth for an understanding of the internal structure of all matter.

Speculations concerning the possibility of magnetic monopoles are undoubtedly some of the oldest elementary particle ideas around today. The first compass came into use in the 1200's, described by one Peter Peregrini as having "a north pole and south pole." The burst of intellectual thought in the 1800's brought Faraday's explanations of magnetism along with Clerk Maxwell's equations describing the inter-relationship of electricity and magnetism, but raising one question which exists to the present: Complete symmetry between electricity and magnetism could exist if there was a particle with a magnetic pole (a magnetic monopole) comparable to a particle which has one electric charge.

In the flurry of a scientific discovery since 1800 and the tidal wave of accompanying technology, ideas about the possibility of a magnetic monopole have been considered but the hunt was not vigorously pursued. Recently, new speculations have been made about the possibility of a magnetic monopole. A search of deep ocean sediment in 1969 as well as a study of samples of moon rock in 1970 failed to find any magnetic monopoles, but did not diminish interest in its possible existence.

The NAL accelerator has offered Frank Nezrick, R. Carrigan and B. Strauss an opportunity to begin the search at NAL for the magnetic monopole. The high intensity of the NAL machine gives a much higher flux of protons than the cosmic rays in the natural material used by experimenters up to now.

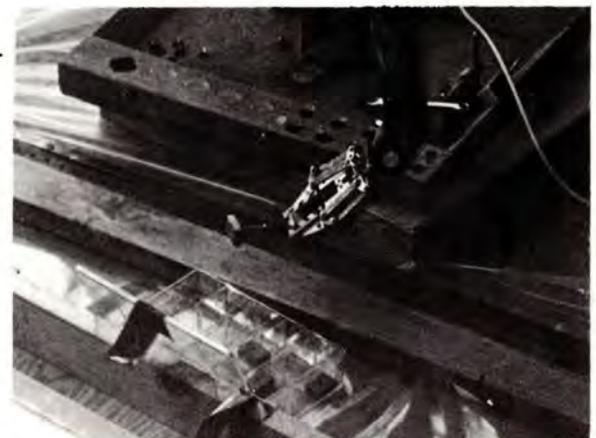
In a report to the American Physical Society meeting in Washington in April, Nezrick said, "The experiment is simple in conception. The proton beam strikes an iron beam 'dump.' Any magnetic monopoles that are created stick to the iron because of magnetic attraction. Later the dump is exposed to a powerful superconducting electro-magnet which is strong enough to rip the monopoles away from the iron and accelerate them through a series of



...B. Strauss at monopole experiment facility posted with Peregrini's 13th century pole description...



...Remote control target handler operated by Bob Oudt, Neutrino Section...



...Electronic fingers pick up targets, place them in boxes...

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SEARCH FOR MAGNETIC MONOPOLE (Continued)

special electronic counters where they are identified and recorded."

About fifty 3/8" X 1" X 1 1/2" target blocks were exposed for 161 hours in Phase I of this experiment at 300 BeV. The experimental equipment was then dismantled and a portion brought to the Village which contained the exposed targets. Because these targets were radioactive, the situation was used as an opportunity for the Target Handling group to demonstrate its ingenious device with electronic fingers for handling radioactive equipment. The device permits an operator to remotely handle radioactive material. The electronic robot daintily picked up the targets, and then placed them in boxes which could be moved to the detector equipment.

In a tense, exciting two hours, Nezrick, Carrigan and Strauss, working along with M. Otavka, fed the targets through their detecting equipment and in the tradition of the scientists who have passed before us, watched for evidence of the elusive particle.

No magnetic monopoles were found in this first phase of the experiment. Targets collected during a 400 BeV run have yet to be analyzed. Further exposures are planned in the Neutrino Laboratory with even longer proton runs.

"If a monopole is there, we have an excellent chance of finding it," Nezrick feels.

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17-YEAR PERIODICAL CICADA DUE SOON

The NAL site, at the end of May and early in June, will likely be part of one of the "common-place miracles of nature," the emergence of the 17-year periodical cicada (often mistakenly called "locust").

About 1 1/2 inches long as adults, the cicadas begin as eggs which the adult female lays in slits she cuts in twigs of trees. The eggs hatch in about 7 weeks; the tiny white worms (1/12" long) drop to the ground and work their way down into the soil where they attach to a tree rootlet to suck sap which sustains their slow growth for the next 17 years.

Late in the 16th year, the nymph begins to construct a vertical escape tunnel which brings it to the surface in the spring of the 17th year. On a warm night, the nymphs emerge, climb up a tree trunk and in a 30-90 minute period, split their skin and emerge as a red-eyed winged adult insect. A few days later, male cicadas (females are voiceless) begin singing their mating choruses in the tree tops. Within 3 weeks the cicada life cycle is completed, new eggs have been laid, and the programmed lives begin again.

The numbers of cicadas emerging can be astonishing, and their singing can be loud enough so that two people in a cicada-infested forest cannot hear each other talk face to face. As many as 133,000 holes per acre in dense forests have been measured in a Chicago area emergence; as high as 1 1/2 million per acre in one floodplain. The weight (biomass) of the cicada population is calculated to be the highest recorded per unit of habitat for a terrestrial animal under natural conditions. Only the herds of Africa temporarily achieve greater biomass per unit area.

An exhibit now in progress at the Field Museum of Natural History in Chicago includes a reproduction of the distinctive cicada chorusing. An article on the 1973 phenomenon by Henry Dybas, Curator and Head of the Division of Insects at the Field Museum, who is one of the country's leading experts on the cicada, appears in the May 1973 issue of the Museum's Bulletin which may be obtained at the NAL Library.

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THEATRE PARTY JUNE 1

Tickets for one of the last performances in the Chicago area of Jesus Christ Superstar are now available from Marilyn Paul, 31 Blackhawk, Ext. 3453. The tickets are for the Friday, June 1 performance at the Auditorium Theater in Chicago at 8:00 p.m. Bus transportation could be provided at no extra charge if enough people want this service. The bus would leave from the NAL Village at about 6:30 p.m. Please indicate your desires on this matter when tickets are purchased.

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MARK YOUR CALENDAR...Saturday, June 9 - 7:30 p.m. - HOE DOWN in The Village Barn. Instruction by caller Rex Stern. Refreshments.

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...John Burdette, NAL Small Business Representative interviewing Al Inwood (R) of Calumet Carton Company at Chicago Fair...



...Roy Rodriguez (right), NAL-EEO office chatting with a visitor at Business Opportunity Fair in Joliet...

NAL participated in the sixth annual Chicago Business Opportunity Fair held May 11 and 12 at the Conrad Hilton Hotel, Chicago. The Fair, sponsored by the Chicago Minority Purchasing Council and hosted this year by the Continental Bank of Chicago, seeks to stimulate business between minority businessmen and purchasing representatives from major Chicago companies. The minority suppliers visit booths at the Fair which are staffed by company representatives; the person-to-person visits allow an exchange of information with benefits for both parties. About 500 prospective suppliers were interviewed by NAL staff members. Representing NAL at the Chicago Fair were Al Adkins, John Burdette, Mike Hall, Jim Jenkins, Randy Lenz, and Bill Riordan of NAL Procurement, and Warren Cannon of Equal Employment Opportunity Office. Burdette and Roy Rodriguez of EEO travelled to Joliet on May 16 to interview some 125 prospective suppliers from that area at the Joliet Business Opportunity Fair.

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1973 BOWLING CHAMPS

The NAL Mixed Bowling League ended its season on Friday, May 11, with its 5th Annual Bowling Banquet held at the Back Door Restaurant in West Chicago. The 1973 League Champion team crowned at the banquet was "What You See." Team members were Mike Wilks (captain), Susan Misek, Theo Gordon, Jim Edwards, all of the Accelerator Division, and Jim Schluchter. The runner-up team was "Beer Bottles." Barbara Schluchter (Energy Doubler), Ron Davis (Neutrino), Hal Satter and Doug Maxwell (Accelerator Division), and Gene Stark (Plant Maintenance), lost to the championship team in a split-season playoff on the final night of bowling.

Individual awards presented at the banquet were for Most Improved female bowler to Claudia Slater (Village Crier Office); Most Improved male bowler, Hal Satter (Accelerator Division); High Handicapped Series to Bill Fray (Machine Shop) and Harland Gerzevske (Accelerator Division) with tie score of 645; and High Handicapped Game of 266 (256 scratch) to Gerzevske.

Anyone interested in participating in the next bowling season may express interest to the new league officers: Gerzevske (President); Stark (Vice President), Barbara Hill (Secretary/Treasurer), and Bill Fray (Corresponding Secretary).



...Ed LaVallie (far right), Proton Section, Bowling League president, presents trophies to members of championship team. (L-R): J. Schluchter, J. Edwards, S. Misek, and M. Wilks. Missing from pic is T. Gordon...



...Second place team members and individual award winners: (L-R, back): C. Slater, H. Gerzevske, B. Fray, G. Stark, R. Davis, H. Satter. Front: D. Maxwell and B. Schluchter...

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FUN IN THE SUN

The National Accelerator Laboratory's Recreation Committee (NALREC) encourages all employees and visiting experimenters to take advantage of the various items of sports and recreational equipment available at the Personnel Office, 21 Sauk in the NAL Village. Canoes (please reserve ahead of time, there is a waiting list), baseballs and bats, volleyballs, squashballs and rackets, horseshoes and handballs are all at the disposal of the employees. The "Little Sunflower" sailboat, housed in the Anderson Barn, may be used in the waters on site ONLY, and should be reserved ahead of time. For additional information, call Personnel, Ext. 3396.

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ARGONNE CREDIT UNION SHARES INSURED

The Argonne Credit Union has qualified for federal insurance of members' share accounts (up to \$20,000 each), John Chonko, Manager, announced recently. Similar to insurance available to banks and savings and loan organizations, the credit union share insurance program is administered by the National Credit Union Administration, an independent agency of the Federal Government. It is authorized by legislation effective for the first time in January 1971.

The Argonne Credit Union was chartered in 1949. With a membership of 5,600 among ANL, NAL and AEC-CH, and with assets of \$6.5 million, it will pay a premium of \$4444.85 for its insurance this year - 1/12 of one percent of its share accounts, the same fee paid by all credit unions, state-chartered or federal. By law the insurance is mandatory for the latter, optional for the former, Chonko advises.

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EMPLOYEE IDENTIFICATION CHANGES

Employees who have changes to be made in their I.D. cards should contact Ralph Wagner, Personnel, Ext. 3324. New I.D. cards are issued on Monday and Thursday of each week.

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A REMINDER...NAL will observe Memorial Day on Monday, May 28, and Independence Day on Wednesday, July 4...There will be no issue of THE VILLAGE CRIER on Thursday, May 31.

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CLASSIFIED ADS

FOR SALE -- 1967 Chevy Impala Super Sport convertible, 396, 4 speed - \$650. Call Richard Diehl, Ext. 3701 or 892-2166.

FOR SALE - 1972 MG Midget, 5000 miles. Console, 4 speed, radial tires, mag wheels, burnt orange-black convertible top. Excel. Condition, \$2150. Call John Middleton, Ext. 3555.

FOR SALE - 1969 Honda 350 CB style, clean, perfect cond...\$575; 1 yr. old Heath Kit Boonie Bike, 5 hp., 2 spd., with ski...\$170; two Goodyear G78-14 tires, \$20; Coleco 12' x 3' deep pool, ladder, filter, chemicals, etc...\$40. Call Robert C. Trendler, Ext. 3157 or 968-0516.

FOR SALE -- 1969 Toronado in excellent cond. Reasonable. Call M. Kampikas, 879-8588.

FOR SALE - 1964 Plymouth sedan, excel. cond., \$150; playpen, high-chair, day bed, large dining room drop leaf table. Call David Gordon, 393-9144.

FOR SALE - 8MM Movie Projector: F 1.6 Zoom lens, 400 ft. capacity, 500 watt. Excel. Condition, \$50. Call R.C. Niemann, Ext. 3156 or 964-3079.

FOUND - A set of General Motors car keys (left in Receiving Area), and others. Call Jack Riffel, Ext. 3575.

FOR SALE - Electric Trolling Motor (Pelican brand), off-on switch w/9 spd. rheostat heavy cast skeg motor housing, \$69.00; Sears girls 20" Spyder Bike, \$29. Call H. Barber, Ext. 3391/448-8640.

FOR SALE - Stereo system, KLH Model, 6 speakers, Kenwood receiver Model 3130, Garrard turntable, \$475. Call Roger Wyrick, Ext. 3721 or 585-3285.

FOR SALE - Double bed frame & mattress, \$25; matching night stand, \$25. Call Tom Humphrey, between 1-9 p.m., 879-1942.

FOR SALE 1970 Galaxie Mini Bike, 4 h.p., good condition- \$75 or best offer; WANTED: Mini Trail Bike, 50cc or larger, or would trade. Call Art Streccius, Ext. 3788 or 392-4905.

FOR SALE - 3-4 Bedroom house with 2 baths, Batavia - Woodland Hills. Beautiful 0.8 acre lot with mature trees. Call Bryant Lemon (DUSAF), 879-2379.

WANTED - 24" boys bike. Good Condition. Call R. Donaldson, Ext. 3278.

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