

The Village Trier

 national accelerator laboratory

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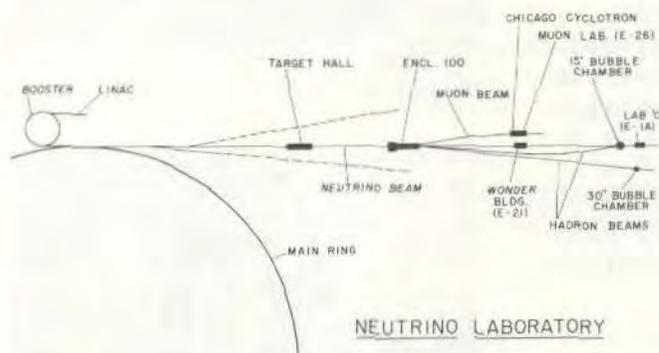
Vol. 4 No. 18

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PROGRESS REPORT - APRIL 24 THROUGH APRIL 28, 1972

The Main Ring was again accelerated to 200 BeV from 6:30 p.m. to approximately 9:30 p.m. on Wednesday, April 26. Much time was spent studying beam orbit. Accelerator studies will continue after a 1-day maintenance shut down.

NEUTRINO LAB READIES FOR BEAM



...Schematic layout of NAL Neutrino Laboratory located parallel to Road A-1 extending north-easterly from the footprint area...

...Inserting target train into target tube of Neutrino Lab. (L to R): A.J. Bianchi, J. Guerra, D. Carpenter, G. Krafczyk, J. Simon, L. Read...

The pursuit of the elusive neutrino particle will be one of the liveliest races on the NAL program. Capable of going through the entire earth without interacting with anything, the weightless neutrino can be observed only when a great number are present. The high energy and intensity of the NAL beam will produce an abundance of neutrinos of high enough energy to permit study of the so-called "weak interactions."

The NAL Neutrino Laboratory will provide the facilities for this study. In the Target Hall of this Laboratory, the proton beam from the Main Ring will smash into a miniscule target -- a tiny rod of aluminum measuring .1 inch by .2 inch -- and this collision will break up the nuclei of the target. The debris of this crash results in formation of pi mesons and k mesons, with a lifetime of 1/100 millionth of a second. Their death, or decay, in turn produces the neutrino.

The Neutrino Laboratory runs along Road A-1, one mile in length. In this vast expanse of facilities, staff members have been working diligently for the past two years on the construction of four beam lines and the conventional facilities that will carry neutrinos and muons (another particle produced as a by-product of neutrino production) to experimental halls.

A 6 ft. diameter target tube, buried under 30 feet of earth shielding, is the main feature of the Target Hall. The neutrino targetting system consists of a 200-ft. long arrangement of magnets and detectors, in the heart of which is the tiny aluminum rod that is the actual target. The entire array is mounted on a narrow-gauge railroad train on a

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NEUTRINO LAB READIES FOR BEAM (Continued from Page 1)

track built into the tube so that the target may be inserted into the tube during operation or may be withdrawn into the tunnel of the Target Hall to be worked on.

Next in the Neutrino Laboratory line is a 1300-ft. long, 3 ft. diameter vacuum pipe. In this pipe the neutrinos are born, in the decay of pi and k mesons following the collision of the beam on the target.

From here, various magnets, power supplies, control stations and particle detectors located in twenty small buildings along the neutrino line guide the newborn particles to the appropriate experimental area. Two neutrino experiments, Experiment 21, an NAL-CAL Tech group, in the Wonder Building, and Experiment 1A (a collaboration of Harvard, Penn. and Wisconsin) in Building C of the Bubble Chamber area, are presently set up and ready to take data. One muon experiment, Experiment 26 (involving Cornell, Michigan State, and University of California, San Diego) is ready to register beam. Running the entire length of the Neutrino Laboratory are two lines that will carry charged particles to the 30-inch Bubble Chamber (known as Beam N-3) and to the future 15 ft. Bubble Chamber (designated as Beam N-5). The N-3 beam line is the focal point of current efforts, getting it ready to accept protons from the Main Ring, target them, and deliver sorted and tagged particles to the appropriate experiment.

Physicist Timothy Toohig, has directed much of the development of the Neutrino Laboratory. His group was merged last week with the Bubble Chamber group and the combined section is headed by William Fowler. Dr. Toohig explained for THE VILLAGE CRIER the organization that has been responsible for the Neutrino Laboratory:

"Preparation of the area has been an ecumenical effort involving many people and groups," Dr. Toohig reports. "Staff physicists are Joe Lach, Frank Nezrick, Ray Stefanski, Yong Kang, Stan Pruss, Taiji Yamanouchi, with collaboration of Al Maschke, Les Oleksiuk, and with Phil Livdahl in the Godfather role. Jim Sanford developed key concepts for the area.

"The core group of the installation effort has been Frank Krzich, Reid Rihel, Leon Beverly, Max Palmer, Wayne Nestander, Russ Winje, Jan Wildenradt, Don Carpenter, John McCarthy, Gene Woods, Jim Walker, Jack Lindberg, John Simon, and Frank Mallie," Dr. Toohig explained.

"Essential to the whole effort are the Controls Group under Bob Daniels, and the Alignment Group under Bill Testin. Tom Pawlak was the DUSAF representative."

He continued, "Miguel Awaschalom and his stalwart staff have kept us always honest radiation-wise, and, finally, Gimny Linquist has kept typing typed and the coffee warm."



...Target in Neutrino Lab that will receive proton beam from Main Ring...



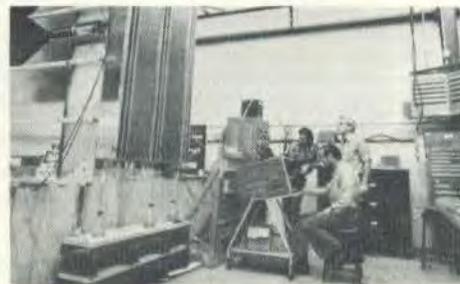
...Jack Lindberg at target train in Target Hall...



...Frank Krzich at water cooling system of Neutrino Laboratory...



...Stewart Loken, Exper. 26, Muon Laboratory Building...



...Exper. 1A -- Fred Messing, Ed Mayer, A. K. Mann...

Photos by Tim Fielding, NAL

"NAL IN TRANSITION" --- Boyce McDaniel

"We're in a transition phase," Dr. Boyce McDaniel observes, "between construction and operation. Our most important job is to make our machine run at its design specifications. Each day we know more than we did yesterday and we know with a little more certainty what's going to happen tomorrow."



...Boyce McDaniel...

Dr. McDaniel's cautious optimism characterizes the current attitude of the NAL Accelerator Section. Under Dr. McDaniel's leadership, this group is now faced with such challenging tasks as achieving regular, effortless acceleration, with raising beam intensity by a factor of 1,000, and then with extracting a high quality beam to the experimental areas. "The job we have now is much less glamorous than reaching 200 BeV for the first time, but it is certainly just as important," he says.

Dr. McDaniel and his wife, Jane, came to NAL on leave from Cornell University where he heads the Laboratory of Nuclear Studies. He has been associated with Cornell since 1938 except for a time at Case Western Reserve University (1938-1940), a year at the Radiation Laboratory of MIT, and three years at Los Alamos (1943-45). He was appointed assistant professor of physics at Cornell in 1945, professor in 1956.

The McDaniels are living at Surrey Hill in St. Charles during their stay here. Mrs. McDaniel is doing volunteer library work at Streamwood Jr. High School. A daughter, Gail, is assistant professor of mathematics at Cheney State Teachers College in Pennsylvania. Their son, James, is teaching science at a state Indian school on Lesser Slave Lake, Alberta, Canada.

Dr. McDaniel brings to NAL a working knowledge of synchrotron development, gained from 25 years' experience in this field at Cornell where a progression of electron synchrotrons has been built, beginning with a 300 MeV machine, and including the first machine to apply the strong focusing principle. Cornell's 10 BeV electron synchrotron, completed in 1967, is the largest in the world.

Dr. McDaniel has done experimental work, as well as development, but he says, "I'm here at NAL primarily to help get this complex system running."

This phase of NAL development will probably see the permanent operating structure emerge, he feels. "I have found the people here to be remarkably cooperative and responsive. That will certainly make it easier to get the job done."

NAL ON CHANNEL 7 MONDAY, MAY 8TH

"Perspectives", an uninterrupted 30-minute conversation program produced by The University of Chicago and WLS-TV (Channel 7) will present a discussion titled, "The National Accelerator Laboratory at Batavia", at 6:30 a.m., Monday, May 8, 1972.

Participating will be Timothy E. Toohig, Associate Section Head, NAL Neutrino Laboratory; Richard A. Lundy, Section Head, NAL Meson Laboratory; and James W. Cronin, professor of physics The University of Chicago and Enrico Fermi Institute. Ranlet Lincoln, Dean of University Extension at The University of Chicago, is the moderator. Dr. Cronin is also a member of the NAL Program Advisory Committee.

NAL FEATURED BY SCIENCE FAIR WINNER

John Sherman, 12-year old son of John Sherman, Security, this week demonstrated for Donald R. Getz, NAL Assistant Director, the science project that won him a first place blue ribbon at the Science Fair of Holy Angels School in Aurora. Using an ingenious assortment of everyday materials to depict the path of the NAL beam, the display reflects the lightning speed of the beam.



Photo by Tim Fielding, NAL

NEWS FROM NALWO

BRIDGE - A Bridge Luncheon will be held on Thursday, May 18th, at 12:30 p.m. at the home of Mary Fray, 423 Woodward, Geneva. Call Mary, 232-0724, if you plan to attend.

PLAYGROUP - A new climbing dome and kitchen set are now in use at NALWO's cooperative playgroup on Eola Road. Children from 1½-4 years are invited to participate. Please call Ann Gordon, 393-9144, and arrange to visit with your child soon.

MENDELSSOHN'S "ELIJAH" TO BE PRESENTED

Interested persons are invited to hear Mendelssohn's "Elijah" at the First Presbyterian Church of Glen Ellyn, Sunday, May 7 at 9:30 and 11:00 a.m. Jim Buffenmeyer, NAL Technical Services, will sing the role of Elijah.

SUMMER JOB OPENINGS ANNOUNCED

A limited number of summer job opportunities for the sons and daughters of NAL employees will be available this summer. Work assignments will be varied with the bulk of the jobs being in grounds maintenance. All applicants must be 16 to be considered. Applications may be obtained at the Employment Office, 21 Sauk, and questions may be directed to William Butler, Ext. 324. Applications will be received through May 12, 1972.

MARK YOUR FAMILY CALENDAR!

Sunday - May 13 - NALREC Family Roller Skating Party - Parkside Roller Rink, Montgomery Road and Business 30, Aurora. 7:30-10:30 p.m. Admission Charge, \$1.00 plus 50¢ skate rental. Call Sharon Nila, Ext. 585, for reservations in order to get group accommodations.

Sunday, May 21 - 7:00 p.m. - NAL International Film Society will present an evening of short silent movies. Five films, including stars such as Chaplin, Keaton, Langdon. Great chance for the kids to see some good silent pictures.

* NAL'S ARBOR DAY PLANTING, TWICE-POSTPONED, WILL BE HELD AT NOON, FRIDAY, MAY 5, *
* RAIN OR SHINE!! *

REMEMBER: CREDIT COSTS LESS AT YOUR CREDIT UNION.

CLASSIFIED ADS

PERSONS INTERESTED IN 12" FAST PITCH SOFTBALL: Call Larry Sobocki, Ext.501 as soon as possible.

FOR SALE - '63 F85 Stick Station Wagon \$275 or best offer. M. Kampikas, TR 9-1712.

FOR SALE - '71½ 350 CC Honda CB \$750, Contact Doug in Survey, 879-2900.

FOR SALE - '57 Harley-Davison sportster, mild chopper, 4" ext. forks, new paint, rebuilt engine, good tires, needs assembly, \$575 or best offer. J. Houkal, Ext. 795 or 969-2579 evenings.

FOR SALE - '71 Toyota Mark II Wag., Auto., AM-FM, Bal. of warrenty, \$2,450. Bill McCaw, Ext. 279.

FOR SALE - '68 VW Bug, excel. cond. \$1,000; F. Krzich, Ext. 737.

FOR SALE - Kroehler bedroom set, blonde, 5 pcs., excel. cond. best offer. R. Kolar, Ext. 236 or 815-436-3963.

FOR SALE - 45 lb. 28" draw wildcat bow w/quiver \$25; 7x50 binoculars w/case \$15; auto vacuum cleaner & auto buffer, 12 AC current \$5 ea.; Ron, 879-2900 (Surveys).

FOR SALE - Gravely tractor w/rotator plow, sickle bar, snow plow & cultivator \$150; riding lawn mower \$25; elec. air compressor \$20; 5 HP fishing mtr. \$25; 3/4" drill \$20; 42" long metal brake \$35; set oxygen & acetylene gages \$40; cement mixer, elec. \$35; hand cart \$5; George Doyle, Ext. 421.

The Village Crier is published by the Public Information Office of the National Accelerator Laboratory. Margaret M.E. Pearson, Editor. Correspondence may be directed to the address below. Telephone number of the Laboratory is 312-231-6600.

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