

# FERMI NEWS

 Fermi National Accelerator Laboratory

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## RELOCATED TREATMENT PLANT POLISHES MAIN RING WATER

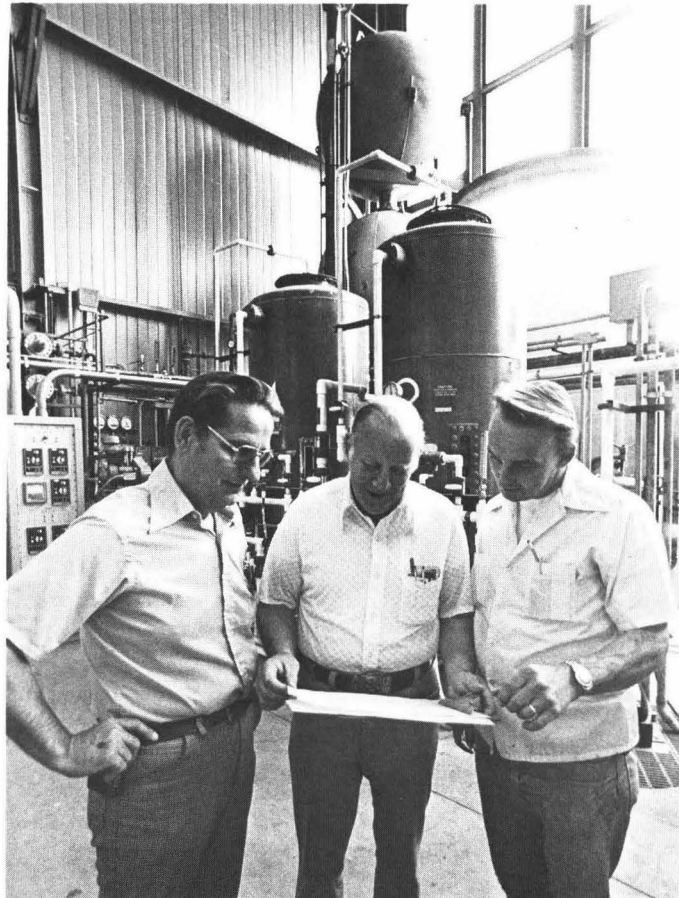


*...BEFORE... Frank Krzich checks the two ion exchange tanks when they were moved last winter into Central Utility Building...*

"It's one of those parts of the accelerator that an experimenter never knows about unless it quits working correctly. And we hope that never happens."

Roy Rubenstein, project physicist, was talking about the Main Ring deionizing plant. It recently was moved from the B-0 service building to the northwest corner of the Central Utility Building, given a new look and a more sophisticated electronic brain.

"With this opportunity, we upgraded the system in order to make servicing simpler, improved its safety features and added additional monitors and controls," said Rubenstein, who is on leave from the Accelerator Division and now is serving as the



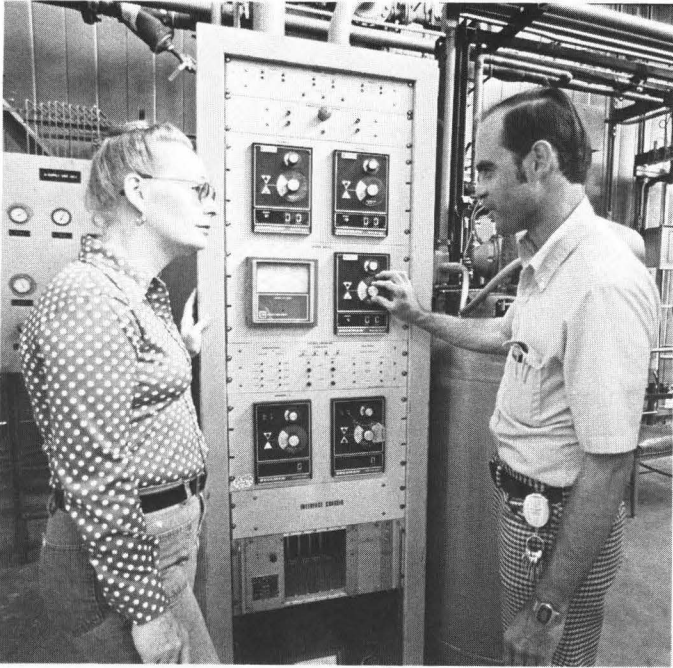
*...AFTER... (L-R) Frank Krzich, Max Palmer and Terry O. Svejda review flow charts of finished plant, seen behind them...*

Laboratory physicist for recruitment coordination.

Installed originally in 1972 at building B-0, the water treatment plant, also called deionizing plant, "polishes" the water that circulates through the Main Ring magnets carrying away unwanted heat as well as unwanted aluminum and copper ions that have dissolved into the water. It is primarily these ions that increase the conductivity of the water and must be removed by an ion exchange process in the deionizing plant.

There are major reasons for this, explains Max L. Palmer, head of the Mechanical Support Group, Accelerator Division, (Continued on Page 2)

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...Sue Barnhill and Dick Biber examine the master control panel for the plant...

and who is responsible for the smooth operation of the deionizing plant.

"The Main Ring magnet cooling water needs to have low conductivity--that is, high resistance to the flow of current--because we want the magnet excitation currents to pass through the magnet coils and not through parallel conducting water paths," he said. "With low resistance water (water with too many ions), electrolysis can take place where large voltage gradients occur, such as at the ceramic insulators. This electrolysis can cause erosion and subsequent failure of the adjacent metals."

The deionizing is done in two ion exchange columns (units 1 and 2 in the photographs on page 1). Approximately 130 gallons of low conductivity water flows through the columns each minute. As it is processed, the resistance climbs from three million ohms per centimeter to more than 12 million ohms per centimeter. After about three weeks, a column loses its effectiveness and has to be regenerated by using hydrochloric acid and sodium hydroxide, said Palmer.

He likened the plant to a water softener found in a house, and regeneration to replenishing the softening material.

The plant also has a 4,000-gallon reservoir (the spheres in the background of the photographs on page 1). They hold the reserve of deionized water that replaces

#### EINSTEIN CENTENNIAL EXHIBIT

The Einstein Centennial Exhibit opened at Fermilab Aug. 1 and will continue through Aug. 31.

It is free to the public and open from 8:30 a.m. to 5 p.m. seven days a week in the 1-West Conference Room, Central Laboratory. At the same time, the film "Albert Einstein: Education of a Genius" will be shown at 11 a.m. and 3 p.m. The exhibit and film provide an in-depth look at Einstein and his works.

water lost to leaks in the Main Ring and also makes up for the volume changes caused by expansion from heating.

Credit for much of the plant's sharp appearance and efficient arrangement, Palmer said, goes to Frank Krzich, operations specialist in charge of the accelerator water system, and to Terry Svejda, a senior technician who assisted him.

Palmer also has considerable praise for the electronics system that gives the plant operators more control and monitoring ability than they had before the plant was moved and redesigned. Dick Biber, technical specialist, designed the electronics, and Sue Barnhill, a technician, assisted him.

For example, the system can sense small changes in conductivity, alert operators at the plant as well as in the main control room in the Cross Gallery, and, if necessary, it can shut the flow off automatically if the conductivity climbs to unacceptable levels.

"The new control system leaves no doubt about what is happening in the deionizing plant," said Krzich.

"And bad water has less chance now than ever before of being circulated through the Main Ring magnets, thereby lengthening their life and reducing the likelihood of failures and Main Ring shutdowns," added Biber.

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ENERGY CONSERVATION THOUGHT...

"Ten percenters for gasohol--unite."

Earl Voss  
DOE Headquarters

CLASSIFIED ADS FOR DISTRIBUTION WITH FERMINES AUGUST 2, 1979

FOR SALE: Rocker, maple finish, \$20.00; Lane Cedar Chest, limed oak (blond) finish, \$60.00. Call 584-2154.

Sherwood S-7110A AM-FM Stereo receiver, 22 watts per channel, very good condition. Call 355-2440.

2-15" Dodge rims with tires, \$10.00  
 2-E78-14 snow tires mounted on Ford rims, \$25.00  
 1-14" Ford rim with tire, \$5.00  
 Call James Biggs, Ext. 4421.

2 Regular Firestone 14" tires; 2 wide oval Firestone 14" tires; excellent condition. \$200.00, or best offer. Call Jon Kerns, Ext. 3013 or 469-7463.

Sony TC-10 car stereo tape player with quick disconnect mounting bracket, \$75.00. Call Rich Parry, Ext. 4438, or 879-8987.

Sears white enameled aluminum guttering, various lengths totalling approx. 103 feet, \$20.00. Wards 10' x 20' white enamelled aluminum patio cover, never used, \$100. Call 964-0185 after 6 p.m.

Ford 351 Cleveland motor, \$150.00. Call Jack Smith, Ext. 4455.

1973 Dodge Charger; 2 dr. Hard top; V8; AM/FM; PS; PB; AT; Excellent condition; 68,000 miles. \$1450 or best offer. Call ext. 4882 or 554-8849 after 6 p.m.

1970 Buick LeSabre; 4 dr., radio, AC; Good tires, \$250. Call Ward, Ext. 3478/4078 - leave message.

1976 Ford F-100 pick up truck; 300 C.I.D.; 43,000 miles; AM/FM 8 track; Snows on rims; 8' camper cap included, \$2,800. Call 815-476-7507.

Toyota Corona Mark II, 1972 Station Wagon; 4 dr; rebuilt engine; roof rack; FM & cassette stereo. Call Ext. 3058, ask for Ramses.

1977 Chevy Blazer, PS/PB; Positraction; 305 V-8; 3 speed stick. \$5,000. Call Dave Trudell, Ext. 4467.

1970 Ford Galaxy; one owner; PS; Auto.; AM/FM radio. Good running condition; Badly rusted. \$75.00. Call Ext. 4001 or 3440.

1973 Super Beatle; good condition; 60,000 miles; Needs new drivers seat; \$1600 or best offer. Call Cindy, Ext. 3293.

Olds Cutlass, 1972; V-8; PS; PB; AC; only 53,000 miles. Good condition. Call Bob Kreml, Ext. 4455, Page 302.

1971 Honda, SL-70; rebuilt engine; new paint job and tires; excellent condition; \$300 or best offer. Call 584-0712.

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FOR SALE: 1973 Honda 750 C.C.; \$1200 or best offer. Call J. Smith, Ext. 3262 or Ext. 4455.

FOR RENT: Deluxe condo, opposite Fox Valley Theatre; 2 bdrms; A.C.; Washer/Dryer; \$400.00 per month. Call 894-6729.

Fully furnished house; 3-4 bdrms; in-town Geneva location; walk to schools and shopping. Negotiable dates Sept.-January; \$400 per month. Call Chuck Brown, Ext. 3202.

LOST: One pair silver wire rim glasses in black case, probably in one of the Village houses. If found, please contact Bill Wasisco, Ext. 3777.

WANTED: Electric eel (*Electrophorus electricus*), any length, for my daughter, who wants to raise it for her Girl Scout pet merit badge. Call Fred Coleman, Ext. 3351.

TV, Stereo and electronic repair; reasonable rates; call Rich, Ext. 3331 or 897-1167.

FOR SALE: Sawyer slide projector, spare bulb, and about 65, 36-slide capacity trays. \$25.00. Call R.A.Lundy, Ext. 4069.



August 2, 1979

SMOKING WHILE WORKING WITH INDUSTRIAL CHEMICALS CAN BE DANGEROUS

An employee recently reported to Medical and indicated that he had become ill with symptoms not unlike that of influenza. His supervisor indicated that he had been working with a mold-release compound containing TEFLON and FREON 113, both of which are relatively biologically inert. The manufacturer was contacted and advised us to determine if the employee smoked cigarettes or a pipe. The manufacturer pointed out that TEFLON on the hands can readily be transferred to the tobacco.

When heated the TEFLON breaks down into various fluorocarbons which can produce a temporary condition "polymer fever" - with symptoms "not unlike that of influenza." The symptoms abate in several hours and there is no lasting effect. As a matter of fact the container warning label indicated Do Not Contaminate Tobacco.

The lessons to be learned from this incident include:

- WEAR PROTECTIVE GLOVES when working with Industrial Chemicals.
WASH HANDS BEFORE SMOKING or eating when exposed to chemicals.
HEED ALL WARNING LABELS When materials are broken down from bulk, make certain that the new container identifies both the chemical and any associated warnings.

PLASTIC BUTANE LIGHTERS HAZARD IN WELDING OPERATION

Several deaths, throughout the country have been attributed to PLASTIC BUTANE CIGARETTE LIGHTERS which exploded when a stray spark or hot slag melted the plastic body of the lighter in Welders' shirt pockets. Butane has a flammable explosive limit of 1.8% to 8.5%, the lower limit being about half that of hydrogen, but the explosive range is more limited than H2.

MAINTENANCE PROGRAM REQUIRED FOR ECONOMY HI-JACKER

The manufacturer has advised that it will supply the Laboratory with a MAINTENANCE/SAFETY KIT for its "ECONOMY HI-JACKER" (both manual and electrical models) so that the models will conform with the latest Federal Safety Regulations. Please advise the General Safety Group X-3580 so that the Maintenance/Safety Kit can be forwarded to the current users.

EMPLOYEE REMINDER HARD HATS REQUIRED IN CONSTRUCTION AREAS

Construction contractor personnel are required to wear hard hats in construction areas. FERMILAB employees visiting or working in these areas are similarly required to wear them. Hard hats are available from Stores.

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MATHESON PRODUCT INFORMATION  
ALL MODELS SERIES 6103 FLASH ARRESTOR

Matheson has advised the Laboratory that all models of the Series 6103 Flash Arrestor will not operate satisfactorily in HYDROGEN-OXYGEN GAS SERVICE under certain operating conditions. Because of this, these devices cannot be considered as safety arrestors in any hydrogen application and should be removed from this type of service immediately. If your application involves oxygen or fuel gases other than hydrogen, a product warning label.. "WARNING Do Not Use in Hydrogen Service" must be attached. In either case, contact the General Safety Group to either:

- 1) Arrange for refund if used for the service or
  - 2) To obtain product warning labels for those arrestors used in fuel gas application.
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CONTACT LENS HAZZARD

Contact lenses, worn for cosmetic reasons are becoming more popular. It is important to remember that contact lenses do not protect the eye. In the presence of chemicals, mists, vapors, welding, dusts or other particulate matter, contacts are extremely hazardous because liquids and foreign bodies can be trapped behind the lens. Electric arc flashes and improper first aid have caused lenses to fuse to the cornea. Irritating chemicals, such as ammonia used in blueprint operations, are particularly hazardous to the contact lens wearer.

A fact sheet, "Contact Lens Hazard" is available from the Safety Section CL-7-E.

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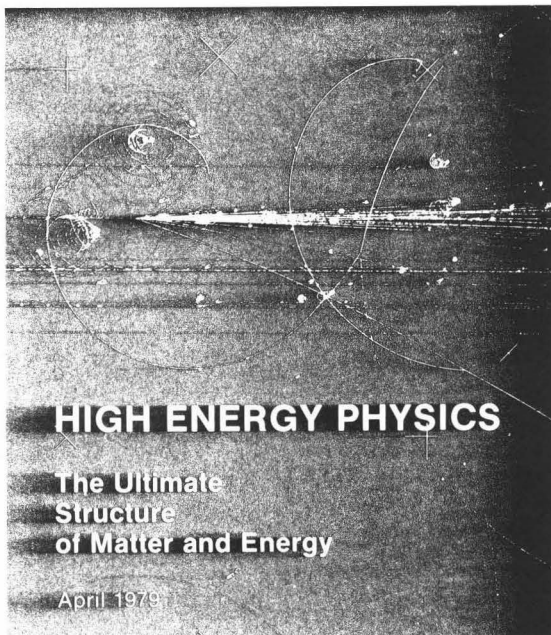
The Department of Energy has released a new booklet on high energy physics.

Titled "High Energy Physics: The Ultimate Structure of Matter and Energy," the booklet is available in the Public Information Office, CL1-W.

Containing 42 pages, it is a report on the present status of high energy physics. It was written by a team headed by Professor Victor F. Weisskopf of the Massachusetts Institute of Technology. Their goal was to communicate the reasons for the current excitement in the scientific community--the recent progress and achievements, their significance and outstanding research opportunities in this field, the booklet's acknowledgement says.

Other members of the writing group include Sheldon Glashow, Harvard University; Thomas Ferbel, Rochester; and Peter Wanderer, Brookhaven National Laboratory. Contributions were made by Martin Deutsch and Francis Low, both of the Massachusetts Institute of Technology; William Kirk, Stanford Linear Accelerator Center; and Frank Sciulli, California Institute of Technology.

DOE/ER-0027



U.S. Department of Energy  
Office of Energy Research  
Division of High Energy Physics

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...Bill Engler, Fermilab summer employee and science teacher at Naperville High school, greets visitors. In the foreground is a new case exhibiting a variety of materials on sale...

Looking for something good to read?

Fermilab's mini-book store probably has it. The "store's" contents are exhibited in a new display cabinet next to the visitor's desk in the Atrium of the Central Laboratory. Items may be purchased either at the desk or at the Public Information Office, CL1-W.

The hardback books, their authors and costs are: "The First Three Minutes (A Modern View of the Origin of the Universe)," Steven Weinberg, \$8.95; "Contemporary Astronomy," Jay M. Pasachoff, \$18.95; "Physics for People Who Think They Don't Like Physics," Jerry S. Faughn and Karl F. Kuhn, \$16.95.

Paperback books include: "The Collapsing Universe (The Story of Black Holes)," Isaac Asimov, \$2.25; "All In Our Time", Jane Wilson, editor, \$3.45; "Astronomy Now," Jay M. Pasachoff, \$13.95; "Drama of the Universe," George O. Abell, \$14.95; "The Key to the Universe," Nigel Calder, \$6.95; and "What is the World Made Of?," Gerald Feinberg, \$3.95.

Also available are 8 by 10 inch color and black and white photographs; 35-mm slides; a 30" by 30" poster-style aerial view of the site; four different post cards; a six-sided photo-cube; and an archeological report.

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## TWO MORE SPECIAL TOURS PLANNED

Two more special tours of the Central Laboratory and adjoining facilities have been scheduled, one for Aug. 14 and the other for Sept. 4.

The first special tour (July 31) was exceptionally popular and its quota was filled, reported Patricia Zack, tour director with the Public Information Office, CL1-W. These tours are designed for small groups that otherwise would be unable to qualify for conducted tours of the facilities. They are preceded by a slide presentation usually given by a staff physicist or engineer.

The Aug. 14 tour will begin at 1:30 p.m. and the Sept. 4 tour at 9:30 a.m. in the Atrium by the north entrance. A tour usually runs about two hours, and because of their nature, is limited to persons of ninth grade age or older.

Openings for the next two tours are limited. To register, either call the Public Information Office, Ext. 3351, or come in to the office and sign up there.

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## REMINDER ABOUT BOWLING SIGN UP DATES

Bowling enthusiasts can sign up for the Fermilab Mixed Bowling League Aug. 6-10.

The times will be noon to 1 p.m. on the second floor lounge of the Central Laboratory. League play begins Sept. 5 and continues to April 23, 1980. The \$14 entry fee covers bowling on the first, 33rd and 34th weeks, plus ABC-WIBC membership.

Bowling is scheduled for 5:45 p.m. each Wednesday at Bowling Green Lanes, West Chicago. The weekly fee is \$4. For more information contact Sharon Koteles, Ext. 3598; John Robb, Ext. 3387; Linda Even, Ext. 3097; or Jackie Coleman Ext. 3211.

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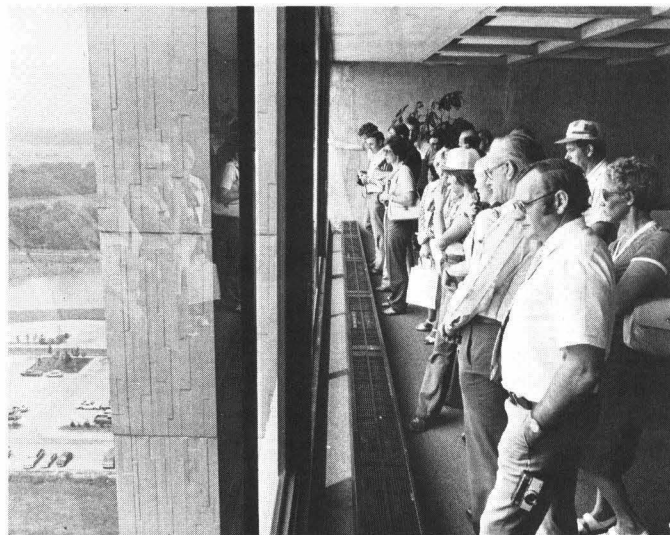
## "ALPHAVILLE"

Presented by Fermilab International  
Film Society

Friday, Aug. 10, 8 p.m. Central Laboratory Auditorium

A 1965 French film directed/written by Jean-Luc Godard, it deals with technology gone out of control. Although set in the future, it really looks at present-day technology extrapolated to extremes. The film has English subtitles.

PG Black and White 100 minutes Adults, \$1.50 Children, 50 cents



...Farm equipment dealers from Australia visit Fermilab as part of their tour of this country. Accompanying them to Fermilab were several representatives of the Batavia outlet for Agricultural Equipment Division of Allis-Chalmers Corp...

## NALREC FAMILY FISHING CONTEST

NALREC'S annual family fishing contest is coming Aug. 5.

That's the time persons young and old can demonstrate their skills with hook and line. The event will be held from noon to 4 p.m. at Swan Lake, just west of the Central Laboratory.

The person catching the biggest fish will be awarded a trophy. Registration will be held that afternoon at Swan Lake. Persons over 16 years of age will need an Illinois fishing license.

For additional information, contact Keith Schuh, accelerator controls, Ext. 4048. As a reminder, no fishing is allowed in the reflecting ponds, Main Ring ponds or the Village fire ponds.

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