BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Courier Editor Tours High Energy Facility

Doug Humphrey

In the ISABELLE tunnel, CERN *Courier* Physics and Production Editor Gordon Fraser, center, tours the construction site with Hywel White, left, head of ISABELLE's Experimental Areas Division, and Neil Baggett, BNL's correspondent to the *Courier*. Fraser spent a few days here last week "taking a quick look around to see how things are shaping up with ISABELLE and the National Synchrotron Light Source." Fraser also talked with AGS scientists and found them "full of enthusiasm for good physics experimentation. I find it quite striking," he added, "that there are still good proposals, and that meaningful work is being done on so venerable a machine." Fraser is one of three editors of the *Courier*, a journal of high energy physics with an international circulation of 15,000. It is printed in French and English in Switzerland and the U.S. by the European Organization for Nuclear Research.

Second Call For Day Care Center

Because of a very small turnout at the day care information meeting held on July 15, a second meeting has been scheduled for 12 noon, Thursday, July 24, at Berkner Hall Auditorium. Steven Held, of Educational Research Consultants, will describe plans for the center which will be operated on the premises of the Middle Island Presbyterian Church on Longwood Road.

Since the proposed center cannot open with the limited number of children enrolled at the July 15 meeting, the Middle Island Church has agreed to postpone the signing of a lease until August 1. The new enrollment deadline has accordingly been changed to July 30.

All employees who may be interested in a day care center are *urged* to attend the July 24 meeting, which may well represent the last opportunity to have a high-quality children's day care center in the immediate vicinity of the Laboratory. Attempts are also being made by the operators to publicize the proposed center in the general community as a means of attracting additional students, and Lab employees can assist in this effort by advising their friends and neighbors of the new facility.

Questions may be directed to Janet Whitehead, Ext. 2872.

Bus Routes Chosen

Last month, the Bulletin called for employee response to a bus transportation proposal made by the Lab and the Long Island Limousine Service Corp. Bill Webster, Manager of Staff Services, reports that 260 employees mailed in coupons indicating that they would be interested in such a mode of transportation to and from work.

Webster's office and Long Island Limo reviewed the responses and selected two routes, both originating west of the Lab. One will cover the north shore, starting from Smithtown, and the other will take in the south shore, starting from the East Islip or Bohemia area. Both routes were chosen because they accommodate the greatest concentrations of people who responded.

Seventy-seven employees would be covered by the north shore run and 52 by the south shore run. All 129 potential riders have been sent written notices asking them to attend a meeting with the bus company on Monday, July 21 at 11:30 a.m. in Berkner Hall. Pick up points and times will be announced, cost will be discussed, and any questions will be answered.

If everyone can come to an agreement at the meeting on Monday, then the bus runs can be started. Depending on the success of these first two, others may be made in the future.

Binder Hunt

For years, Standard Practice Instructions (SPI) have been issued to new staff, as appropriate. These manuals are enclosed in binders which have become very expensive to buy. Employees are asked to check their offices to see if there are any SPI's lying around which are not in use. If so, the binders should be returned to Grace Dryden, Bldg. 460.

Interim Report: Fusion/Synfuels

Following the Presidential signing of the Energy Security Act three weeks ago – informally known as the Synthetic Fuels Bill – the expansion of synfuel production has been much in the news.

Research on fusion-generated synfuels, funded by the DOE Development and Technology Division, has been going on at BNL and Lawrence Livermore Lab for several years.

The LLL team is working on direct thermochemical methods, where fusion heat is used to produce hydrogen from water through several intermediate thermochemical reactions.

The BNL Fusion/Synfuels Project led by John Fillo, a mechanical engineer, uses a combination of very high heat (1000°C) and electricity to directly electrolyze steam into H_2 and O_2. "We believe this approach offers several advantages," says Jim Powell of the BNL Project, "such as single-step electrolysis, higher O_2 and H_2 yields and fewer problems with material endurance."

Work on site is not with fusion plasma physics but with engineering high temperature electrolysis for fusion applications to synfuel manufacture. To make hydrogen, the basis for many synfuels, fusion heat is used to make steam for electrical generation. This electricity is then used to electrolyze very hot steam generated in another part of the fusion reactor blanket. Hydrogen made this way can be used directly as fuel, or in making synfuels.

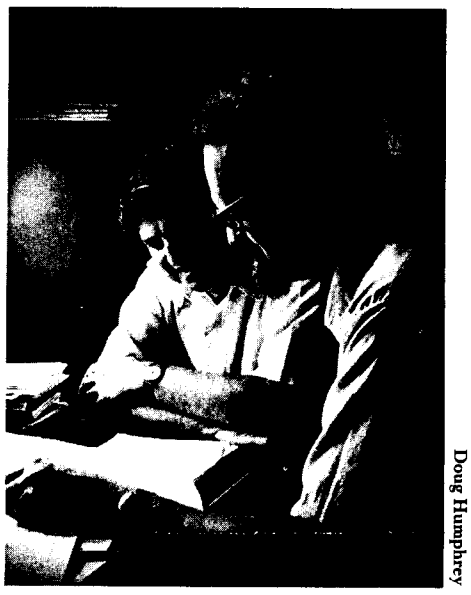
Progress with Material Problems

The problems of harnessing and building a commercially viable fusion reactor are both of material science and nuclear physics. The BNL team has made some important theoretical and experimental developments with materials and engineering since the project began three years ago.

One goal is a durable design for a "reactor blanket" – crudely, the layer where water is heated which lies between the fusion chamber and the outer shield. The trick is making a blanket that can withstand years of neutron radiation damage and superheated steam and gas.

"So far," says Powell, "we've shown experimentally that blanket materials of alumina and zirconia (ZrO_2) work well in the 1400°C steam environment."

Parallel work in DEE, led by Hugh Isaacs and C.Y. Yang, has found lanthanum chromite electrodes work well under stressful temperature and chemical conditions. They've found high temperature conductivity and phase stability of these electrodes is enhanced by adding magnesia and alumina. Work remains to be done on finding an electrode surface catalyst that can work at 1400°C, the optimum working temperature. "Such a find," Isaacs says, "would decrease electrode over voltage and improve overall efficiency."



Doug Humphrey

John Fillo (background) and Jim Powell.

Fusion Performance

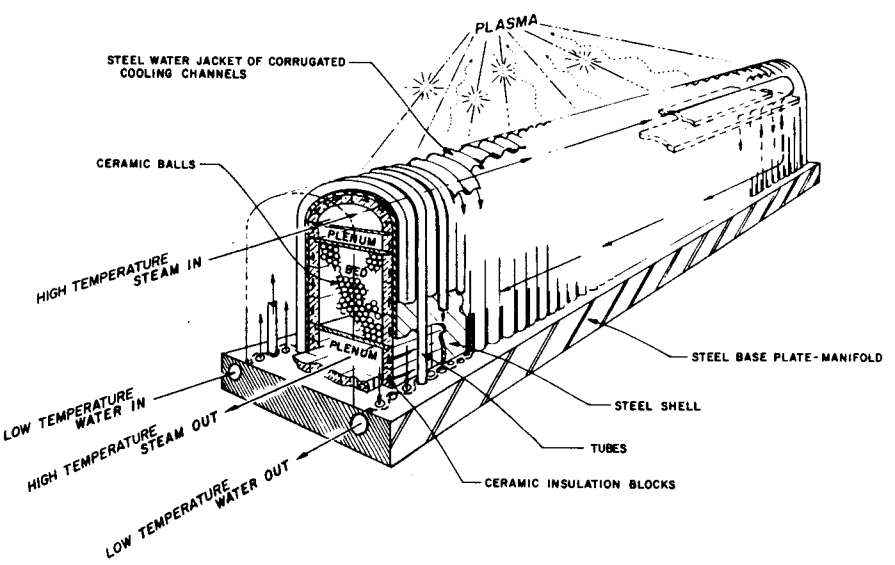
On the theoretical side, calculations by the Fillo-Powell group indicate hope for high performance of synfuel production from fusion reactors:

High Thermal Efficiency: Nearly two-thirds of all fusion energy could be transmitted to the blanket interior to produce very high temperature steam for efficient electrolysis.

Commercial Synfuel Plants: Projected for 2015, could produce hydrogen fuel at efficiencies up to 60%, far above conventional power plants with conventional electrolysis systems.

Engineering Problems: Difficulties are being resolved with cooling pipe arrangement (a "topological night-

(Continued on page 2)



This figure shows the BNL-designed "two-temperature zone" blanket that can supply high temperature process steam to electrolyzers. Neutron and gamma energy from the plasma is deposited in the ceramic bed and transferred to high-temperature steam that flows through it. The steam is electrolyzed in a separate vessel, not shown here.

The Force Is With You For The Weekend

Doug Humphrey

Princess Leia of the Imperial Force will join "Star Wars" characters R2D2 and Darth Vadar for this weekend's tour at BNL. The princess is really tour guide Silvia Iwantshuk. R2D2, a duplicate of the famous movie robot, was built by two physics teachers from Clinton Corners, N.Y., out of an assortment of spare auto parts. Co-starring will be Per Dahl, of ISABELLE, who will be at Berkner Hall to tell visitors about the giant proton accelerator now under construction at the Lab.

Art Commentary Planned Tuesday

An art show of prints and watercolors is continuing through Friday, July 25, in Room C of Berkner Hall. On display are landscapes and figure studies by lithographer Bernard Cathelin; aquatint landscapes by Christopher Penny; and watercolors by Judy Inman. Exhibit hours are from 12 noon to 2 p.m., including this weekend.

On Tuesday, July 22 at 1 p.m., Sue Chrien will be on hand to discuss the artists' work and techniques. Mrs. Chrien graduated from the Cleveland Institute of Art and received her master's degree from Western Reserve. She has taught in Cleveland and Bellport and is presently teaching painting and sketching for the Recreation Department of the Town of Brookhaven. Mrs. Chrien has exhibited in Ohio, the Northeast, and Canada.

Library Notice

Because of the public tours of the Lab on weekends, the main library will be closed on Saturdays and Sundays through September 28. However, those employees who wish to use it, may do so by calling Police HQ. Weekdays, the library is open to 11 p.m.

Selected Reading

Nat. Rev. XXXII (14), July 11, 1980
A walk to Tibet. F.B. Randall. 843-5

New Sci. 87 (1208), July 3, 1980
Microbes go to work-but is the price too high? S. Yanchinski. 12-14

New Yorker LVI (19), June 30, 1980
Russian Journal (Pt. 1). A. Lee. 72-80+

Time 116 (1), July 7, 1980
Behavior: How to commit suicide. J. Leo. Reported by A. White/London. 49

Fusion (Cont'd)

mare," Powell said), coolant media and self-sufficiency of tritium breeding.

"Of course the proof of the pudding," Powell added, "is testing all this with an actual fusion reactor." A possible first opportunity for fusion neutron bombardment would be with Princeton's Tokomak Fusion Test Reactor scheduled to go on line in 1983-84. Meanwhile, by September, the project plans to build a bench-scale electrolyzer for testing electrodes.

–James Kent

Making Synfuel With Fusion

Fusion reactors could be used to generate both electricty and hydrogen, a starting material for certain types of synthetic fuels. Neutrons from the fusion reaction heat the "blanket" around the plasma chamber. This transfers heat to a layer of water that circulates around the blanket, turning it to steam. Some of this steam is routed through turbines to make electricity. The electricity goes to electrodes that electrolyze other steam outside the blanket, turning it into O_2 and H_2. Hydrogen can then be chemically combined with coal to make methane or gasoline. It can also be mixed up to 10% with natural gas.

Retirees

Herbert S. Iversen

Mary R. Burns

Edwin F. Rappe

Mort Rosen

Mary R. Burns, Sr. Administrative Services Asst., Physics Department, joined BNL on January 14, 1952. Now she just wants to be lazy for awhile and devote more time to her "Sunday Painting."

Herbert S. Iversen, Construction Inspector, Plant Engineering, has been with the Lab since September 28, 1953. He retired on June 30 and lives in East Moriches.

Edwin F. Rappe, a Technical Associate in the Physics Department, came to Brookhaven on July 2, 1951. He lives in Brookhaven and is looking forward to "working around the house and enjoying life."

Arrivals & Departures

Arrivals

Mark Fuhrmann	Nuclear Energy
Valarie M. Green	Plant Engrg.
Thomas J. Kelly	Energy & Env.
Darryl W. Peters	Chemistry
Laurie H. Rhodes	Applied Math.
Semyon Shteyngart	Nuciear Energy
Gregory C. Slovik	Nuclear Energy
Cosmore D. Sylvester	Accelerator
Renee R. Tiernan	Ph. & Gr. Arts
Michael G. White	Chemistry

Departures

Rabelan S. Baloyi	Safety & Env. Prot.
Anthony A. Di Lullo	Biology
Linda Hammer	Sys. & Adm. Data Proc.
Peter E. Hammer	Applied Math.
Bernice K. Johnson	Medical
Richard Johnson	Energy & Env.
Stanley F. Lowell	Applied Math.
Gordon McGranahan	Energy & Env.
William H. Price, Jr.	Central Shops

Ersatz Erudition

Like any art, conversational counterpoint has its code. The general principles have been handed down – orally, of course, until now – by the masters. In what follows, you will find a modern manual. There are comments on both *content* and *delivery*.

The first three rules – be dogmatic, spotlight the obscure, and call upon the past – were outlined in a previous Bulletin. The following completes the ten basic rules.

IV. Specialize

Till one corner of a field and you will appear brilliant without enormous effort.

Make it easy on yourself. Don't try to fake your way in literature by choosing Faulkner. He wrote too much and what he wrote is difficult. Find one who is both obscure and relatively unproductive. Nathanael West was good for a time, but he has been rediscovered. Choose someone like Thomas Love Peacock. His major work, *Nightmare Abbey*, is only 120 pages long.

For philosophy, try Hume, although that's asking a great deal; Jainism for religion; and in architecture, nix Gothic but try Manueline.

Of course, all this is cheating a bit on our rules, for by doing this you will actually know something. What preserves the challenge, however, is a *minute* authority, a miniature scholarship.

V. When possible, say it in another language

There are enough obscure English words to intimidate most people. Nevertheless, a smattering, a muttering, of French, German, or Latin helps, even if *what* you say provides no evidence of intelligence. You have no gift for languages? Fine. Remember, the trick is not to know but to seem to know.

VI. Authorities

Your options are many. But again, avoid the obvious. You can quote the New York *Times* (corny), statistics from the Census Bureau (better), Freud (overworked), Milton the poet or Milton the accountant in your office, who knows everything there is to know about tax returns. Still, the more awesome the *source* the more effective. The name is the game.

Most times you will paraphrase. But a few quotations must be committed to memory. And again. if you can make it sound vaguely familiar, don't bother giving the source. When your neighbor tells you his teen-ager has been calling him a tool of the multi-nationals, murmur, "How sharper than a serpent's tooth. . ." Let him grope for the rest of the quote and its author.

Make up the quote? This may require a little talent. In any case, make up the quote as though *you* have the right to be authoritative. Woody Allen, for example, pauses, then intones, "I sometimes think all life is a footnote to Faust." It is especially effective to make up statistics, as needed: "Recent studies show that Nostradamus was wrong 73 per cent of the time."

VII. Use words in unfamiliar contexts

At intermission, everyone tries to say something bright about the play and its performers. If you say, "The second act is biodegradable," the sheer lunacy of the comment should turn things your way or at least give you a chance to get to the men's room. Or, "The trouble with the love story, like all love stories, is that it follows a sine curve." Or, "When Joe Papp directs Shakespeare, Heisenberg's uncertainty principle is always operating." Never mind about the meaning: the enigmatic quality of your remarks will set you off as a person of refined perception.

VIII. On occasion, employ reverse snobbery

At times this can be dazzlingly effective and sometimes it is the only recourse when the going gets rough. If they are raving about the food at Le Coq d'Or or Rapaccini's Ristorante, look a little bored and offer, "The best dish in town is the corned beef hash at Bickford's Cafeteria." If they are carrying on about Pynchon's or Gaddis' latest unreadable masterpiece, say that you found the new Harold Robbins vastly amusing, more like his earlier serious novels, and yet good trash.

The high scoring here comes from making your audience believe you're so familiar with the highbrow that you can afford to like *shlock*.

IX. Never punch your lines

A further word on delivery. What we are engaged in is not a brutal exercise. Use the foil, not the bludgeon. Your shafts of knowledge must be delivered casually, in an offhand, throwaway fashion. What you have just said tripped into your consciousness without effort, the inevitable consequence of breeding, long years of cultural immersion, and a brilliantly retentive mind.

X. Cut your losses quickly

There are those times when you're in too deep, when there's someone too knowledgeable to mess with. This is part of the risk and stimulus of the sport. Don't persist: you're bound to make things worse. Back off before you are whipped – or discovered. Sneeze, see someone across the room, change the subject, utter some high-flown generality, pick at a thread on his sleeve – but get out.

Even in retreat there can be style, as Rommel proved at El Alamein.

—Excerpts from the book THE PHRASE DROPPER'S HANDBOOK by John T. Beaudouin and Everett Mattlin. Copyright© 1976 by Richard F. Dempewolff and Benjamin R. Hefter, Trustees for Lisa K. Beaudouin, Stephanie B. Piper, John C. Beaudouin & Mark T. Beaudouin. Published by Doubleday & Company, Inc.

BROOKHAVEN BULLETIN

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CARL R. THIEN, Public Relations Officer

Picnic P.S.

You can dance away the afternoon of the employee picnic on Saturday, August 23. One of the big events of the day will be a dance contest. The categories will include Disco, Cha-Cha, Lindy, and Charleston or Fox Trot. And since this is a special day for just BNL employees and their families, even children under 12 will have a chance to show off their favorite steps in a contest for kids. Top dancers in each category will win loving cups. Registration for the contest will be the day of the picnic.

If you are not a twinkle-toe dancer, then you can sit on the side lines and watch the show. The picnic committee advises people to bring their own chairs so they can lounge comfortably when not busy with one of the many planned activities.

Do you want to just take it easy that day? You don't even have to pack your own picnic hamper because the cafeteria will offer snack bar service from 1 to 6 p.m. Remember, your admission ticket entitles you to free beer, soda, cotton candy and ice cream. A note for picnickers: as a safety measure, no barbecuing will be allowed.

The Bulletin will continue to post information on picnic activities. If you have questions, call the picnic committee. But they would most like to hear from people who will volunteer to help out that day. Committee members are: Roseann Chiuchiolo, Ext. 3199; Charlie Flood, 4207; Josephine Gazzola, 2456; Blanche Laskee, 2873; Rosalie Piccione, 3160; and Michael Zguris, 4728.

Children's Program

Last week's Friday special for the on-site program was a spectacular parade around the apartment area. Spectators lined the streets to wave on the marching and bike riding children led by a police car with flashing lights and wailing siren.

Coming events:
this week – treasure hunt
next week – talent show

Pool Special

At last Friday's special pool event over 150 young swimmers searched the bottom of the pool for pennies, nickels, dimes and quarters under close supervision of the lifeguards. The following youngsters surfaced with the most loot:
4 to 6 year olds – 1st, Marjorie Acevedo; 2nd, Kathleen Holden; 3rd, Derek Spark. 7 to 9 year olds – 1st, Patti Birfeneau; 2nd, Erin Albritton; 3rd, Karen Mills. 10 years and older – 1st, Sheila McNerney; 2nd, Kevin Dell; 3rd, Sharon Emery.

Coming events:
this week – kickboard races
next week – diving contest and balloon races

Golf Extra!

Mike Zguris (Accelerator Dept.) did what every golfer dreams of. He got a hole-in-one at Swan Lake in a regular BGA match on July 15. Zguris, who is a 12-handicapper, pulled off this feat at the 16th hole – 123 yards, par 3. As far as anyone can recall, this is the first hole-in-one in League play.

Bowling

In the New York State Women's Bowling Association Tournament held the end of May, Josephine Gazzola and Helen Keeley placed 314 out of 2,000 in the ladies doubles and Josephine Gazzola placed 343 in the ladies singles.

Drivers Note

If you rent cars for official or personal use and don't recognize this

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20	20	20	10	AS PER AID #

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you are missing out. Check with the Travel Office for more information.

Cafeteria Menu

Week Ending July 25, 1980

Monday, July 21		
Corn Chowder	(cup)	.45
	(bowl)	.55
Beef chop suey on rice		1.45
Scrambled eggs, sausage & fries		1.35
Hot Deli - Roasted turkey breast	(on bread)	1.45
	(on roll)	1.55
Tuesday, July 22		
Cream of tomato soup	(cup)	.45
	(bowl)	.55
Chicken pot pie		1.40
Beef liver & onions & 1 veg.		1.40
Hot Deli - Bar-b-qued beef	(on bread)	1.40
	(on roll)	1.50
Wednesday, July 23		
Beef noodle soup	(cup)	.40
	(bowl)	.50
Broiled fillet of fish & 1 veg.		1.45
Salisbury steak & 1 veg.		1.40
Hot Deli - Grilled Reuben		1.45
Thursday, July 24		
Mulligatawny soup	(cup)	.40
	(bowl)	.50
Manicotti & 1 veg.		1.40
Braised beef with veg.		1.50
Hot Deli - Taco w/refried beans		1.45
Friday, July 25		
Bouillabaisse	(cup)	.50
	(bowl)	.60
Shells w/clam sauce & garlic bread		1.35
Grilled ham steak & 1 veg.		1.45
Hot Deli - Fried fillet hero		1.45

Softball

League I

Make-up Game:
Phoubars 17 – Deegenerates 16
– – –
Six Pax 14 – Deegenerates 10
Phoubars 18 – Source I 11
Blue Jays 6 – Ravens 4

League II

Cardinals 15 – Titans 10
Roga 15 – Dirty Sox 8
Moles 8 – AMD 3

League IV

Survivors 13 – Nads 2
Diamonds 14 – Thrids 10
E-Z Riders 7 – Balls & Strikes 3
Turkeys – Random Sample (Game postponed)
Game of June 30:
Balls & Strikes 8 – Nads 5

League V

No Names 10 – Mudville Sluggers 7
TNT 22 – Who's On First 6
No Feedback 8 – Source III 5
Who Cares 16 – Underalls 5
Game of June 30:
Who's On First 17 – Underalls 8

In the Spotlight

Doug Humphrey

These cherubs are going to steal the show. Tonight and tomorrow night, at 8:00 p.m. in the Brookhaven Center, the Theater Group is presenting its annual Vaudeville Show. Some of the talented players on stage will be (back, from left) Daniel Love, Victoria Meadows and Karl Pittenger, and (front) Jillian Meadows and Sara Pittenger. Tickets are $3 for adults and $2 for children under 18 and senior citizens. A cash bar will be open. Don't miss out on this mid-summer entertainment.

Mountain Club

A meeting of the Mountain Club will be held Tuesday, July 22, at 7:30 p.m. in the North Room of the Center to discuss plans for the remainder of the summer.

Tennis

Tennis players are reminded that the deadline to enter the annual tournament is today at 1 p.m., at the BERA Sales Office. Consolation tournaments will be held for early-round losers, so champions and hackers alike, sign up.

Pool Schedule

Monday through Thursday
11:00 a.m. to 1:30 p.m.
employees only
1:30 p.m. to 3:00 p.m.
children's swimming lessons
3:15 p.m. to 9:30 p.m.
employees/family members/guests

Friday
11:00 a.m. to 1:30 p.m.
employees only
1:30 p.m. to 3:00 p.m.
children's swimming lessons
3:00 p.m. to 4:00 p.m.
children's special events
4:15 p.m. to 9:30 p.m.
employees/family members/guests

Saturday and Sunday
1:00 p.m. to 6:00 p.m.
employees/family members/guests

An employee is permitted to bring one guest per visit. Advance arrangements may be made for additional guests (maximum of five per visit) at the Recreation Office in Personnel.

Fee Schedule

Daily Admissions:
$1.25 employee/family member
$1.75 guest

Season Tickets (for employees and immediate family members):
$20.00 individual
$30.00 family

NYC Train Trip

The Hospitality Committee is planning a group railroad trip to the city on Wednesday, July 30. Departure will be at 7:55 a.m. from the Patchogue LIRR station. Round-trip fare is **$3.25**, children under six years ride free.

Reserve a ticket by sending your fare through the U.S. mail to P.O. Box 322, Upton, New York 11973, no later than **Thursday,** July 24. Make checks payable to "Brookhaven National Laboratory." Your tickets will be given to you on the train. Refunds will be made only if cancellations are received by the Friday preceding the scheduled trip.

Runner's Corner

There will be a runner's meeting on Monday, July 21 at noon in the Conference Room of Building 318. Items to be discussed include: a memorial race for Jack Baer; summer race schedules; and the possibility of races and relays for the BNL picnic. All runners are welcome.

In racing news, Dick Fuller is dominating the veterans age group (age 40-49) on Long Island. Dick recently captured first place in the Olympic Village 5 mile race and finished as the first veteran in the tough 7.5 mile Fran Cuccu Run at Oyster Bay. Curt Fincher (11th) led the BNL team to a strong showing at Oyster Bay followed by Fuller (16th), John Ferrero (21st), Gus Prince (37th) and Elaine Landry (79th). At Olympic Village, the BNLers turned in another strong team performance with Ted Landry (27:30), Dick Fuller (28:15), Elaine Landry (32:52) and Mike Paquette (33:15) running fine times on a tough course.

Classified Advertisements

Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position, with consideration given to candidates in the following order of priority:(1) present employees within the department, with preference to those within the immediate work group; (2) present employees within the Laboratory as a whole; and (3) outside applicants.

The determination of the best-qualified candidate for available positions will be based upon education, experience and other job-related criteria. Such factors will be evaluated and measured against the demonstrable requirements of the available vacancy, as well as the Laboratory's Affirmative Action objectives.

The Laboratory is committed to a policy of Equal Opportunity in its selection and placement of personnel. Its objective is equality of opportunity in employment, training, and promotion without regard to race, color, religion, national origin, sex, age or handicap.

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all nonscientific staff positions; second, to give employees an opportunity to request consideration for themselves through Personnel; and, finally, for general recruiting purposes. Because of the priority preference policy stated above, each listing does not necessarily represent an opportunity for all candidates. As a guide to readers, the listings are grouped according to the anticipated area of recruitment, as indicated below. Except when operational needs require otherwise, positions will remain open for one week following publication date.

For further information regarding a placement listing, contact the Personnel Placement Supervisor, Ext. 2882.

POSITIONS OPEN: Scientific. The following staff positions are open. Candidates may apply directly to the department representative named, or through the Office of Scientific Personnel, Ext. 3338.

POSTDOCTORAL RESEARCH ASSOCIATE - To join physical chemistry program around January, 1981; to study the properties of active oxygen species (superoxide radical, hydroxyl radical and singlet molecular oxygen). Contact: Dr. B. Bielski, Chemistry Department, Ext. 4333.

POSTDOCTORAL RESEARCH ASSOCIATE(S) - To join Environmental Chemistry Division. Seek individuals with background in theoretical or chemical physics, to study methods of aerosol measurement and control as practiced in the environmental, air pollution, and coal utilization fields. Contact: Dr. W.H. Marlow, Department of Energy & Environment, Ext. 4505.

PHYSICIAN. Seek General/Family Practitioner, or specialist in Internal Medicine, Tropical Medicine, or Epidemiology, for fallout radiation studies in the Marshall Islands. Contact: Dr. Donald C. Borg, Medical Department.

LABORATORY RECRUITMENT: Opportunity, for present Laboratory employees.

1400. RIGGER, GROUP LEADER - Plant Engineering Division.

1401. SECRETARIAL POSITION - Requires excellent secretarial skills including typing and shorthand. Working knowledge of technical typing involving mathematical symbols and Greek letters highly desirable. Will handle broad secretarial duties for High Energy Theory Group. Responsibilities include typing of highly technical manuscripts, preparation of reports, expediting of travel reservations, maintenance of preprint library and answering phones. Physics Department.

1402. SECRETARIAL POSITION - Requires AAS in secretarial science or equivalent experience performing diverse secretarial duties including technical typing and shorthand. Will provide general assistance to primary secretary in the Biomedical and Environmental Assessment Division. Department of Energy and Environment.

OPEN RECRUITMENT: Opportunity for present Laboratory employees and outside applicants.

1403. COMPUTER SCIENCE ANALYST - Requires BS/MS or equivalent in computer science with working knowledge of FORTRAN, mathematical programming techniques, and econometrics. Will join scientific and professional staff at the National Center for Analysis of Energy Systems in developing, constructing and maintaining energy/economic computer models. Department of Energy and Environment.

1404. ENVIRONMENTAL SCIENCE ASSOCIATE - Requires BS or equivalent in biology or environmental science with working knowledge of basic scientific programming techniques. Will provide programming and technical assistance with the Biomedical and Environmental Assessment Division in assessing health and environmental impacts of energy techniques. Department of Energy and Environment.

1405. RADIOCHEMISTRY ASSOCIATE - Requires BS/MS in chemistry or nuclear physics with specialized training in radiochemistry and state-of-the-art counting equipment. Will be responsible for the procurement, set-up, operation and maintenance of radio-nuclide counting facilities. Will also conduct radiochemical analysis of radioactive wastes and leachates. Department of Nuclear Energy.

1406. FACILITIES ENGINEER - Position requires demonstrated experience in electrical layout, wiring, one-line diagrams, lighting, alarm and power distribution systems. Responsibilities will include preparation of preliminary sketches, specifications, working diagrams and estimates. Degree in engineering and several years experience preferred. Plant Engineering Division.

1407. TECHNICAL POSITION - Requires AAS or equivalent in chemistry or materials science. Familiarity with ASTM type test procedures is desirable. Will formulate simulated radioactive waste forms and conduct various product characterization test procedures. Department of Nuclear Energy.

1408. COMPUTER OPERATOR - Requires AAS degree in data processing or successful completion of computer operation training program or equivalent experience assisting in the operation of a large electronic digital computer. Will perform all operational tasks on Hewlett Packard 3000 and peripheral equipment. Must be willing to work shifts. Administrative Systems and Data Processing Division.

1409. TECHNICAL POSITION - Requires AAS or equivalent in electronic technology and a high level of digital electronic experience. Will perform maintenance of sophisticated electronic equipment inluding sensors, signal conditioners, data logging equipment and computers and will assist in development of additional systems. Will build prototype from sketches . Good writing skills essential. Department of Energy and Environment.

1410. TECHNICAL POSITION - Requires AAS or equivalent in mechanical technology and knowledge of mechanical and basic electrial assembly techniques. Department of Energy and Environment.

1411. DEVELOPMENT ENGINEER (two positions) - Requires BSME or equivalent with a background in general machine design and high precision manufacturing processes. Knowledge of vacuum technology and computer programming desirable. Accelerator Department.

1412. EXPERIMENTAL MACHINIST - Requires experience in job print interpretation, layout and machine set-up. Candidates must demonstrate ability and imagination in all phases of machine work. Will function as an all-round machinist for non-production work in research and development shop. Project assignments range from raw material to final assembly. Central Shops Division.

1413. REFRIGERATION AND A/C ENGINEER - Requires competence with troubleshooting, repairing, installing and operating commercial/industrial air-conditioning and refrigeration equipment including steam absorption, centrifugal and helical screw refrigeration machines. Successful completion of refrigeration and A/C apprenticeship program or related coursework is highly desirable. Must be available to work shifts as required. Plant Engineering Division.

Auto & Auto Supplies

69 BUICK - good cond, leaving country. $400. Carmen, Ext. 7923 or 2053.

71 PINTO - 1600 cc, standard, good tires, engine, needs new front suspension. $250. or best offer. Jim, Ext. 3501 or 928-6491.

AM/FM - in dash radio, new Audiovox. George, Ext. 3783.

APACHI EAGLE CAMPER - good cond. $400. Firm. Ext. 4008.

74 AMC MATADOR - 37,000 mi, R&H, a/c, clean. $1,200. Ext. 3848 or 472-0553.

79 RABBIT - C, 4 dr, am/fm stereo, tint glass, rust proofing, excel cond. Must sell. $5,200. 724-0564.

78 CHEVY VAN - 15,000 mi, customized by Travco, has everything, excel cond. reg. gas, $7,700. 286-8202.

67 CHEVY WAGON - 327 Holley 4-barrel carb, 4 spd, corvette rims, tires L-60-15" on rear, H-60-15" front, 113,000 mi. $1,000. 878-4618 eves.

71 TOYOTA COROLLA - recent valve job, needs starter exhaust system. $400. Firm. Ext. 4008 or 821-0686.

BATTERY - for 350cc Honda, Sears Die Hard, never used, cost $29. sell for $18. Ernie, Ext. 2957.

69 CHEVY IMPALA - ps/pb, radials, V8, runs well and bargain at $200. Ext. 3996 or 286-1136 after 6.

66 PONTIAC CATALINA - 71,000 miles, factory, air clean, needs tires. $325. Firm. 281-8031.

65 OLDS - F-85, V6, a/t, runs well. $200. Tony, Ext. 3637.

SPARK PLUGS - (8) F-9Y, $5; (10) AG22, $5. Ext. 4003 or 924-4373.

72 VOLKSWAGON - Camper Bus, excel cond, many extras. $2,800. 821-0329.

65 CHEVY - running, fair cond. $100. Ext. 3170 or 475-4947 after 6 pm.

78 T-BIRD - p/s, p/b, p/w, a/c, am radio, 22,000 miles, immaculate cond. inside and out. $4,000. 286-0695 or 286-9013.

74 DATSUN - Z 2+2, 4 spd, 57,000 mi, orig., excel cond. $3,700. Ext. 3591 or 265-0501.

78 YAMAHA - XT500 Enduro, 1 cyl, 4 stroke, 7,000 mi. $1,300. Ext. 3397 or 473-4959 ask for John.

BMW - need advice on engine. Ext. 2004.

Boats & Marine Supplies

AMF - force 5 sail boat, blue and white, very good cond. $1100. 878-3138.

CLAM RAKE - 2¼" teeth, 18 tooth, $30. 654-1945.

PADDLE BOAT - two seater fiberglass w/trailer. $250. JoAnn, Ext. 4189.

BOAT -18' x 6'7" outboard wood boat, fair cond, no engine. $100. Tim, 281-7873 after 7 pm.

72 BROADWATER - H.T. 25' Chrysler 225 lo hrs. F/W/C, VHF, DF, new teleflex steering, many extras, excel cond, cg aux. fac. $2800. 589-4465 or 589-5011 eves.

150 LB. MOORING - w/35 ft. chain, float and pickup buoy. $100. Joe, Ext. 4069 or 261-7825.

BOAT TRAILER - needs work, best offer. 654-2304 after 12 pm.

FISHING CHAIRS - (2) folding type, wood w/lees chrome plated gimbals, $35. ea; small boat boarding ladder, 4 step, $20. Lou, Ext. 4615.

DOCUMENTED - 44' twin cabin, twin screw yacht hull and engine in good cond, needs interior work. 475-0868, 9 am to 5 pm.

1970 EVINRUDE - 40 HP w/controls. Ext. 2423 or 4970.

6 GAL - polyurethane outboard motor gas tanks (2) $15 ea. Mike, Ext. 4293.

SAIL FISH - $200. 744-5096.

16' SAILBOAT - Comet, trailer, motor, oars, life jackets, mooring. $1,000. Must see. Paul, Ext. 2071 or 928-8171.

1978 MARQUIS - 19' bow rider, 85 HP Johnson, Galv. trailer, elec. wench, compass, full curtains, winter cover, excel cond. 981-5993.

19' THUNDERBIRD - fiberglass trihull, 90 HP, Evinrude, camper top, sleeps 4, $2200. 286-1024.

15' WOODEN SKIFF - in good cond, steering & engine controls, no motor, extras. $175. 281-0360.

Yard Sales

YARD SALE - July 19 & 20, 173 McConnell Ave, Bayport. Furniture, kitchen ware clothes for children & adults, toys.

YARD SALE - July 19 & 20. 69 Senix Ave. (1 mi so. of McDonalds), Center Moriches.

GARAGE SALE - July 19, 10 am to 4 pm, junk, junk and more junk. 7 Crosby Street, Center Moriches. 878-1450.

MOVING SALE - Bedroom set, sofabed, easy chair, dinette set, coffe table, desk, chair. Ext. 4367 or 698-3347.

YARD SALE - Toro comb. mower, snow blower; alum extension ladder; refrig; many other items. 744-2332.

Miscellaneous

WASHING MACHINE - $80; air cond, excel cond. $50. Ext. 7603 or 3102/345-3102 eves.

FLORIDA - Seminole, 2 bdrm house in retirement area. Winter or yearly. 475-0002 after 6.

SEWING - need a gown for wedding/special occasion? Also hems, alterations, detailed work, personal service, reasonable rates. Janet, 924-8723.

WEDDING PHOTOGRAPHER - w/complete line of invitations & frames. Reasonable rates. Ronnie, 281-1795.

G.E. 30" RANGE - white, electric, self-cleaning, good cond. $65. Ext. 7686 or 878-0897.

GARAGE DOOR - 7' wood/fiberboard channels, springs, hardware. $25. Bob, Ext. 4547 or 473-3987.

POOL - 4'x18' top fence alum, s/s filter, H.D. liner, skimmer, vacuum, good cond. $250. 475-5349.

LEAF - and branch mulcher, 5 H.P., $225; Colonial table 60" round w/2 leafs, $25. Diane, 878-4984.

POOL - 24' w/filter, many extra, excel cond. $300. Don, Ext. 2022 or 878-2215 after 5 pm.

AIR COND - GE, 10,000 BTU; coffee table; dinette set; dbl bed. Ext. 3395 or 758-9154.

WINDOWS - dbl hung 6 over 6, 48L x 30W x 14 sash, cast iron weight. Best offer Ext. 2265.

DEEP WELL PUMP - Sears multi stage. George, Ext. 3783.

GARDEN SPIKER- 17", $15; 14" x 20" roller, $15; 7½ gal. orchard sprayer, electric, $40. 744-5867.

PACHYSANDRA PLANTS - healthy & thriving, 25 plants for $2. Jean, 929-4522.

Real Estate

Real Estate advertised for sale or rent is available without regard for the race, color, creed or national origin of the applicant.

For Sale

ROCKY POINT - 4 bdrm fully paneled Cape, patio and shed, close to beach. $35,000. John, Ext. 3443 or 744-2116.

CENTEREACH - Hi/Rancch, 4 bdrm, 1½ bath, den, L/R, D/R, 1 car garage, fenced yard, gas heat, coal stove, a/c, large wood shed, all appli., taxes $1520. immaculate, many extras. $36,500. Larry Tempesta, 698-8009 after 6 pm or Ext. 3365.

YAPHANK - 2 bdrm ranch, L/R, D/R, kit, bsmt, shed, ½ acre, low 30's. 924-6131 after 4 pm.

MASTIC BEACH - 3 bdrm ranch, corner lot, roofed patio. Pleasant location near water. Low 30's. 281-7531.

REMSENBURG - Custom Cape, cedar shingles, 3 bedrooms, 2 baths, large eik, family rm, deck & fp. Low taxes. $59,500. 325-8158.

BELLPORT VILLAGE - 5 yr. old 3 bdrm ranch, large eik, att. gar, patio, stockade fenced rear yard. $36,000. 286-0795.

SOUND BEACH - 9 yr. old Cedar ranch on ¼ acre, 3 bdrms, full bsmt, OHW heat, re-insul attic, oak floors, deck shed, stockade fence, corner location. $33,500. FHA avail - taxes $1,300. Dan, Ext. 2012 or 744-6148.

COOPERSTOWN - 160 country, scenic acres, half tillable, good road frontage, reasonable. 363-7032.

CENTRAL ISLIP NORTH - 1 acre, hi-ranch, 8 rms, 1½ baths, 24x28 sunken patio, possible M/D, many extras. Yani, Ext. 2514 or 234-8564.

SHOREHAM - large 4 bdrms, 2½ bath Colonial, wooded ⅓ acre lot on quiet street near Miller Ave. School, north of 12A, 2 car garage, eik, fam rm. $68,000. 744-4787.

ISLIP - immac. cedar ranch, country setting along stream, ½ + acre, 3 bdrm, 2 baths, D/R, L/R, eik, full bsmt, glass doors, OHW heat, re-insul attic, w/w a/c, w/d, possible M/D. $49,500. 666-5367.

ROCKY POINT - M/D custom built practically maintenance free, 100 x 100 nicely landscaped, storms and screens, oil baseboard heat, many extras, excel cond, one rm and patio screened summer house on property. 744-2332.

MASTIC BEACH - 4 bdrm Cape, L/R w/franklin, eik, D/R, enclosed porch, shed, 160 x 100, $1,000 taxes, Farmers Home 8% mort., walk to stores and water. $28,000. 281-0360.

For Rent

WADING RIVER - 3 bdrm house, garage, washing machine, near beach. $360/mo. plus util. Jim Black, Ext. 3798 or 929-8462.

BAYPORT - 1 bdrm apt. to sublet $285/mo. Bayport Terrace Apts. Avail. Sept. 1st or later. Ext. 4905 or 363-2732.

YAPHANK - German Gardens, sm. bungalow, ideal for single. $190/mo. incl. elec. & hot water. 924-3946.

LAKE PANAMOKA - studio apt. priv ent, 4 miles from Lab. $200/mo. all util. incl. 929-4818 Don Schuette after 7 pm.

SHOREHAM - 4 bdrm Colonial, 2½ baths, secluded yard within walking distance of beach, 1 yr. lease, Avail Aug. 1st. $400/mo. plus util. 744-2816 or 744-1740.

RIDGE - 1 bdrm, 2nd floor, furn. apt, includes kitchen and living rm, terrace, priv. ent, female only, references. $285/mo. incl. util. Ext. 7996 or 929-6034.

MASTIC BEACH - charming small home, 2 bdrms, convenient to stores, 5 min. from schools, business person or couple. $285/mo. 281-8044 before 5:00 399-3684 after 5:00.

YAPHANK - 5 rm modern duplex apt, 3 miles from BNL, L/R, D/R, kit, 2 bdrms, full bsmt, patio. $400/mo. 1 month security, includes heat & water. 581-2909.

NORTH PATCHOGUE - new 2½ rm apt, eik, full bath, cablevision, priv. ent, partially furn, working couple or single female only. $250/mo. includes util. 654-2831.

MIDDLE ISLAND - 3 rm apt, suitable for young couple, unfurn, priv. ent, wooded estate. 924-0191.

YAPHANK - Furnished cottage, 5 miles from Lab., $185/mo., ideal for single person. 924-7251 or Ext. 3863.

Wanted

HOUSE -3 or more bdrms w/bsmt in So. Huntington/Melville Area. Bill, Ext. 7688.

LADIES BIKE - 3 spd, used but in good cond. Gloria, Ext. 4231 or 878-2966 after 6 pm.

CLOCK RADIO - under $15. must be in good cond. Lisa, Ext. 4660 days.

BABY CARRIAGE - stroller, car bed, 3 in 1 comb. Reasonable. Dennis, Ext. 4259 or 736-2534 after 6 pm.

ROOM - to rent in Three-Village area. Must have priv. ent. and bathroom. 924-7850 after 5 pm.

TRICYCLE - adult size, inexpensive. 698-2114 after 6 pm and weekends.

MICROSCOPE - binocular dissecting, low priced. John, Ext. 3443.

FIREPLACE TOOLS - poler shovel, rake, tongs. Bill S. Ext. 3848 or 698-3145.

OUTBOARD GAS TANK - w/two hole hose connection. Jim Ext. 4215.

BABYSITTER - 8 am to 5:30 pm E. Patchogue, for 6 yr. old girl, responsible woman, preferably w/other children. Begin Aug. 1. 289-1646 after 6 pm.

SAIL BOAT TRAPESE - harness. Joe, Ext. 4139.

YACHTSMEN'S ANCHOR - in 50-60 pound range. Forsyth, Ext. 4676.

BICYCLE - for 5 yr. old in good cond, 14". George, Ext. 3262.

HAND PUMP - deep well; also a used honey extractor. Ext. 4660 or 924-3293.

BABYSITTER - for 9 mo. old, our home Shoreham, 3 mornings a week beginning Sept. Own trans. references. 744-0763.

TEMPORARY HOME - for 2 friendly dogs, Sept. '80 thru Aug. '81. Fenced yard necessary. Fee negotiable. 286-1489 eves and weekends.

PIANOS - any cond, any age. Ext. 7667 or 751-4985.

SMALL BOX TRAILER - wanted for month of August. Rent or Sale. Kim Lister, Ext. 4581.

PISTOL - .45 auto, match grade preferred, gold cup or similar. Ext. 2012, Ray.

HOUSE - 2 or 3 bdrms within 15 min. of Lab. Beginning Sept. 3. Ron, Ext. 4385 or 744-6216.

SIAMESE CAT - needs good home, male, 11 mos. old, affectionate, house trained, will walk on leash. Sue Ext. 2913.

EFFICIENT PERSON - who can manage an office (typing, filing, mailing, etc.) and who likes people. Riverhead, M-F, 10-5. 369-2171.

Car Pools

MIDDLE ISLAND - start car pool from Artist Lake. Tuli, Ext. 2901.

EAST ISLIP - car pool to and from. Pete, Ext. 3292 or 581-1773.

Lost & Found

FOUND - Warmup jacket, field 2 after softball picnic. Ray, Ext. 7509.

FOUND - softball glove at ball field - loser contact league Pres. C. Bohnenblusch, Ext. 4758.

LOST - 1 black film canister with roll of 24 colored pictures. 400 ASA. Ken, Ext. 4597.

Ads left out of this issue due to lack of space need not be re-submitted to appear in next week's issue. Please note that ads may not be more than 15 words long and must be received in the Bulletin office by 4:30 p.m. Friday, for inclusion in the following week's Bulletin.