

New Study Focuses On Synfuel Health Effects

While the production of synthetic fuels is still in its infancy in this country, the Environmental Protection Agency (EPA) is asking some very important questions. One of its concerns: What will be the health effects on the industry's workers and the environment if the U.S. should go into this business in a big way? For an answer to that question, the EPA approached BNL's Medical Department.

How does one investigate health effects in an industry which is not yet operating full scale? That was the first problem facing principal investigator Marilyn Miller and her colleagues. "We looked to a surrogate industry," she said "and we found that the steel industry had a perfect surrogate exposure group in its older coke oven workers — those who did most of their work before the late 70's, when the steel industry began upgrading its standards. Many of the chemicals to which they have been exposed are very much the same as those produced in the manufacture of synthetic fuels."

In an earlier 20-year epidemiological study, Carol Redmond of the University of Pittsburgh had found coke oven workers to be at increased risk of death from respiratory and renal (kidney) cancer. Using Redmond's findings as a base, Miller proposed studying those workers who were approaching the time when they would have peak incidence of disease — ages 50-64 years old. "We wanted to have an epidemiologically sound study, with carefully-matched controls. We knew this population was at risk and we wondered if some of the newer tests being developed in animal research programs have any value predicting disease in humans."

Chief of occupational medicine at the University of Pittsburgh is Dr. David Parkinson, who is also the International Medical Director of the Steelworkers Union. He and Redmond agreed to participate in the study. With their support, the medical directors of several steel companies were contacted and gave their essential

cooperation to a study of a population of 50 pairs of coke oven workers and controls. The exposed population would have had 20 years coke oven experience, with a minimum of five years topside. Non-exposed workers would have worked at the same plant for the same time period - but never as a coker.

The study will begin within the next two months, with the arrival of the first two pairs of subjects at Brookhaven for three-day medical evaluations involving investigators from several groups at BNL:

- Epidemiologist Jerome Barancik, of DEE's National Center for Analysis of Energy Systems, has worked hand in hand with Redmond at the University of Pittsburgh in selecting the population for study. Henry Thode, a biostatistician from DEE, will analyze the data.
- Each subject will have a comprehensive history and a physical examination.
- Otto White and Debbie Keimig of S&EP's Industrial Hygiene Group, will conduct interviews to establish a complete chemical exposure profile on each worker and each control.
- Medical's Nuclear Medicine Group will examine the subjects for early lung damage.
- Michael Bender of Medical will perform cytogenetic analysis.
- Medical Department personnel will conduct consecutive tests called sputum cytologies. These evaluations of the malignancy of the cells in expectorated matter are expected to reveal greater results than the singular tests currently done annually by the steel industry, to fulfill OSHA requirements.
- Miller will culture the subjects' bone marrow cells to search for impairment in precursor cells that form all the blood cells in the peripheral blood. This is a first study of the incidence of blood disease in this population.

As a means of evaluating the ultimate health effects of synthetic fuel production, this study complements one that has been under way for ten years in Kosovo, Yugoslavia. Dr.

Marilyn Miller, Medical, is the principal investigator in an EPA-sponsored study to evaluate the health effects of synthetic fuel production. The manufacture of synfuels includes the conversion of coal to other fuels, mostly gaseous and liquid, through chemical reactions. Since the synthetic fuel industry in the U.S. is still young, a population of coke oven workers from the steel industry will be studied. Used in steel production, coke is manufactured from coal in coke ovens. In the process, cokers are exposed to many of the same chemicals as those produced in the manufacture of synfuels.



Mort Rosen

Eugene Cronkite, Medical's representative on that study, is now coordinating the analysis of ten years' worth of retrospective data and the planning of prospective studies, which will include many of the same tests as Miller's study, for purposes of cross-comparison.

Miller's study is also of interest to researchers from Columbia University who are testing blood samples from the subjects. Other groups throughout the country have requested that lymphocytes and red blood cells from the subjects be frozen in long-term storage, so that as newer tests become available they can be applied on the same samples.

Miller thinks aspects of the study may ultimately shed light on the reasons for the high incidence of respiratory and renal cancers in this population. "Even when we match for cigarette smoking, I think we'll probably find an increase," Miller said. "We also think we'll find a lot of non-malignant respiratory disease — something that's never been eval-

uated."

"If our tests are any good," she concluded, "we should get some positive results. If we don't, in this heavily exposed population, we're going to have to rethink the test."

The test's evaluation will take place in about a year-after the first 50 pairs of subjects have been studied. At that time, all the investigators will go over the preliminary data and decide where to go next. And all subjects will be followed prospectively to determine if any unexplained abnormalities have significance for them in the future.

Perhaps the most important thing about this research is that it is designed as a model study. Explained Miller, "Once you have all these investigators in synchrony, you can accept patients for study from any environment or occupation. We hope to be negotiating with other groups so they will be ready to come here when we are finishing up this population."

It is important to remember that even though the current group under

(Continued on page 3)



Roger Stoutenburg

Ann Morgan (right) Director of DOE's Office of Public Affairs, ended her tour of the Lab on March 17 with a stop at the Exhibit Center. Accompanying Ms. Morgan was John Bradburne who is Chief of Public Presentations and Audio-visuals Branch, Office of Public Affairs. Janet Tempel, coordinator of BNL's tour program, conducted the visitors through the three floors of exhibits at the Center. The DOE officials were also given an overview of the Lab by Deputy Director Warren Winsche, and visited the Brookhaven House, the Colliding Beam Accelerator site and the National Synchrotron Light Source.

Patents Awarded

John Brodowski, Accelerator Department, was recently awarded U.S. Patent #4,360,760 for inventing an apparatus consisting of an array of electrostatic quadrupoles for focusing a plurality of parallel beams of charged particles.

Brodowski's invention is an improvement on a device designed by Alfred W. Maschke, Accelerator Department. Maschke holds U.S. Patent #4,350,927 for an invention related to a novel linear accelerator adapted to accelerate a plurality of parallel beams of charged particles.

Linear accelerators, or Linacs, are devices which use radio frequency energy to accelerate charged particles such as electrons, protons and ions. High current, high brightness Linacs would be extremely desirable for applications such as heavy ion fusion, but the production of such Linacs is constrained by a tradeoff between brightness and injection energy.

Maschke invented a novel focusing apparatus which will provide beams approaching maximum brightness

and which will focus beams having essentially any desired total current without increasing the strength of the focusing forces.

Brodowski's invention is an improvement in several ways. A single quadrupole is formed of four identical elements, each element comprising an electrode and a conductive support rod on which the electrode is mounted. The rod ends are terminated in four terminal blocks which are electrically isolated from each other by a total of only four insulators. No bias leads are required for this configuration as bias is supplied to the electrodes via the support rods.

The structure of a single quadrupole may be expanded to form a quadrupole array. The support rods and electrodes used in a large array may be identical, making it feasible to mass produce a single element consisting of multiple electrodes completely assembled on a support rod. This element may be produced by such methods as precision casting.

Inside Info

Melvin M. Levine, associate chairman of the Department of Nuclear Energy and head of DNE's Reactor Safety Licensing Assistance Division, has just been elected a fellow of the American Nuclear Society. Levine was cited for his contributions in theoretical and applied reactor physics, and in the application of thermal-hydraulic computer programs to problems in reactor safety.

Barbara Fitzgerald, DOE's Brookhaven Area Office, will celebrate her 25th anniversary on March 31. Fitzgerald started on March 31, 1958 when the area office was under the AEC, and was an assistant to all the area managers, beginning with Emery Van Horn. In September 1979 she became a contract administrator with the Administrative Branch. Fitzgerald has the distinction of being the second person to have reached 25 years of continuous service with the Brookhaven Area Office — the first was Robert Drucker who retired last year.



Sandra Green



Mary Cooper

Mort Rosen

Att: Retirees

What are you up to? Are you devoting your time to something out of the ordinary? The Bulletin would like to know about it. We are planning a series of articles about some of the different things our retirees are doing now. If you think your new lifestyle would make interesting reading, just send a short description of your activities to the Bulletin, Bldg. 134, BNL, Upton, N.Y. 11973. If we decide to do a story about you, we will contact you for more information and photographs.

For the past few weeks, two word processors on site have been talking to each other. When their conversation is finally finished, about 4,000 pages of words will have been transmitted from one machine to the other, in the form of 100 floppy disks.

"This may be the first time two different makes of word processors have been hooked up to each other on site," says Sandra Green, secretary specialist for the industrial hygiene group in the Safety and Environmental Protection Division. Green is switching from an Amtext word processor to an NBI with better features for her kind of work. She stores reports, tables, memos, letters and other such documents in her word processor, and changing machines meant transferring all of the information on the Amtext disks to NBI disks.

Green had a choice of undertaking a mammoth typing job to get everything into the new disks or sending her Amtext disks off to the NBI com-

pany, with no guarantee of what would come back. The NBI sales representative had one more idea. Two NBI machines can talk to each other. Could an Amtext talk to an NBI?

That's where Mary Cooper and Alan Kuehner entered the picture. An executive secretary in Applied Math, Cooper has an NBI word processor. Kuehner is in the technical services group of S&EP, and he could do the hookup.

Says Kuehner, "I found a communication package that was compatible with both machines, hooked up the necessary hardware, and did some programming so that the special characters like superscripts and bold faces in one machine's format would transfer correctly to the other."

The first transfer was encouraging. Remembers Cooper, "The word 'filter' came over, followed by a garble of letters. But we knew that if we could get one word, we could get them all."

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H@@" AKk4nmsT[pms
H@HD " Cd*+KcK sj
"apr"Z$ filter
```

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H@ "p lrpoyee #K
" " " b%IA
j " " " 9+T[0oy+nta
"ogramj " " " ?C**K
```

"1st attempt — minimal success"

Now that the system is debugged, the procedure is fairly simple. Cooper calls Green on the telephone, they both hook their phones into a modem, and Green starts sending information. As the words disappear from her video screen, they appear on Cooper's screen, and then onto an NBI disk.

Each day, the two women do a few more disks. Periodically, they check to see that the documents are being transferred intact. With the words flowing at 120 characters a second, "it sure beats typing," says Green.

Looking For Hot Spots



In this trick photograph by Alex Reben, Plant Engineering's Mark Culp uses an infrared viewer to check for heat loss through this brick wall.

Plant Engineering's Mark Culp sees red when he sees a leaky window. That's because part of his job is using an infrared viewer to pinpoint heat loss in windows, doors, building exteriors and steam piping.

The viewer is a handy gadget, says Culp, engineer in the energy management group. It measures surface temperatures, showing red where heat is being lost.

Actually, every object which has a surface temperature above absolute zero (-273°C) radiates electromagnetic energy. The intensity of this radiation varies along the wavelengths of the electromagnetic spectrum, from the visual through the infrared.

Infrared light is not visible to the human eye. It can be detected as a sensation of warmth on the skin, but short of going around feeling walls or bashing them in to see what's inside, an infrared camera is the only way of detecting actual heat loss.

Culp uses the infrared viewer as part of energy surveys of on-site buildings. He also takes it out to do spot checks in response to complaints. The common culprits in heat loss are windows, doors, eaves and the wall area around air conditioners. Also, indoor steam piping can leak where its wrapping of insulation has gotten wet or is even missing. Old steam traps can be guilty, too. As steam circulates around the Lab site, it cools off and condenses into water. The water returns to the steam plant through steam traps that are supposed to only let water through. When they let steam through, that heat is wasted.

A few years ago, Supply and Material requested an energy survey of their buildings. They suspected faulty thermostats, leaky windows and the like. As part of that survey, Culp looked at the building exterior with the infrared viewer. He saw a great deal of heat leaking out the large

overhead doors that are common to many of the warehouse buildings.

Plant Engineering did some calculations and concluded the old wooden doors had to go. They were replaced with insulated metal doors, and the openings were weather stripped.

The infrared viewer weighs about seven pounds, an easy load on the shoulder. Culp generally uses it that way for exterior scans. When he wants to take a picture, called a thermograph, he attaches a camera, sets the viewer onto a tripod, and clicks. Out comes an instant shot for the records.

The thermographs are black and red, the hotter the surface, the brighter the red. Of course, thermographs are best taken in the winter season, when the contrast between indoor and outdoor temperatures is greatest.

Culp says the pictures are very convincing. Recently, he went to Bethlehem, Pennsylvania, to give a seminar on energy conservation, as part of an energy management workshop sponsored by the Moravian Church. He did the exterior of a church with the infrared viewer, and took some revealing thermographs. The church elders had conscientiously put storms on all the windows, but the infrared viewer showed one window bright red. It was a basement window which they had dismissed as not being important. Another red spot was the top three feet of one wall, which Culp says indicates missing or sagging insulation. The most heat loss from the church was its steeple, a demonstration of the fact that heat rises.

A separate group in Plant Engineering, the electrical section, also takes advantage of the infrared viewer's heat-seeing capability. John Di-Nicola says the site electrical distribution system as well as devices in the electrical switchyard are examined for "heat loss," which indicates potential trouble with transformers and switches.

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Synfuels (Cont'd)

study is a population of steelworkers, they are surrogates for workers in a new industry for which standards are still being formed. "We're in the business of pure science, we make no recommendations," said Miller. "Still, our measurements may play a role in deciding what standards should be applied to synthetic fuel production. And we hope that we're helping those workers get off on a good footing."

Even beyond its implications for the budding synthetic fuel industry, Miller said, "This is a first-of-its-kind study, where three departments at BNL — Medical, DEE's National Center for Analysis of Energy Systems, and S&EP's Industrial Hygiene Group — form a core group collaborating with universities, industry and unions. I think we are truly fulfilling the role of a national laboratory."

— Anita Cohen

Nuclear Symposium

The Committee on Public Health of The New York Academy of Medicine, and the N.Y. State Dept. of Public Health, will sponsor a two-day symposium on the health aspects of nuclear power plant incidents, April 7 and 8 in New York City. BNL staff members participating in the symposium include Joseph Hendrie who will speak on the structure and function of nuclear power plants and participate in a panel discussion; Victor Bond will speak on the biological effects of ionizing radiation; and Andrew Hull will introduce the banquet speaker, Alvin Weinberg, Director of Oak Ridge Associated Universities.

Those who wish to attend the free symposium should register as soon as possible. Forms may be obtained from Cheryl Christie, Ext. 4207, Bldg. 535A.

Service Awards

The following employees received service awards during the month of March:

Thirty-Five Years	
Ernest D. Courant	Physics
George A. Schoener	DEE
Thirty Years	
Vernon J. Buchanan	Accel.
Theodore R. Johnson	Medical
Helen J. Kelly	Biology
N. Blair Munhofen	Chemistry
Twenty-Five Years	
Robert P. Alvino	Accel.
Henry Boomer	Plant Eng.
Chester J. Bubka	Central Shops
Stanton H. Cohn	Medical
Robert I. Louttit	Accel.
Joseph Mammia	Central Shops
Helen L. McNally	Director's Office
Joseph W. Mead	Instrumentation
Carlyle Murray	Accel.
Morton Rosen	P&G Arts
Arthur Schwarzschild	Physics
Elizabeth K. Shaw	Biology
Anthony J. Wisowaty	Accel.
Twenty Years	
John M. Dunning, Jr.	Accel.
Robert H. Hannel	S&M
Charles M. Johnson	Plant Eng.
Hugh R. McNeill	Accel.
Robert A. Scheetz	Physics
Robert L. Schuman	Applied Math.
Ten Years	
Rippie Bowman	Accel.
Thomas S. Clifford	Applied Math.

NYC Train Trip

The Hospitality Committee is planning a group railroad trip to New York City on Wednesday, April 6. Departure will be at 7:55 a.m. from the Patchogue LIRR station. Round-trip fare for adults is \$3.50; children under five years ride free.

Reserve a ticket by sending your fare through the U.S. mail to Hospitality Committee, P.O. Box 322, Upton, New York 11973. Please do not send cash. Checks or money orders, payable to BNL, must be received by Thursday, March 31. Put the date of the trip, your BNL life number and your phone number on the back of your check or money order. Your tickets will be given to you at the railroad station on the day of the trip. Refunds will be made only if cancellations are received by the Monday morning preceding the trip.

IBEW Meeting

Local 2230, I.B.E.W. will hold its regular monthly meeting on Monday, March 28, at 6 p.m. in the Knights of Columbus Hall, Railroad Ave., Patchogue. There will also be an afternoon meeting at 2 p.m. for shift workers in the union office at 31 Oak Street, Patchogue. On the agenda will be regular business, committee reports and the president's report. Please note date.

Arrivals & Departures

Arrivals

Thomas H. Boucher Plant Eng.
Giovanni Ciarrocchi Biology
Wladyslaw Zakowicz NSLS

Departures

This list includes all employees who have terminated from the Laboratory, including retirees:

Mark R. Hjelmfelt Energy & Env.
Peter M. Meier Energy & Env.
Diane M. Olsen Energy & Env.
Minh D. Tran Physics

Aviation Club

The Aviation Club is planning a flight to Washington, D. C. on April 15 to return April 16. If you would like to participate, call Lou Addessi on Ext. 4758 for details.

CREF Values

February	44.88	March	44.48
April	46.32	May	44.53
June	43.34	July	42.41
August	47.05	September	47.32
October	52.59	November	54.78
December	55.73	January	\$57.59

February \$58.93

What's New In Tele-C.U.E.

Are you in the market for a used car? Tele-C.U.E. can help.

Tele-C.U.E. is a message service which offers information and advice on subjects from automobiles to zoy-sia grass. All you have to do is call Tele-C.U.E. from 9 a.m. to 8 p.m., Monday through Friday and ask for the appropriate message number.

Message titles and numbers are contained in a brochure available in the Public Relations Office, Bldg. 134. But if you want to hear the newest message, "Buying a Used Car — What to Look For," simply call Tele-C.U.E. and ask for message #1255. Tele-C.U.E. phone numbers are: Riverhead, 369-2100; Huntington, 673-5858; Deer Park, 586-0101; Patchogue, 654-8383. Tele-C.U.E. is provided by the Cooperative Extension Association of Suffolk County, in cooperation with the County of Suffolk.



Ken Sutter



Mickey Haller

BERA Board Election Winners

Mickey Haller and Ken Sutter were voted winners of the 1983 BERA Board election. On May 1 they will replace outgoing Board members Dennis Klein and Rosalie Piccione and will join incumbents Sandi Lane, Jim Roesler, Janet Sillas and Nelson Tyler.

The BERA Board would like to thank the nominating committee, the candidates, and all the voters for contributing to the success of the election.

Softball

A meeting will be held on Wednesday, March 30, at noon in the Snyder Seminar Room of the AGS, Building 911, first floor. All team captains and board members are urged to attend.

Any individuals, not already on a team, who wish to participate in the BNL Softball League this year, should contact Sharon Smith, Ext. 3995. The Mixed League, in particular, is looking for new people to fill out their rosters.

Bowling

Red/Green League

High games were bowled by J. Muller 224/225/626 scratch, R. Jones 224/214, J. Connelly 224/207, J. Morris 208/206, G. Spira 216, R. Wiseman 213, T. Holmquist 212, A. Pinelli 210, J. Ferrante 209, M. Israel 208, C. Bohnenblusch 203.

White League

D. Adams rolled a 247, K. Vogel 228/185/542 scratch, K. Asselta 215, M. Scheidet 194/194/549 scratch, S. Smith 185, K. Conkling 181, S. Long converted the 5/8/10 split. Clearwater is in first place.

Purple League

J. Connelly had a 224, A. Pinelli 218, E. Meier 213, E. MacDougall 212, K. Riker 209, B. Brown 206, E. Sperry 201, G. Spira 200, D. Feitler 533 scratch series.

Volleyball

Standings as of 3/21/83

Mixed League

A Division

Dinkers	9-0
EPO's	5-4
Mixed Ups	5-4
Teddybears	5-4
Nuts & Bolts	2-7
Nuclear Wastrels	1-8

B Division

Semi Tough	20-4
Phoubars	17-7
TNT	17-4
Up Fagrab	16-8
Nuke Yorkers	16-11
Chungas Revenge	12-15
Puff & Stuff	8-16
Screwballs	7-14
Quirks	7-20
KMA	3-24

Open League

Phoenix	8-0
Brewmasters	5-3
Raiders	4-4
Random Errors	4-4
FRE8D	3-5
Half Lifes	0-8

Economy: a way to spend money without getting any fun out of it.

Depression: a period during which we have to get along without the things our grandparents never dreamed of.

Speakers Bureau

Walter Kane (DNE); Knox School at St. James, Present Day Model of the Nucleus, January 12.

Marcie Liebler (PE), Edward Murphy (PE); Smithtown Rotary Club/Boy Scouts of America Career Day, Careers in Architecture and Engineering, January 27.

Per Dahl (Accel.); St. Isidore's School Science Fair, Science Fair Judge, February 2.

Mark Culp (PE); Moravian Theological Seminary, Energy Auditing, February 26.

Sonia Haber (Med.); YM/YWHA of Suffolk County Senior Citizen's Club, Medical Research at BNL, March 2.

Glenn Price (DO), Avril Woodhead (Bio); Shelter Island High School 18th Annual Science Fair, Science Fair Judges, March 4.

Eva Bozoki (NSLS), Eena-Mai Franz (DNE), Rachele Weiss (Med); Women's Study Conference at SUNY Stony Brook, Panel Discussion on Women in Science, March 8.

Betty Heldman (Med.); Syosset High School Women's Achievement Week, Combining Career and Family, March 9.

Martin Plotkin (Accel.); Institute of Environmental Sciences, BNL General and CBA, March 17.

Gus Prince (DNE); CCNY Math Career Day, Careers in Math, March 17.

John McTague (NSLS); Long Island Forum for Technology, NSLS, March 31.

Lawn Seeding

In this area, lawns should be seeded for spring by April 15. For a fact sheet on "Suggested Suffolk County Lawn Seed Mixtures," write to the Cooperative Extension Association, 246 Grifing Avenue, Riverhead, N.Y. 11901.

Seeding can be done by hand, with a rotary seeder, or with the usual type of seed and fertilizer spreader. To ensure uniformity and completeness of coverage, divide the seed into equal lots. Seed the second lot at right angles to the first, with each lot covering the entire lawn area. Spread all seed, fertilizer and lime this way.

Cafeteria Menu

Week Ending April 1, 1983

Monday, March 28	
Cream of celery soup	(cup) .65
	(bowl) .75
Western omelet & hash browns	1.80
Western-style chili on white rice	1.85
Hot Deli: Corned beef	(bread) 1.85
	(roll) 1.95
Tuesday, March 29	
Chicken soup w/matzo balls	(cup) .65
	(bowl) .75
Top round of beef & 1 veg.	2.00
Chicken breast Parmesan & 1 veg.	2.00
Hot Deli: Grilled Reuben	1.90
Wednesday, March 30	
Cream of potato leek soup	(cup) .65
	(bowl) .75
Fish & shrimp Newburg on white rice	2.00
Barbeque spare ribs & 1 veg.	1.95
Hot Deli: Baked ham	(bread) 1.85
	(roll) 1.95
Thursday, March 31	
Turkey vegetable soup	(cup) .65
	(bowl) .75
Sauteed chicken breast on white rice	2.00
Easter Special	
Prime rib of beef	
Baked potato w/sour cream or rice pilaf	
String beans almadine	
Coffee, tea or small soda	
	\$3.85
Friday, April 1	
New England clam chowder	(cup) .65
	(bowl) .75
Shrimp cakes w/cream sauce & 1 veg.	1.85
Breaded fish fillet & 1 veg.	1.85
Hot Deli: Italian-style meatball hero	1.95

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. In keeping with the Affirmative Action plan, selection decisions are made without regard to age, race, color, religion, national origin, sex, handicap or veteran status.

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all non-scientific 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.

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.

The vacancies listed below have been exempted by the Director's Office from the current freeze on open requisitions.

LABORATORY RECRUITMENT: Opportunities for present Laboratory employees.

1839. FACILITIES OFFICE ASSISTANT - Plant Engineering Division.

1840. DRIVER - Plant Engineering Division.

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

1841. SCIENTIFIC ASSOCIATE - Must have experience in the designing, building and maintaining of computer controlled electronics. Additional responsibilities will involve assisting in experiments and measurements using this equipment to interface with DEC 11/34 hardware. A degree in a related discipline and/or equivalent experience is required. Physics Department.

Autos & Auto Supplies

79 HONDA - motorcycle, CM400T, 2,000 mi., garaged, must sell, \$1,000. Ext. 7125.

69 OLDS CUSTOM DELTA 88 - a/c, p/s, p/b, 67,000 mi., runs beautifully, well maint., \$1,000. Corliss, Ext. 4438 or 472-1585.

80 HONDA HAWK - sport model, CB400T, excel. cond., low mi., extras, \$995. 286-8814 after 5:30.

81 PONTIAC T-1000 - white, blue pin stripe, a/c, 4 spd., 4 cyl., w/w rad., 15,000 mi., still under warranty, tint windows, asking \$4,500, negotiable. Ext. 2964.

75 DODGE CORONET - p/b, p/s, power windows, cruise control, a/c, 318 motor, auto., good cond., \$1,100. 732-3350.

73 DODGE MAXI VAN - 1 ton, high mileage, good cond., \$1,050. Ext. 3336.

72 PLYMOUTH FURY - 4 dr., hard vinyl top, p/s, p/b, \$600. Ext. 2314 or 567-5131.

76 FIAT - 131S, 2 dr., 5 spd., a/c, am/fm, 20 mpg, asking, \$1,300. Ext. 2521 or 928-8379 eves.

73 VEGA - 4 spd. stick, custom interior and suspension, 7,500 mi., good transportation. Ext. 3596 or 821-1039.

71 BLAZER - 6 cyl., 250 eng., 4 w/drive, new tires, \$1,200. Bob, 588-0677.

(2) RIMS - 14" from Plymouth, \$20. Ext. 3499.

82 SUZUKI - RM 125, dirt bike, excel. cond., extras, \$1,095. 929-8520 after 6 p.m.

77 SAAB - 99 EME, sport coupe, sun roof, luggage rack, Perelli tires, gold alloy rims, \$5,100. Jim, 667-3909.

73 DUSTER - 6 cyl., auto., p/s, p/b, a/c, 1976 motor, 55,000 mi., very reliable, \$625. 732-3350.

65 LEMANS - convertible, 326 eng., auto., bucket seats, primed, ready for paint, excel. cond., \$1,100. 588-7648.

78 FORD FIESTA - excel. cond., 55,000 mi., 4 spd., 30-40+ mpg, records, manuals. Mark, Ext. 4315.

78 BUICK - Sky Hawk, V-6, sunroof, 4 spd., a/c, p/b, p/s, hz hback, 23-25 mpg, mint cond., \$3,500. 929-3362 after 5:00 p.m.

75 CORVETTE - red, auto., a/c, p/s, p/b, T-top, am/fm stereo cassette, clean, \$7,900. 286-0372.

81 CHEVY CITATION - black, 4 cyl., 4 spd., p/s, p/b, a/c, sunroof, 33,000 mi., mint cond. 286-3698.

76 REGAL - excel. cond., high 80's mi. Lynn, Ext. 2780.

74 DODGE DART - perfect body, runs but needs work, \$450. 751-3375 after 6 p.m. or weekends.

TOW HITCHES - 1 reg., 2 heavy duty, ball-type, \$30. 722-4469 after 5:30 p.m.

CASSETTE DECK - Audiovox and Jensen speaker, like new, \$90. 673-6730.

71 SUPER BEETLE - new engine, new tires, new paint, new seat covers, a/c, am/fm radio, CB radio, \$2,200 negotiable. 981-9584 eves.

72 DODGE COLT - runs good, extra parts available, asking, \$400. John, Ext. 3406 or 929-6896 eves.

69 VW CAMPER - sleeps 3-4, sink, ice-box, CB, rebuilt engine, \$1,500. Wanda, Ext. 3583 or 3682.

80 MAZDA RX-7 - charcoal gray, tape deck, aluminum wheels, immaculate cond. Ken, Ext. 2008 or 928-5875 eves.

66 BSA - 441cc, Victor Enduro, \$400; 1966 Sears 250cc motorcycle, good cond., \$175. Frank, 399-4480.

80 PONTIAC PHOENIX - 6 cyl., a/c, p/s, p/b, am/fm cassette, 32,500 mi., original owner, excel., \$4,000. 744-4611 eves.

69 VW KARMANN GHIA - runs well, needs muffler, \$400. Joyce, 928-8717 or 928-4698.

77 FORD GRANADA - 2 dr., 6 cyl., a/c, p/s, p/b, \$2,000. Ext. 4391 or 3031.

79 CHEVY PICK-UP - short bed, Siverado, bucket seats, am/fm, cassette, extras. AT9-1755.

71 VOLVO - sta. wagon, new exhaust, rebuilt eng., excel. cond., new paint, body work, \$2,200. Reagan, Ext. 4798 or 473-8036.

73 CADILLAC - Sedan de Ville, 65,000 orig. mi., excel. cond., \$2,300. R. Lane, Ext. 2575 or 653-5555.

79 FORD - F-250, 4 x 4 Ranger XLT, cap, am/fm, auto., many H.D. options and extras. 475-1388 eves.

73 FIREBIRD - 350, auto., a/c, blue & white inter., 1978 Yamaha 400 Rd. Paul, 621-3613.

65 BUICK LESABRE - 4 dr., good cond., many new parts, \$500. Steve, Ext. 4297 or 929-6877 after 5:30 p.m.

PIONEER KP-500 - under-dash, fm/cassette stereo, w/slide bracket and antenna adaptor, excel. cond. Chip, Ext. 2256.

74 MONTE CARLO - am/fm cassette stereo, new paint, good cond., \$1,900. Sharon, Ext. 7008 or 722-8019.

81 CHEVY STEPVAN - lunch wagon, fully equip., 3,000 mi. 399-1868 after 6 p.m.

73 SUZUKI - T500, saddle bags, many new parts, very good cond., \$600. Dan, Ext. 7518 or 929-3195.

79 PLYMOUTH HORIZON - a/t, excel. cond., must sell, \$2,800. Doreen, Ext. 2456 or 924-7723 eves.

VW PARTS - muffler assemblies, \$28; bumpers, \$27; repair manuals, \$16; 009 distributor, \$36; all brand new. Augie, Ext. 2419 or 325-0594 eves.

Boats & Marine Supplies

20' BAYLINER - 1976 Liberty, 130 Volvo I/O, cabin, trailer, extras. John, 541-4792.

17' THUNDERBIRD - cathedral hull, 90 HP, Mercury, Trailex aluminum trailer, asking \$2,000. Borg, Ext. 3568 or 286-0428.

115 HP JOHNSON - w/controls, good cond., \$650. 286-1618, after 6 p.m.

23' CUD. CAB. - fiberglass boat, offshore hull, very good cond., needs engine, \$3,150; new engine avail. for add. \$1,000. Joe, Ext. 4638.

20' SEA OX - 1980, 115 HP Evinrude, excel. commercial fishing boat, loaded, clean, w/accessories, \$6,900. Ask for Richard Gagliardi, Ext. 4613 or 821-9296.

KAYAK PADDLE - airbags, asking, \$180. Ext. 2521 or 928-8379 eves.

16' FISHING BOAT - fiberglass, 40 HP motor, trailer, \$900 or best offer, Ext. 4505 or 928-2803.

17' CANOE - Coleman, 3 yrs. old, goes for \$425+ new, great shape, asking \$325. Bill, 286-9226.

18' WOOD & FIBERGLASS BOAT - 1962, w/trailer, 50 HP outboard motor, asking \$975 or best offer. 399-2149.

1981 EVINRUDE - 9.9 HP, outboard, used for fishing only, mint. cond., \$750. Ext. 4243.

18' SPEEDBOAT - 1969 Chris Craft, mahogany, 283 Cl. collector's item, mint cond., \$4,000. Mike, 289-0602 eves.

17' COBIA - fiberglass, 85 HP Johnson w/trailer, life jackets, gas tanks, excel. cond., \$3,000. Jim, Ext. 7772.

Free

PUPPIES - German short-haired pointers, Lab mixed. 281-8916.

KITTENS - (3) females for adoption. Kelli, 286-1378 after 5 p.m.

Garage Sales

YARD SALE - March 26-27, 10-5 p.m., furniture, desk, appliances, lawnmower, bikes, camping good and much more, 3B Independence Ct., Ridge. 924-4250.

Miscellaneous

INTELLEVISION - 6 mos. old, including 2 tapes, \$150. 567-5947 after 1 p.m.

DENIM JACKET - w/picture of Jim Morrison painted on back. Rose, 744-5069.

CANOPY FRAME - white, good cond., \$50. Ext. 2964.

GRAY FOX - mounted in natural pose on log, \$125 firm. Bob, Ext. 3354.

SLIDE ON CAMPER - for 8' pick-up, sleeps 4, sink, stove, ice box, \$800. 567-8811.

RECORDS - 45 RPM records from the 50's and early 60's, plus some albums. Frank, Ext. 3120.

REFRIGERATOR - black, old but still works, \$15; Sears dishwasher, needs motor parts, \$30. Ext. 2529.

GOWN - sz. 9, pale yellow, pleated, worn once in wedding party, perfect for a prom, \$45. 744-9677.

SECTIONAL SOFA - 3 pc., green brocade, good cond., \$150 negotiable. 588-6333.

ATARI CHESS GAME - new, \$12. Pat, Ext. 4602.

SNOWMOBILE SKI-DOO - 340 TNT, 4 yrs. old, excel. cond., \$1,000. 744-0471.

CHINA CLOSET - walnut, about 40 yrs old, \$65; old mahogany buffet, can be used as dresser, 58" long, \$30. 878-6637.

BEDROOM SET - 5 piece, w/custom made mirror, double bed, \$325. 981-4419.

FRIGIDAIRE - 21" white electric wall oven, used 3 mos., excel. cond. 929-6772 after 6 p.m.

COLD WATER TANK - w/air valve, 30 gallons, 5 yrs. old, converted to city water, \$25. Ext. 2384.

COLONIAL SOFABED - queen size, very good cond., blue/gold, \$175. 399-0592.

25" MAGNAVOX CONSOLE - needs picture tube, best offer. Ext. 5124, 269-5003.

BIKE - lady's 3 spd., English, very good cond., \$50. Naomi, Ext. 3699 or 744-1081.

COMMUNION DRESSES - all lace, \$20; fancy party type, \$10-\$15, sz. 12, worn once. 585-8420.

MEN'S LEATHER JACKET - lined, like brand new, sz. 38, black, really nice, \$60. Ask for Richard Gagliardi, Ext. 4613.

TAPES - BASF Pro II blank cassette, CrO2, C-90, \$2.75 ea. Ext. 2521 or 928-8379.

INTELLEVISION - 13 tapes, w/intelleivoice module, best offer over \$250; 2 pairs of ladies ski boots, sz. 6 & 6-1/2, \$10 each. Ext. 7720.

EVERGREENS - fir & spruce trees, U-dig, 22" to 42", 2 for \$7, bring shovel and burlap, last year of selling. 878-6637.

ATARI - 2600 system, w/12 tapes, including Donkey Kong, StarMaster, M-Network, Football, Chopper Command, \$120. 473-2473.

CHILD'S SKI JACKET - good cond., sz. 10, navy, \$8. Susan, 4267.

TWIN BED HEADBOARDS - matching pair, ivory gold tint, \$15 pair; screen door, wood, copper screening, 3 panel, 81"x31"x1-5/8", \$20. 289-6490.

COUCH - 2 piece sectional, 96" blue velvet, traditional, \$150. Ext. 4473 or 581-2961.

HAMS - Heath C.W., tranceiver HW16, w/V.F.O., ant. tuner, SWR meter, coax. switch, complete, \$200. 589-2648.

LAWNMOWERS - Toro gasreel mower, Clemson hand mower, best offer. John, Ext. 7611.

FLOPPY DISK DRIVES - CDC model 9409, 80 track, new \$150. 289-5704 after 5 p.m.

MOTOROLA CAR RADIO - am pushbutton, w/speaker, good cond., \$10. Pete, Ext. 4326.

STEREO UNIT - Sound Design, needs work, \$15; barbells, weights, bench set, \$15; new crib, horsehair mattress, bumper pads, \$110; infant Love car-seat, \$15. Ext. 2437.

40 CHANNEL CB - Corba Home Base, best offer over \$100. 399-2149.

FIREPLACE INSERT - "Scandia" woodburning, filler plates, 2 spd. fan, used one season, new, \$750, asking \$300. 878-0164.

SINCLAIR COMPUTER - ZX 81 cassette recorder, 16K ram, TV/monitor, \$125. Ed, Ext. 3840.

DINETTE - Douglas w/4 chairs, \$350, 6 foot decorator wall unit, \$60; queen size sofa bed, \$350; desk, \$50; stereo light box, \$25. Ext. 3565.

ROTOTILLER - Ford for use w/10 HP tractor, excel. cond. \$250; spreader, 1 bushel size, flex. shaft drive, excel. cond., \$50; 20" Schwinn bicycle, very good cond., \$25. Ext. 4636 or 929-4522.

BOY'S BIKE - 24", 3 spd., \$30; woman's bike, 26", \$5, humidifier cool-vapor, \$5. Ext. 4391 or 3031.

LIVING ROOM SET - sofa, 2 chairs, ottoman, \$150; executive office chair, \$50; all excel. cond. Ext. 2752 or 744-1127 eves.

TABLES - (3) Lane, walnut finish, good cond., 1 coffee, 1 square, 1 step, \$150. Jerry, Ext. 7427 or 475-5591.

BEDROOM SET - white, Provincial, single bed, dresser, nightstand, also wood rocker, good cond. 286-1097.

DYNACO STEREO - 120 amp., \$50; Dynaco stereo pre-amp. PAT-4, w/many features, \$50. Ext. 4743.

DOG FENCE - 5x150 ft., plus metal poles, \$75; travel cage for large dog, \$30; b/w TV, \$15. Ext. 4389 or 331-4596.

RIDING MOWER - Huffy, 8 HP, 26" adj. cut, excel. running, \$300. 475-1388 eves.

ASPARAGUS ROOTS - freshly dug, local, excel.; child seat for bicycle, new, padded steel construction, \$12. Tom, Ext. 4084 or 878-1060.

SLIDE PROJECTOR BULBS - (14) CWD 4 pin, 300 watt, \$3 ea.; (7) CAL 4 pin, 300 watt, \$3 ea.; (3) CZX/DAB, bayonet base, 500 watt, \$5 ea., all are new, in boxes, looking for ELH bulbs. H. Sauter, Ext. 3783.

ALUMINUM GUTTERS - and leaders, over 200 ft., \$100 takes all. 751-6418.

MOVING - electric mower/trimmer, 6 mo. old, excel. cond.; kerosene heater, 8,600 BTU; furniture; tires; more. Carol, Ext. 2907 or 928-3650.

Car Pools

STONY BROOK/STRATHMORE - established car pool looking for 4th member. Morris, Ext. 4192.

ROCKY POINT - paying rider would like to join car or van pool. Chris, Ext. 3744 or 821-9781.

RONKONKOMA DRIVER - to join 3 person pool, LIE Exits 59, 60, 61. Victor, Ext. 2395.

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

RIDGE - 1 acre fully wooded building plot, established residential area, minutes from Lab, \$13,900 w/short term mort. 924-3236.

BAYPORT - small authentic colonial, move-in condition, includes all major appliances, drapes, fixtures & some carpeting, 2-car garage, convenient to schools, shopping, low 100's. 472-2633.

NEWPORT CENTER, VERMONT - 80 acres, 14 mi. from Jay Peak ski area, approx. 15 mi. from the Canadian border. 727-7628.

HOLBROOK - high ranch, 4 bdrms., eik, l/r, d/r, large l/r with fireplace, garage, hardwood floors with some carpeting, 2 zone oil heat with set back thermostats, fenced back yard, brick patio, \$61,990. Ext. 4092 or 981-7226.

CONDOMINIUM - Colonial Woods, 2 bdrms., 3 min. from BNL, \$38,500. Eileen, Ext. 4949 or 924-4922.

WADING RIVER - gorgeous waterview, beachfront year-round house, 2 bdrms., fireplace w/stove, 2 decks, SWR schools, low \$100's. 929-3127 after 4 p.m.

BAYSHORE - 3 bdrms., l/r, kit., d/r, fenced yard, gas heat, mint. cond., assume 7% mort., \$320 pay's all or refinance, \$41,900. Ext. 3397 or 666-4133.

For Rent

STONY BROOK - 2-3 bdrms., l/r, d/r, eik, full basement, f/p, walk to Stony Brook. 751-2835 after 6 p.m.

MEDFORD - 2 rm., studio apt., large kitchen, pvt. entrance, cable TV, all utilities incl., \$300 mo. Don, 475-7532 eves and weekends.

Wanted

SMALL CAR - 1976-1978, less than 65,000 mi., stand. trans. Debbie, Ext. 3420 or 643-2261 after 6 p.m.

HOUSE TO RENT - Bellport Village or Brookhaven Hamlet. Ext. 5055 or 286-0919.

HOUSEMATE - for 4 bdrms., 3 bath house, 20 min. to Lab, washer/dryer, sundeck, dishwasher, \$164/mo. + 1/3 util. Ext. 2521 or 928-8379.

CEMENT MIXER - 1/2 bag capacity. 289-3586.

RABBIT - large amorous female. John, Ext. 3675.

TRAINS - Lionel, American Flyer, accessories, any condition brings good price. Carol, Ext. 3362 or 924-4097 eves.

TRAINS - Lionel, any "O" gauge or "027" gauge cars, track and equip. Frank, Ext. 3120.

HOUSE TO RENT - for summer, near beach 2-3 bdrms. for visiting scientist & family, furnished. Ext. 7114.

INFANT'S OUTDOOR SWING - pressure gates to restrict toddler, covered sandbox, child size lounge chair. Ken, Ext. 4421 or 744-0722.

GRINDER BENCH - 3450 rpm, 1/2 HP or smaller, any cond. George, Ext. 3536.

TIE BOXES - if you have the box that came with your Christmas tie, I could use it (without the tie). Ginny, Ext. 3414.

HOUSE TO RENT - Bayport-Blue Point area only, 2 or 3 bdrms. Carol, Ext. 3341 or 567-6433 after 6 p.m.

MINERALS, MINERAL COLLECTIONS - old mineral publications, any language. Ext. 4717.

APARTMENT - large, one bedroom, waterfront. Jugnet, Ext. 5508.

APARTMENT - Brookhaven Hamlet, single male, nonsmoker, Bill, 286-9226.

FLUORESCENT LIGHT FIXTURES - 2 foot each, one or two bulb. Andrew, 281-8274.

WOMAN'S BIKE - \$50 or less, also child's bike seat, \$10 or less. Dawn, 698-4882 8 a.m. - 11 a.m.

INFANT CARE - Monday to Wednesday on-site, near Lab or near Brentwood. Lavina, Ext. 2905 or 435-8650.

HOME - for 1-1/2 yr. old cat. Gary, Ext. 2066 or 924-0636.

HOUSEMATE - to share roomy house in rustic country environment, 3 mi. from Lab. Gary, Ext. 2066 or 924-0636.