BROOKHAVEN BULLETIN
Volume 34 - Number 13 / March 28, 1980
BROOKHAVEN NATIONAL LABORATORY

Negative Ion Sources —Looking Good

The almost unlimited production of energy by fusion reactions is an exciting prospect, but the problems are manifold and scientific researchers are attacking them from many angles.

In the Accelerator Department, the Neutral Beam Development Group, with Krsto Prelec and Theo Sluyters leading the group, has as its long range goal the development of neutral beam injectors for plasma heating in fusion reactors.

Currently, the only proved heating method to eventually achieve the net production of energy from fusion is the injection of high energy beams of neutral hydrogen atoms into a plasma. In principle, a high energy neutral atom can be produced in two ways: by attaching an electron to an accelerated positive ion, or by removing the electron from an accelerated negative ion.

The former method is well developed and all neutral beam systems, existing or under construction, are based on positive ions. However, as fusion devices increase in size, the energy of neutral atoms has to increase as well, perhaps to as much as several hundred keV. And therein lies a problem. Beyond 100 keV, it becomes more and more difficult to attach the electron to the fast positive ion and more and more of the beam power is lost.

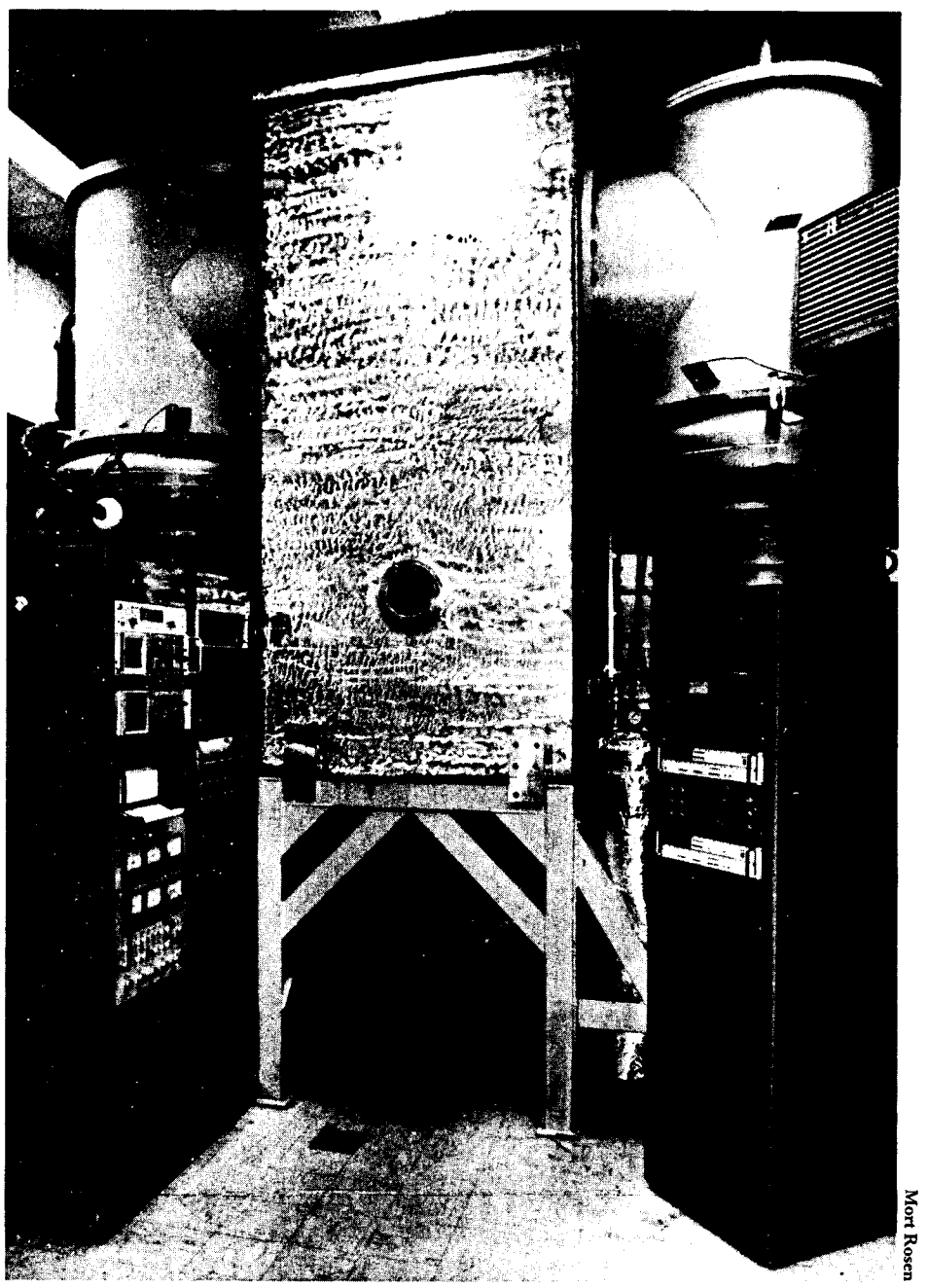
On the other hand, it is easy to remove the additional electron from negative ions even at very high energies. But this very feature makes it difficult to produce negative ions in sufficient quantities. As Prelec says, "one has to be careful how to handle them so as not to neutralize them in the wrong place."

Funded by DOE's Office of Fusion Energy, the Neutral Beam Development Group has been making steady progress towards its goal for the past seven years. Although its program has no direct relation to high energy physics, it has important side applications, for example, the charge exchange injection into the AGS. But the main thrust of its work has been to design sources for direct production of negative hydrogen ions, as well as to work on problems of acceleration and neutralization.

During these years, the group developed sources which yielded negative ion currents up to 1 ampere intensity with subsequent acceleration to 120 keV energy, but they operated in relatively short pulses of 0.1 seconds. As fusion devices will require much longer pulses, or even a steady state operation of ion sources, the group then concentrated on developing a source model that would deliver negative ion currents of 1-2 amperes in pulses of at least 5 seconds.

Based on recent and very encouraging results with existing ion sources, Prelec says that such a model has now been designed, and fabrication will begin soon. The new feature of the source is cooling of all the electrodes, up to a power density of 0.25 kW/cm^2, by using high pressure water flow. From the cooling point of view this source should be capable of steady state operation.

To study the characteristics of the new source a test facility is being built at the AGS linac building. The facility consists of a large box with two 35″ diameter diffusion pumps to remove the hydrogen gas streaming out of the source and maintain a good vacuum inside the box. To maintain the discharge in the source and to extract negative ions, different kinds of power supplies will be used, some rather unconventional, as for example, a stack of diesel truck batteries for the source discharge. A computer system has been developed to monitor and operate the source on a round-the-clock basis. Testing will begin early this summer and, following accomplishment of proof-of-principle, a 10A source module will be designed for later use in an operating neutral beam system.



Mort Rosen

A recent view of the ion source test facility. In the center is the 7′x9′x4′ main box. On either side is the vacuum system which consists of two 35″ diffusion pumps with a combined pumping speed of 80,000 litres per second. In front are the controls and instrumentation of the ion source.

The growing importance of negative ion based systems for future fusion reactors was reflected in the success of the first International Symposium on the Production and Neutralization of Negative Hydrogen Ions and Beams, organized by BNL in 1977. Stimulated by the enthusiastic response and the progress being made in this field of research, DOE and BNL will again sponsor a second conference in October of this year, with Theo Sluyters serving as chairman.

CENSUS '80 APRIL 1

The Count Begins On Tuesday

Once every ten years Americans are able to fill out a government form without it costing them a dime – at least that's what the United States Bureau of the Census says; and according to many critics of the census it's no coincidence that the data collection will begin on April Fools' Day.

Since 1790 Congress has required that every person in the country be counted once every ten years for the purpose of delegating Congressional seats. Secretary of State Thomas Jefferson directed the first census; 17 marshals were given the responsibility of counting every person in the 16 states and the Southwest Territory. They asked only five questions, and were paid one-third cent to two cents a person. On the 1980 long form there are 65 questions, with the distributors and collectors being paid an average of four dollars an hour.

It took the marshals and their assistants 18 months to complete the first census which showed a population of 3.9 million in comparison to today's estimated 222 million. However, before the 1980 census is complete 5,000 miles of microfilm, 85 tons of ink, and 5,000 tons of paper will be expended – at a cost of more than a billion dollars. The 1970 census cost $268 million.

Here at the Lab the 1980 census will reflect the days when United States marshals roamed the hillside. Instead of receiving the mail-out packets like the rest of the country, on-site residents will be tallied by census workers doing a door-to-door survey. Currently, there are approximately 95 living here in apartments with an additional 123 people occupying dormitories.

In the past the main objection to the census was the public rendering of private information. For many years census material was posted in public places, but in 1929 Congress set up standards of strict confidentiality. Under the United States Code, the Census Bureau can only use the data it gathers for statistical purposes, and can't publish or release material which could identify any person or business. In the 51 years since the law was enacted, no census taker has ever been formally charged with a violation of the code.

However, the issue of privacy has been supplanted by critics questioning the census system itself. Leading the charge, with a lawsuit against the Census Bureau, is the Federation for American Immigration Reform. They believe it's against the law to count illegal aliens in with the rest of the population. Under the present census system there is no distinction made between citizens and illegal aliens on census day. Everyone except foreign tourists and diplomats are counted which gives areas with high numbers of illegal aliens an unfair advantage when Congressionl seats are reassigned. The F.A.I.R. is saying this violates the principle of equal representation.

With a whopping billion dollar price tag on the census, many people think that just scientifically sampling the population would achieve the same objectives. In an effort to count every head in the country, the government will be sending census takers into bus stations, all-night movies, tents, and even automobiles. Despite the all-out head hunt history has shown there are bound to be a few misses. The 1970 census missed 5.3 million people, and is expected to miss a similar number this time, roughly 2.5 percent of the population.

Still, Washington maintains it needs a census to keep up with government needs such as; minority programs, finding military manpower, employment, and education. Other groups use the census as well. A Detroit Pizza parlor chain, The Boy Scouts, and a Kansas City church have all used the census in preparing organizational moves.

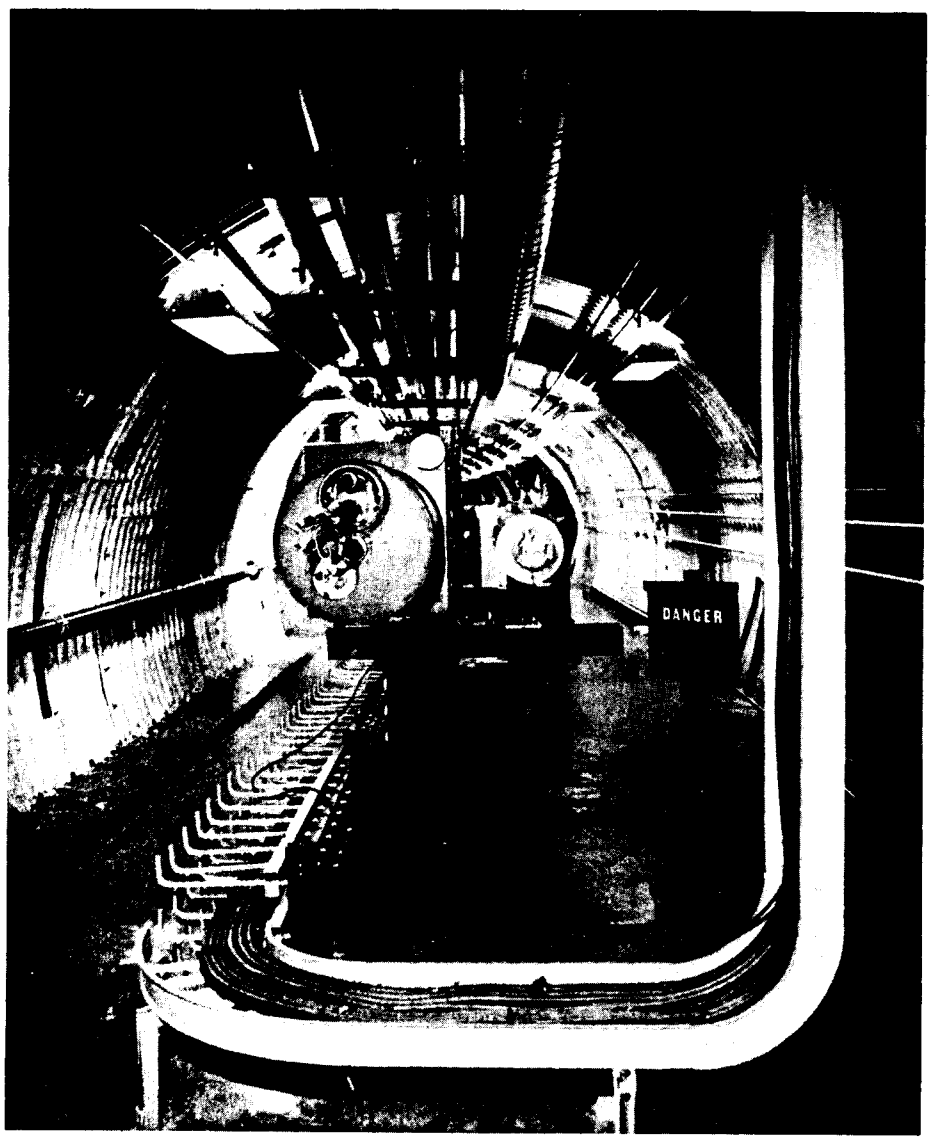
Measuring changes in the role of women during the past decade will

(Continued on page 2)

Another Energy Conservation Measure

ISABELLE's First Cell test facility at Building 902 contains essentially what will be found in the main ring – cryogenic magnets, high vacuum systems, distribution headers, including the ventilating system and cryogenic piping. Control and communication cable trays are beneath the magnets. Recently a blanket of insulation was added to the mock-up tunnel which is approximately 14 feet in diameter and 11 feet high. To reduce the energy used for heating and cooling the test facility, approximately 2½" of polyurethane spray-on insulation was applied to the exterior. This has the equivalent insulating value of 20 inches of concrete. When the main ring is constructed on the ISABELLE site, it will be covered by 13 feet of earth which will provide radiation shielding, as well as insulation to keep the working environment at a temperature between 55°-60° F.

—Photos by Humphrey



Inside

Outside

Census (Cont'd)

also be a by-product of the new census statistics. Information about the percentage of women in the working force, number of divorced women now maintaining single homes, and female gains in education will all be part of the 1980 census. As in the past women are expected to outnumber men: in 1978 they represented 51.3 percent of the population – roughly 5.5 million more women than men. By the turn of the century that figure is supposed to rise to 7.6 million.

Congress has decided to have a mid-decade census as well, beginning in 1985. Apparently it needs more data on population and housing to allocate funds. However, the five year census can't be used for shuffling Congressional seats and will be limited in scope and cost.

Perhaps the most inventive idea for using census data came out of Denver, Colorado, a short while ago. A young woman called the Census Bureau and asked how she might find out the number of unmarried men in her city. One of the bureau employees said he could give her that information, broken down by neighborhood if she wanted. "Fantastic, she said, "and can you tell me the neighborhoods where the men are young and wealthy?"

—Jerry Mikorenda

In Memoriam

Harvey E. Bumstead, a Design Engineer in the Accelerator Department, died on March 24 at the age of 53. He had been employed at BNL since September 17, 1951, and also played the bass with the Isotope Stompers, a band formed in 1971 by a group of BNL jazz enthusiasts.

He is survived by his wife, Claire; sons Douglass, Richard and Mark; daughters Amy, Patricia Beck, Claudia James, Cori and Angela Hill; and four grandchildren. He was a resident of East Patchogue.

Speakers Bureau
March

Norma Cicale (Med); **Sandra Garber** (DNE). Women's Week at Suffolk County Community College, Careers for Women in Science, March 12.

Betsy Buzash-Pollert (Bio); **Eena-Maí Franz** (Chem); **Jeanne Penoyar** (DNE); **Gail Waite** (DNE); "Awareness Day" at Shoreham-Wading River High School, Careers for Women in Science, March 14.

Janet Hoefling (DO), C.W. Post College Career Day, Careers in Exhibit Management, March 15.

Samuel Morris (DEE), National Council of Jewish Women, Energy: Will It Do Us In?, March 19.

Irwin Lewis (Math). Queensboro Community College, Computing Careers in a National Lab, March 19.

John Blewett (Accel); **Avril Woodhead** (Bio), Shelter Island 15th Annual Science Fair Judges, March 21.

Going Electric

Brookhaven's three new electric cars are on the road. The Change of Pace sedan deliveries have been assigned to the HFBR, DNE at Bldg. 197, and the local DOE office. Staff Services reports that ten more electric vehicles are expected to be delivered early in May.

The performance of the vehicles will be monitored over the next three years as part of a demonstration project administered by DOE to test the feasibiliy of increased use of electric powered transportation.

Energy Tips

Warmer weather needn't mean an end to thoughts about home insulation. Adding insulation can reduce the cost of cooling your home in warm weather as well as cutting heating costs during the winter. Consult with a reputable insulation dealer or with your local building inspector or county agent to determine your needs.

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Make sure that the ducts in your air conditioning system are properly insulated, especially those that pass through the attic or other uncooled spaces.

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Observe the 55 mph highway speed limit when driving. Most cars get about 20 percent more miles per gallon on the highway at 55 mph than they do at 70 mph.

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Consider replacing your car's conventional tires with radials when new tires are needed. Did you know that radials can improve gas mileage by from three to five percent for city drivers and by seven percent for highway drivers? And radial tires last longer; however, never equip your car with both radials and conventional tires at once.

Selected Reading

Sci. News 117 (8) February 23, 1980
The female edge against disease. 118-19

New Sci. 85 (1196), February 28, 1980
A singular solution for schizophrenia. D. Horrobin. 642-4

Nature 283 (5750), February 28, 1980
Smoking and health: Time for a legal commitment. 801

Nature 284 (5751), March 6, 1980
No easy route to non-proliferation. 1

New Sci. 85 (1198) March 13, 1980
Computers threaten translators' jobs. 836

Science 207 (4436), March 14, 1980
Accountability: Restoring the quality of the partnership: A Report from the National Commission on Research. 1177-82

Retires Today

Izydor Kujawski, a Laboratory Custodian who has been at BNL since December 19, 1960, is retiring today. He and his wife plan to do a little traveling, "but not too far" – perhaps to the Finger Lakes this summer. Mostly he just plans to enjoy working on his house and garden.

Gas Drops 90c

All Fools' Day, or April Fools', is one of those unofficial events that has survived over the centuries, yet no one is quite certain of its origin. As is the case with many of our holiday's in some way or form it may have its roots in ancient Greek or Roman mythology.

The Romans held a "Feast of Fools" celebrating Proserpina's descent into the underworld. Ceres, her mother, heard of Proserpina's cries as Pluto carried her away, and her unsuccessful search for her daughter was called a "fool's errand."

But the most plausible account of how 'All Fools' Day' began comes from France. In 15th century France the new year was celebrated during the spring equinox, roughly April first. However, in 1564 Charles IX adopted the Gregorian, or modern, calendar, which begins January 1.

Back then news traveled as slow as tax reform does today. Many Frenchmen were unaware of the change in the date of the new year, or wished to stick with the old tradition of sending gifts and throwing parties. So they continued to celebrate on April 1. Eventually the holiday became a mock new year festivity, and evolved into a joke. 'Fooling' and pulling pranks became so rampant on April first that Frenchmen refused to do anything of importance on that day because they wouldn't be taken seriously. In time, the practice spread throughout the rest of Europe.

The most successful hoax pulled off on April 1 occurred in London during 1860. Thousands of Londoners received invitations from an anonymous source to "The Washing of the White Lions" at the Tower of London. The streets were mobbed with confused Londoners who wandered aimlessly about bumping into each other, and fighting for a place in line to see the great event. As the day wore on people began to realize that a prank had been pulled on them. And by the way, about the 90 cent drop in gas prices – April Fool.

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Express Mail

Effective immediately Express Mail Service to New York City (Manhattan only) is being offered by the Upton Post Office. With express service, you can mail anything up to 70 pounds, with the guarantee that your shipment will be in the hands of the Manhattan addressee the following day. Merchandise can be insured for as much as $500 at no extra charge. Shipments of higher value, or irreplaceable items, should be sent via Registered Mail.

There are two types of Express Mail service. One is Post Office to Post Office which guarantees delivery by 10:00 .am. the following day. The addressee would be required to pick up the shipment. Post Offices with zip codes of 10001, 10005, 10007, 10017, 10022, can accommodate this particular service. The second type of service is Post Office to addressee. This service costs more and delivery time is guaranteed by 3:00 p.m. the following day.

An example of the cost for a shipment up to and including one pound for Post Office to Post Office service is $5.40, and for Post Office to addressee $7.50. Express mail service should be used only for shipments of a priority nature and when delivery time is critical.

The Upton Post Office is now open from 8:00 a.m. to 5:00 p.m. and will accept Express Mail shipments until 5:00 p.m. To guarantee dispatching of other classes of mail, the following times should be strictly adhered to: 9:45 a.m., 2:45 p.m. and 4:45 p.m. The 2:45 p.m. dispatch has been added recently to provide additional service to BNL.

Volleyball

Mixed League
Standings - March 17, 1980

(A) End of Third Quarter
(B) Year to Date

	A	B
No Names	15- 0	43- 2
Nuts & Bolts	10- 5	28-17
High Society	8- 7	25-20
Deegenerates	5-10	9-36
Family Affair	4-11	20-25
Thrints	3-12	10-35
Diamonds	12- 3	39- 6
Nads	10- 5	31-14
Leftovers	9- 6	27-18
Le Mufs	7- 8	21-24
Monday Nite Live	6- 9	9-36
Underalls	1-14	8-37

Open League
Beginning of Final Cycle
(March 19, 1980)

Spikers took Toga
21-13 20-22 21-15

Bumps buried Moles
21-13 21-11 13-21

OTHG beat the Players Pool
22-20 15-21 21-15

E & P over Monday Terrors
21-19 11-21 21-18

Tickets

Stanley Cup

A drawing for tickets to the first seven Islanders home playoff games will take place at the BERA Sales Office on Tuesday, April 1, at twelve noon.

Employees who supported the BERA ticket service program by their purchase of tickets during the regular Islanders hockey season will be eligible for the drawing. Each name drawn will be entitled to buy two tickets at $16.50 each (BERA service charge included).

Winners not present at the drawing will be notified by phone.

Great Adventure

Brought back by popular demand, Great Adventure discount tickets are again being sold at the BERA Sales Office in the Cafeteria. The Recreation Office has been notified that opening day is scheduled for April 3.

Combination tickets for the Amusement Park and Safari are $11.00 each (regular price $12.95, tax included).

The BERA Sales Office is open Monday through Friday, from 9:00 a.m. to 1:00 p.m.

BNL Golfers

With the Golf League season to begin on April 28, it's time for the annual party and organizational meeting which will be held on Friday, April 4 in the Recreation Building starting at 5:00 p.m. Refreshments will be provided free of charge and various business matters will be discussed.

New and prospective members are encouraged to attend and learn about the league. Be sure to note that the deadline for all membership applications is Tuesday, April 8. Application information and forms may be obtained from Bob Mills, Building 535A, extension 2006 or 3470.

Mixed Golf

Anyone interested in forming a mixed golf league (one male and one female per team) contact Bob Wayte, Ext. 4417, Bldg. 750.

Cafeteria Menu

Week Ending April 4, 1980

Monday, March 31		
Corn chowder	(cup)	.45
	(bowl)	.55
Beef chop suey on rice		1.45
Scrambled eggs, sausage & fries		1.35
Hot Deli - Roasted turkey breast	(bread)	1.40
	(roll)	1.50
Tuesday, April 1		
Beef noodle soup	(cup)	.40
	(bowl)	.50
Chicken cacciatore w/noodles		1.45
Sausage & cabbage scramble		1.35
Hot deli-roast sirloin of beef	(bread)	1.45
	(roll)	1.55
Wednesday, April 2		
Lentil soup	(cup)	.40
	(bowl)	.50
Grilled ham steak w/raisin sauce & 1 veg.		1.45
Broiled filet & fr. fr.		1.40
Hot Deli - Veal pattie & peppers hero		1.35
Thursday, April 3		
Chicken noodle soup	(cup)	.35
	(bowl)	.45
Cheese ravioli & 1 veg.		1.35
Sauerbraten & potato pancake		1.45
Hot Deli - Smoked baked ham	(bread)	1.40
	(roll)	1.50
Friday, April 4		
Fish chowder	(cup)	.45
	(bowl)	.55
Spaghetti w/clam sauce & garlic bread		1.35
Breaded pork chops w/ applesauce & 1 veg.		1.50
Hot Deli - Grilled Reuben		1.45

Doug Humphrey

Coming Up On Site

It may look like just another hole in the ground right now, but to the 15 heavy equipment operators at the Site Division of Plant Engineering, on Princeton Ave., construction of a three service bay extension is a godsend.

The 2800 hundred square foot addition will include a 27 foot garage door enabling the largest of the heavy equipment to be worked on indoors. Under present conditions, anything which dosn't fit into the existing bays must be repaired outside. According to Ed Szczepanik, Heavy Equipment Supervisor, and Roy Barone, General Supervisor, who are both credited with beginning the project, breakdowns during the winter months cause the most problems because the machinery becomes difficult to work on and exposes replacement parts to unfavorable conditions.

Jack Hennessy, Site Division Superintendent, said the motorpool will utilize some adjacent space now occupied by Plant Engineering, and added that the extension should be finished in roughly six months.

"This expansion will vastly improve our maintenance and repair operation," said Hennessy, "and significantly reduce the down time on any piece of equipment."

Aviation Club

The monthly meeting of the BNL Aviation Club was held on March 12 and the activities for the next few months were formulated. A full-length feature movie starring the Blue Angels Demonstration Aerobatic Team, flying F4J McDonald Douglas aircraft, will be shown. This film is two-hours long with an intermission and will be open to the general public.

A fly-in meeting at Martha's Vineyard is planned for May.

Another meeting will be held at Brookhaven Airport with club members having a glider demonstration and participating in flights. Dates for the above events will be announced in future issues of the *Bulletin*. Contact Ron Dobert, Ext. 4082, regarding club membership.

Twelve members from the club are half-way through their Flight Simulator Course at BOCES which will be completed by the second week of May.

The next meeting will be Wednesday, April 9, at 8:00 p.m. when the FAA will conduct a program on the Pilot Proficiency Award Program.

Once Again

All employees are asked to **please** use the new entrance door on **Center Street** (ramp) for the cashier, payroll, accounts payable and general accounting business.

Building 134 has been completely refurbished and has an entrance on **Brookhaven Avenue** to serve only the administrative offices of the Fiscal Division, Associated Universities, Inc., Internal Audit and U.S. Fish and Wildlife Service. It is not to be used by people on their way to the cashier.

Arrivals & Departures

Arrivals

Margaret E. Appleby.....Accelerator
John R. Curreri.....Nuclear Energy
Robert J. Danowski.....Ph. & Gr. Arts
Craig J. Erick.....Accelerator
Richard M. Jackimowicz.....Accelerator
David E. Kraus, Jr......Accelerator
Carol A. Smith.....Medical

Departures

Eric J. Bernholz.....Ph. & Gr. Arts
Marie L. Kilpatrick.....Accelerator
Anna-Maria Vasquez.....Medical
Nicholas M. Veglucci.....Accelerator

Bowling

Blue & Gold League

The Athol Regulars who took 7 from Double Trouble are in first place by 4 points. Clearwater is in second with Mary Sheidet rolling a 175/230 series and Ruth Sheehan bowled a 165/234 series.

Pink League

Great bowling by Millie Connelly with games of 184/170 for a 503 series. Other good games were bowled by Mary-Grace Meier 182, Ginny Walker 180, Ellie Adams 178, Renee Flack 173, Kit D'Ambrosio 172, Helen Keeley 171, Marge Stoeckel 169, Fran Briening 168, Renie Rosati 168, Pat Jencius 167 and Sharon Creveling 164.

Red League

The Designers won 11-0 over the Phoubars. E. Sperry (205) grossed 650, A. Pinelli 642 and J. Ferrero 604. The Freon Loaders won 11-0 over the Sandbaggers. R. Marlow (214) grossed 622 and V. Bilms 603. This Isa Team won 8-3 over the Old Timers. E. Sperry IV (200/209) grossed 643, L. Musso 639, R. Barberich (201/200). The 76'ers won 8-3 over the Light Source. J. Connelly (203/308) grossed 646. The Strangers lost 11 to the Blue Jays.

Purple & White League

The Flounders won all 7 points increasing their lead by 10 points in the first place. Ed Meier rolled a 628 series (high series for the season) games of 186/197/245. A difficult split conversion by Bob Fuchs - the 6/7/10. Other good games this week: Ben Belligan 227/210, Jim Griffin 212, Joe Cuccia 210, Jeanne Penoyar 201, 176, Gail Schuman 194/188, Gerri Riker 191/178, Nancy Erickson 185, Grace Kyhl 191, Lynn Boyd 182.

J. Morris bowled a 218, W. Reams a 216, on the final night of the Grumman Tournament. BNL finished in 12th place in the competition. J. Morris was awarded the tournament high game trophy for his earlier 247 game.

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.

LABORATORY RECRUITMENT: Opportunity, for present Laboratory employees.

1292. GENERAL CLERK - Supply and Materiel Division.

1293. SECRETARIAL POSITION (part-time/three days per week) - Requires excellent technical typing ability. Working knowledge of Laboratory policies and procedures is desirable. Will primarily supply typing assistance to the structural analysis group secretary. Department of Nuclear Energy.

1294. SECRETARIAL POSITION (temporary/three months) - Requires excellent secretarial and communication skills. Will assist with diversified office procedures in Affirmative Action Office. Director's Office.

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

1295 STAFF ASSISTANT - Requires a bachelor's degree or equivalent plus several years experience in preparing, monitoring, and controlling research and development subcontracts. Major responsibilities will include the above as well as establishing contract review panels. Will interact heavily with scientific staff members as well as with administrators of Department. Excellent oral and written communication skills are required. Familiarity with related computer reports desirable. Department of Nuclear Energy.

1296. MECHANICAL TECHNICIAN - Requires an AAS in mechanical technology or equivalent experience. Candidate will be responsible for the operation, construction and repair of helium cryogenic refrigeration systems. Piping and vacuum system experience is desirable. Accelerator Department.

Autos & Auto Supplies

75 HONDA SUPERSPORT - 400cc, 4 cyl, limited edition, excel cond. $900. 286-9066 after 7 pm.

65 OLDS DELTA 88 - needs a lot of work but good for parts. Name your price! Judy, Ext. 2064.

75 YAMAHA - 250cc, excel cond, rack & sissy bar. $625. Bruce, Ext. 4173, 725-2720.

TIRES - on rims, fit all 14" Chevy. $2 ea. Bruce, Ext. 4022.

78 CHEVY VAN - bl, 6 cyl, 37,000 mi, AM/FM-8 trk, customized. Asking $5000 or best offer. Phyllis, Ext. 2065.

66 PONTIAC CATALINA - needs muff, some rust. $95 firm. Tony, Ext. 2920.

73 ELDORADO CONV - fully loaded, white/red int; 76 Coupe de Ville, lt blue. Ext. 4100, 727-0842.

2 MOTORCYCLE HELMETS - $20 ea. Rick, 589-8691.

70 CHEVY IMPALA - a/t, ps/pb, a/c, new tires, good running cond. Asking $650. Denise, Ext. 2456.

73 VW CAMPER - excel cond, raised roof. Danny, 727-2414, 727-5312.

70 HONDA CB 350 - good cond, extras $400 firm. Gil, Ext. 4043, PA7-6258 after 6.

70 VW - good cond, AM/FM, new motor, front brakes, batt, 28 mpg, 4 spd. $975. 588-4703, 981-2876 after 5.

54 HUDSON HORNET - rebuilt eng, trans, other features. Ext. 3688.

69 FORD - 4 dr, rust, needs muff, has a/c. $300. Ext. 2011.

74 FORD F-250 - rebuilt motor, 4 w/d, AM/FM cassette, new exhaust. $4000. 698-3030 after 6.

74 BUICK CONV - a/t, ps/pb, p/w, a/c, AM/FM, very good. Asking $2555. Ext. 4113, 289-0753.

71 DODGE DEMON - a/t, p/s. $250. Ext. 3268.

3 WHEEL COVERS - 1970 Mustang. $20. Ext. 2491.

78 YAMAHA YZ-250E - mint cond. never raced, hardly used. $875. 928-7769 after 5.

72 IMPALA - 4 dr hdtp, very good cond. $925. Ext. 3532.

(2) 13" RIMS - 5 holes. $7. 727-5912.

69 VW SQUAREBACK - new clutch/brakes/caliper/batt/radials, running excel. Asking $1100. Ext. 4410, 924-0581.

78 DODGE VAN - 6 cyl, a/t, p/s, insulated, carpeted, radials, 15,000 mi, orig owner. $5300. Rick, Ext. 4437.

78 YAMAHA 360 - bought new in late 79, 600 mi, 2 Arai helmets, absolute mint cond, have all papers. Ext. 4701, 757-5991.

70 HORNET - good for parts, new eng. 744-9027.

71 CHRYSLER NEW YORKER - 4 dr, a/t, excel cond, ps/pb, AM/FM, a/c, radials, elec win, dk green/grn vinyl roof. $1600. Jim, Ext. 4040, 289-0876.

72 CHEVY CAMARO - a/t, a/c, 350-V8, dk grn/blk vinyl top, excel cond. Walter, Ext. 4731, 981-2430.

73 OLDS VISTA CRUISER WGN - a/t, a/c, ps/pb, 78,000 mi, very clean, excel runing. $1450. 289-7383.

70 CHEVY PANEL TRUCK - factory wood floor, good cond. $1000. Sue, 286-8554.

73 CHEVELLE - 2 dr, 307 ci, a/t, p/s, new w/w tires, snows. $695. Linda, Ext. 7572, 288-2355 after 6.

78 ELDORADO BIRRAITZ - yellow, every available option, 22K collector's edition. 331-1955.

76 DATSUN B210 - 4 cyl, std trans, 48,000 mi, good cond. $2600. 654-8810 after 6.

67 DODGE DART - good eng. $400. Kale, Ext. 4224.

77 TRANSAM - white, fully loaded, sunroof, new radials & brakes, like new. $4400. 473-3150.

73 MUSTANG - Mach I, a/t, ps/pb, a/c, 302 ci, $2300; 74 Ford Gran Torino Brougham, a/t, ps/pb, AM/FM stereo, new paint, $1500. Ext. 2546, 744-4047.

69 FORD GALAXIE - runs well, good cond. $250. Ext. 4654, 744-2639.

65 PLYM FURY - needs batt, brake work, or good for parts. $75. Dave, Ext. 4428, 399-5877.

Boats & Marine Supplies

SEAGULL OUTBOARD ENG - 5-½ hp 1978 long shaft, used 1 season, excel cond. $390. Wes, Ext. 3760.

20' O'DAY SAILBOAT - 1978, cruiser, sleeps 4, 3 sails, fully trailerable, equipped, extras. $6499. 289-0925.

1977 MERCURY O.B. - 115 hp pwr tilt, all controls, excel. 281-6325 after 5.

1972 WELLCRAFT V-20 - 165 hp, new full canvas, CB w/18' ant, excel. Ext. 2599, 929-4967.

15' WOOD SKIFF - very good cond, ready for water, steering controls incl (no eng). $200. 281-0360.

1966 O'DAY TEMPEST - 3 sails, fin keel, 6 hp outboard motor, 23', sleeps 2. 298-8239 eves.

115 HP EVINRUDE - low hrs, excel cond. $900. Bob, Ext. 3309.

Yard Sales

WADING RIVER - 28 Barnes, 3/29 & 30, 10-6, tools, electrical, plumbing & auto parts, household, girl's clothes. 929-6460.

Miscellaneous

31" POTBELLY STOVE - new, some pipe. $55. Owen, Ext. 3082, 12-12:30; 286-1886.

TV GAME - Telstar Arcade, extra cartridges, 8 controls. $25. Bill, Ext. 4173, 929-3029.

TAPE RECORDER - Sony TC-260 R/R, 4 trk, 2 spds, 34 lbs, access, good cond. $150. Cathy, 681-1467 after 6:30.

TI-59 CALCULATOR - PC 100A printer, leisure, applied statistics, master libraries. $350. Bob, Ext. 3784, 928-8562.

FRANKLIN STOVE - good cond, w/screen, piping & grate, $95; 5-gal gas can, new, $7. J. Skora, Ext. 3431, 744-9677.

ZENITH 25" COLOR TV - liv rm furn; child's bedrm furn; stereo-AM/FM/tape; sewing machine w/cab. 281-0804 eves.

19" RCA COLOR TV - plays well. $175. Alan, Ext. 2252.

SOFABED - grn herculon, inner spring matt, matching drapes & lamp. $200. 698-7428.

ANIMAL HUTCH - 4'x8', suitable for chickens or rabbits. $35. 581-7656.

STURDY SOFA - opens to bed, good, needs throw cover, $20; 80 (33's) records, some new, $25/all. 727-1617.

DRAFTING MACHINE - grinder & stand; lawn edger; snow shovels; 30 gal fish tank & stand; calculator. Larry, Ext. 3397, 928-0969.

SLIDE PROJECTOR - 33mm Keystone, remote control, trays incl. $30. P. Michael, Ext. 2264, 941-9055.

SCANNER ANTENNA - coax, $12; slide-in CB floor mount, $5; h/d AMC trailer hitch, $15. 286-0795.

TREES - you cut & carry, good for fire wood. $40/car, $90/pickup truck/load. 732-3073 after 5.

GOLF CLUBS - Wilson left handed, 1-3-4 wood, 2-3-4-5-6-7-8-9 irons, also putter; Andersen gliding window, 26"x62-¾"; 8' & 4' elec baseboard heaters. 473-4471.

OIL BURNER UNIT - ready to install, 7 yrs old. $35. Joe, Ext. 2005.

BOY'S SUIT - 3 pc navy, size 10, $15; several girl's dresses, size 5, $5 ea. Ext. 2945, 744-4594.

(2) TICKETS- E. Gorme & S. Lawrence, Westbury Music Fair. $15.75 ea. 689-8626.

BUNK BEDS - 2 compl sets, 1 maple, 1 steel. $75 ea. Ext. 4493, 726-5908 after 5.

FURNITURE - Childcraft crib & children's dresser, white, mod design, good cond. $70. Lowenstein, 286-2788.

(2) PROPANE GAS TANKS - 20 lb, $12 ea; 6-gal outboard gas tank, $15. John, Ext. 3354.

SNO-BLOWER - Ariens 4 hp, throws 30'. $50. Ext. 3462, 744-8449.

WINDOWS - white D.H. insul w/scr, new, (1) 3'x3', $65; (2) 3'x4', $75 ea. 924-6582.

SEWING MACHINE - "no frills," good working cond. $30. Miriam, 924-3528.

CHAIN SAW - heavy duty, Remington PL-4, 2x17" bars, 3 chains. $65. 473-6570 after 6.

BRUNSWICK BOWLING BALLS - w/bags, man's 15 lb, lady's12 lb. Lonie, 281-8867 after 6.

BIKE - boy's 10 spd, good cond. $45. Jon, Ext. 4682.

SEWING MACHINE - Riccar portable, zig-zag & reg stitch, good cond; $50; National Geographic Magazines, 1959-1970, make offer. 929-8982.

HOT WATER HEATER - elec, Sears Kenmore, power miser, 50 gals. Ext. 2011.

GOLF CLUBS - used, 3-PW, 1-3-5 woods, Wilson faultless, 1 wood & 1 iron unmatched. $65. Frank, Ext. 4122.

SWIVEL ROCKERS - (2) bone plastic, fan back, $15 ea, 2/$25; stereo (pre-teenage), grn & white, 2 sep spkrs on chome record stand, dust cover, $25. 744-3069.

STUDIO COUCH - sleeps 2, old, $15; folding chair; alarm clock; king size blanket. Best offer. Laura, Ext. 3111.

STEREO - AM/FM record player, GE 1616A, compact walnut cabinet. $20. Ext. 3326, 286-0497.

BLENDER - brand new. Asking $10. 744-9498 after 7.

DISHWASHER - used, under-counter, good cond, Sears. $50. 744-9027.

AIRTIGHT STOVE - Gibraltar no. 3, almost new, cost $500. Now $350, cash & carry. 588-0805.

CABER SKI BOOTS - size 9-½, excel cond, $45; Holley 600 carb, $30. 475-7241 after 5.

DIN RM - ash fruitwood, 6 chairs, breakfront, $600; bedrm, 6' Mr & Mrs armoir, twin beds, 2 mirrors, $250. Ext. 2462, 727-7515 eves.

TOOLBOX SET - toolmakers tools; pipe dies; ratchet; bookcase; mirror; commercial vacuum cleaner; lg doghouse. Free-you move. 744-2332.

WOMEN'S BIKE - Iverson 3 spd, blk & silver, like new. $40. 475-1196.

STUDENT DESK - $10; alum storm door w/screen, $20; child's carrier seat for bicycle, $7. Ronnie, Ext. 2980, 289-0532 after 6.

12 GAUGE MOSBERG - 3 shot, bolt, adj choke, cleaning kit, gun like new. $60. Kevin, Ext. 4084.

UPRIGHT PIANO - OK for beginner. $80. 286-1396.

REG & PRESSURE GAUGE - US Drivers, only used once $85. Ext. 3617.

OIL BURNER - Weil MacLain, 1-3 gal/hr capacity. $25. Ext. 3655, 281-2002.

KINGSIZE RECLINER - woman's recliner; 15 folding chairs; baby high chair; 30 gal fish tank w/stand & access. Best offer. 281-1599.

FREE TO GOOD HOME - Siberian/Husky mix puppies, 8 wks old, friendly & good natured. 751-7140.

FIREWOOD - For Sale, seasoned upstate hardwood, 4'x8'x16". $50.00. Split, delivered 744-8387.

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

CORAM - $10,000 assumes 7% mtg, $1569 taxes, gas heat, well insulated, 15 min to Lab, 3 bedrm ranch, ⅓₀ acre fenced, patio, att gar, all appl, carpeting, city water & sewers. Ext. 2251, 331-2234.

E. PACHOGUE - brick ranch, 3 bedrms, ½ fin bsmt, 0.3 acre, well landscaped. Ext. 3086/4363, 286-8370 after 6.

MT. SINAI - 3 bedrm ranch, cath ceiling L/R w/fp, w/w, 5 appl, 2 baths, gar, avail immed. $39,000. Bill, Ext. 3369, 929-6442.

SHOREHAM - prime loc N of 25A, 4 bedrm ranch, DR/LR w/fp, country kit, den, ent hall, 2 baths, lg deck, 5 appl, 2-car gar, ½ acre, beach rts, must sell. $59,900. Ext. 3462, 744-8449.

PATCHOGUE NORTH - 3 bedrm hi ranch, eik, lg L/R, lg panelled fam rm, excel cond, add insulation, 6% assumable mtg. High 30's. Ext. 4333.

PORT JEFFERSON - Harbor Hills, 4 bedrms, 2-½ baths, fam rm w/fp, 2-car gar, assumable 7-½%mtg. $66,000. Ext. 2053, 744-7510, 331-3019.

BELLPORT SOUTH - colonial ranch, L/R, D/R, vaulted 15 ceilings, fam rm w/built-in birch bkcases & sliding doors to 30' astro-turf patio, 3 bedrms, new eik, 2-car gar, out bldg, prof landscaping, brick ent patio, $34,000 assumable 8-¼% mtg ($75 transfer cost). $52,500. 265-2889.

PORT JEFFERSON - Harbor Hills, 3-4 bedrm ranch, possible mother/daughter, wooded ⅓ + acre, fp, dead end st, immed occupancy. Reduced to $69,000. Ext. 4504, 473-1523, 928-0483.

BROOKHAVEN HAMLET - 3 bedrm cedar shake ranch, bsmt, a/c, w/w, ½ acre, many flowers, 8-½% mtg. $53,000. 286-3934.

MEDFORD - close to LIE, mother/daughter, newly remodeled on ¾ acre incl buildable lot, upstairs 3 bedrms, DR/LR w/fp & w/w down stairs, eik, 1 bedrm, L/R, sep elec & heat. $53,000. 475-2769 after 5.

MASTIC BEACH - 3 bedrm ranch, corner lot, roofed patio, pleasant loc near water. Low 30's. 281-7531.

1 ACRE PLOT - over 100'x400', ideal for space lovers w/thoughts for the future. 924-3236 for details.

MANORVILLE - 3 bedrm ranch, 1 acre, lg 32' country kit w/cathedral ceiling, 1-½ baths, all appl, w/w, full bsmt, gar, assumable mtg at negotiable rate. $45,000. Pete, Ext. 3868/4574, 878-1225.

BELLPORT VILLAGE - 3 bedrm high ranch, L/R, fam rm, den, lg eik, deck, 1-½ baths. $42,000. Ext. 3502, 286-8166 after 5 & weekends.

For Rent

HOLTSVILLE - 2 bedrm Townhouse Condominium, LR/DR, 5 appl, gas heat, 20 min to Lab. $375 + util. Roseann, Ext. 7794, 475-6622.

RIDGE - lovely country house, 4 bedrms, freshly painted & renovated, brand new furnace, insulated, 4 mi from Lab, lg yard, garden, woods, avail May 1. $300/mo + util. Ext. 3382, 924-8125 eves & weekends.

RONKONKOMA - 2 bedrm ranch, lg eik, D/R, L/R, fam rm w/stove, w/w, $325 + util, month-month lease. B. DiLello, Ext. 2964, 588-1464 after 5.

Wanted

RIDE - Medford student needs ride one-way Fridays at 5 to Zeidler Motors, Rt 112, Medford. OSP, Ext. 3336.

SEASON LAWN CARE - Patchogue. 475-4875 after 6.

GOLD & SILVER COINS - stamp collections, for collector. Russ, 475-4930 after 5:30.

BOY'S SUIT - dk blue, size 10 or 12. Ext. 2926, 281-0268.

12' BOAT - alum or fiberglass. Ext. 2294.

WICKER FURNITURE - any cond. 286-0422 after 6.

HOUSE SITTING - or reasonable apt, married couple home from graduate school June-July-Aug. Ext. 2423.

HOUSEMATE - share lg 4 bedrm house, Coram. $155/mo + share util. Ext. 2521, 928-8379 eves.

HOME - urgently needed for young male cat, house trained, good w/children. Julie, Ext. 3070.

CONCRETE WORK - someone to install a 5x32' concrete porch, must be top quality. Dick, Ext. 2911.

TRAINS - Lionel, any "0" gauge or "027" gauge cars, track & equip. Frank, Ext. 3120.

FLUTE - Lou, Ext. 3506/4573.

CASSETTE RECORDER - w/digital meter; someone to dig a free pussy willow tree, 3' tall. Ext. 3655.

APARTMENT TO RENT - 1 bedrm, Rocky point, Sound Beach, Miller Place area. Donna, ext. 2907. 751-6383, Eves.

Car Pools

NESCONSET - near Gibbs Pond Park, looking to join or form car pool. Tony, Ext. 3047.

STONY BROOK/STRATHMORE - looking to form car pool. Morris, Ext. 4129.

STRATHMORE/STONY BROOK - join or form car pool. Bob, Ext. 3430.

Services

ALIAS SMITH & JONES - music for weddings, proms, all socials. 929-6624 after 6.

LEARN CHINESE - from Berlitz teacher, prvt or group lessons. Ext. 4157.

ROTOTILLING - gardens & new lawns, flower beds, etc. Up to 1,000 sq ft for only $18. Tom, Ext. 2011, 325-1033.

SPRING SPECIAL - up to 900 sq ft for $15, 3/15 thru 4/15. Call for appt, 928-5684.

FLOOR WAXING - $3.50/rm, min 2 rms. Bill, 286-8554.

TAXES - prepared by tax consultant, your home or mine, reasonable. John, 732-2472.

MOTHER'S HELPER - experienced teenager seeks position as mother's helper, after school, weekends, summer. Alice, 286-3984 after 5.

ASPHALT PAVING & SEALING - Bob, 475-4382.

EXPERT TUTORING - math, French, German, elem subjects, certified teacher, my home. $10/hr. 941-4328.

ROTOTILLING - 1000 sq ft/$15. Dave, Ext. 7517, 288-3011 eves.

MOVING - pickups & deliveries. R. Glucksman, 732-3145 after 6.

TYPING - scientific reports & general typing, 24 hr service. 654-4635.

ON-SITE BABYSITTING - days $6; nights $1.25/hr. Ext. 3008.

Classified Ad Policy Deadline is 4:30 p.m. Friday for publication Friday of the next week.