BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Happy Landings

After 700 passes, the test was declared a success. Brookhaven's runway repair material, developed for the U.S. Air Force, had passed muster.

That was two weeks ago, when Larry Kukacka, Toshifumi Sugama and Neal Carciello went down to Tyndall Air Force Base in Florida to test a polymer concrete material they had developed for rapid repair of runways. The Air Force is looking for a material that can cap bomb craters up to 75 feet in diameter and strong enough to support heavy aircraft approximately one hour from the time the patch is made. The BNL group, also including Barry Galen, had worked mostly with their material in a laboratory, occasionally filling four-foot square holes in a parking lot to see how the polymer concrete handled in bulkier amounts. (See Bulletin story, October 2, 1981.)

The 700 count in May was a signal they were on the right track. One of the Air Force requirements is that the material withstand 1500 passes of a load equivalent to an F-4 fighter plane. The test was done with a trailer full of lead bricks and outfitted with F-4 landing gear, passing back and forth over a 20 by 20-foot hole filled with the BNL material. The patch and surrounding ground were wired with strain gauges. When they indicated no movement after 700 passes of the trailer, the test was suspended, and a more rigorous test begun.

The second test simulated the load of a C-4 cargo plane, five times heavier than an F-4. The Air Force requirement for a C-4 is 400 passes, and halfway there, the clay base at one edge of the patch started to sag, causing the patch to flex and break. Later analysis of core samples showed the aggregate had failed, rather than the polymer bond. The group has concluded that a stronger aggregate or a thicker patch would solve the problem.

A pre-pack method of patching was used for the test. First the hole was filled with an aggregate mixture of coarse and fine silica plus zinc chloride. Then furfuryl alcohol, with a catalyst, was poured on top, saturating the aggregate before the catalyst bonded and hardened everything together.

In the next year, the BNL researchers will be testing various combinations of patch materials and aggregates. Besides the furfuryl alcohol formulation that was tested in Florida, they have also developed two

(Continued on page 2)

Mort Rosen

Dave Hansen leads members of the Solar and Renewables Division as they carry the Brookhaven solar collectors to a waiting trailer for loading and transport to Colorado.

Colorado Field Test For Solar Panels

Bill Wilhelm arrived at Colorado State University on Friday, June 4, hauling a trailer full of solar collectors. Almost immediately, he began leading efforts to install those collectors on Solar House III, one of several structures used to test both passive and active solar systems in CSU's Solar Village.

But this story really began in early 1978 when Wilhelm, with DOE support, first developed the concept for the Brookhaven solar collector. A member of DEE's Solar and Renewables Division, he set out to design inexpensive solar panels that could be used for all temperature applications. Low temperatures — up to 100°F — are mainly used to run heat pumps and to heat swimming pools. Space heating and domestic hot water demand medium temperatures, to 150°F, while solar cooling and industrial heat applications require hotter temperatures of 200°F or more.

The panels Wilhelm designed have a projected average installed cost of $5 per square foot, when the technology matures. The payback period for an initial investment in a solar system utilizing these collectors will vary depending on the size of the system installed. However, Wilhelm said, it should never exceed eight years, as compared to 15 to 30 years for conventional active solar systems.

A key factor in achieving these low costs was the use of thin plastic films attached to a lightweight aluminum frame. Traditionally, solar collectors employ heavy materials in their construction. The Brookhaven solar collector uses a laminate of fluoroplastic film between sheets of aluminum foil. An optically selective coating on the top sheet of foil maximizes the foil's ability to absorb and transfer solar energy. The incoming energy is further absorbed by the plain water flowing lengthwise through channels between the fluoroplastic film. The heated water then travels from the panel through the rest of the solar system to provide heat where necessary. When the collector is not running, water drains back from this unpressurized system, eliminating any need to add expensive anti-freeze.

In addition to making the panels effective, inexpensive and durable, these materials offer another advantage. Each panel weighs only about 14 pounds — approximately one-tenth as much as a conventional collector — and can easily be installed by one person.

The panels were first installed and tested in BNL's solar test facility in Bldg. 704 about one year ago. This "proof-of-concept" stage showed that the collector could not only meet its design specifications, but it could also achieve temperatures as high as 400°F.

With the conclusion of this initial testing, personnel in the Solar and Renewables Division began to prepare a solar system for testing at CSU. Lead technician Dave Hansen and technician Hellen Knox assisted in the fabrication of 32 prototype panels. Paul Le Doux, aided by Jose Sanchez, worked on the piping for the CSU installation, while Phil Cernigli handled the instrumentation. Now, Wilhelm said, "We have made the transition from the proof-of-concept stage to the field testing stage." Wilhelm and Hansen, who helped deliver the panels, expect to be at CSU for three to four more weeks to oversee the system's installation and to make sure it is working properly before testing begins.

For the field testing, twenty-eight 3'x7' solar panels totaling 580 square feet were installed in two rows on the roof of Solar House III. The collectors are so easy to install that the first row was in place within a half hour. However, it will be about a month before the panels begin to prove their ability to provide comfortable solar cooling and/or heating. In the interim, the system components will undergo a series of individual tests and monitoring instruments will be connected.

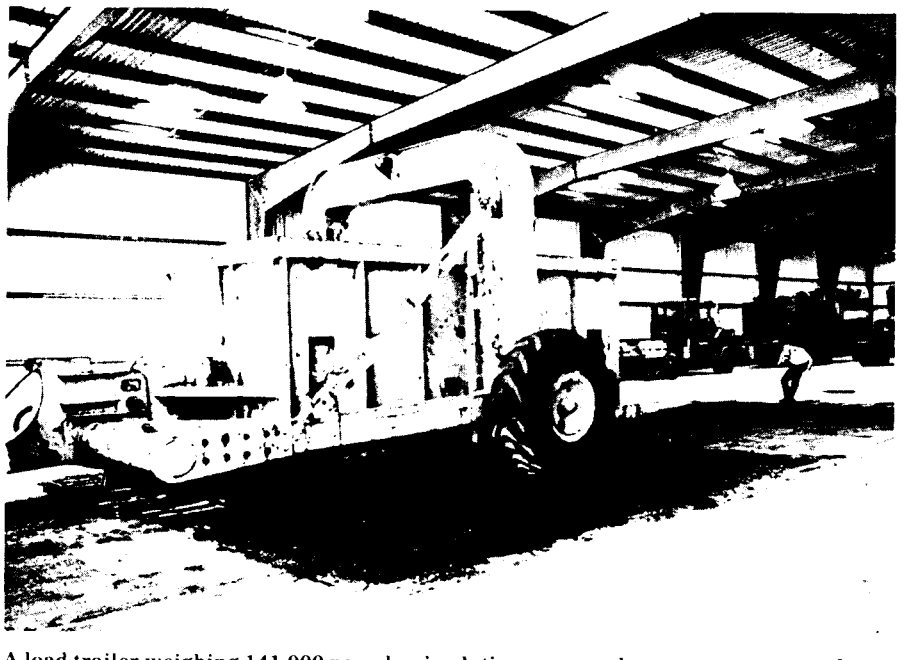
John Andrews, head of the Solar and Renewables Division, explained that when the system begins operation, "The collectors will act as a heat source to drive an absorption air conditioning system and produce chilled water which is then used to cool the building in summertime. The same collectors will be used in the wintertime for space heating and hot water production."

The panels being used in the test were built to their special 3'x7' size to accommodate the dimensions of the roof of Solar House III. The preferred size for commercially manufactured panels is 4'x8'. But collector size is more accurately measured in square feet. Andrews explained that "the 580 square feet being used for the CSU test is typical for cooling." If collectors were just to be used for space heating, only 300 to 400 square feet might be necessary, while for domestic hot water heating about 60 square feet would generally suffice.

"The main purpose of the field test," Andrews said, "is to test the collector under what we consider relatively severe conditions." Agreeing, Wilhelm called the CSU test "one of the toughest" that these panels could ever be subjected to, and he is confident that they will meet the challenge. "The work we have done so far encourages us that we're on the right track," he said.

Ultimately, the Solar and Renewables Division plans to produce a total system, including collectors, storage, pumps and controls, for an installation cost of approximately $10 per square foot. Wilhelm, who sees the Brookhaven solar collector as "the critical element of the system," said, "Now that we have solved the problems connected with the collector, the balance of the system components are not nearly as tough."

— Anita Cohen



A load trailer weighing 141,000 pounds, simulating a cargo plane, passes over a polymer concrete cap on a 20 by 20-foot hole. Earlier in the day, the material had withstood two passes of a load equivalent to a fighter plane. The polymer concrete was being tested at Tyndall Air Force Base as a material for rapid repair of runways.

Sunday Tours

10 a.m. - 3 p.m.

Through September 26

(except July 4 & Sept. 5)

Roger R. Stoutenburgh

Eric Russo, Deputy Supervisor of Brookhaven Town, presents a proclamation to the newly chartered Upton Chapter of the Professional Secretaries International. To Mr. Russo's right are Audrey Blake, Betty Ivero, Carolyn Albert and Margaret Wilson, president of the Queen Anne Chapter of PSI which sponsored the BNL membership.

Secretaries Open New Chapter

The Upton Chapter of Professional Secretaries International (PSI) became official on June 1. It is the first chapter in Brookhaven Town and was so recognized in a proclamation issued by Brookhaven Town Supervisor Henrietta Acampora. The proclamation was presented to the new group by the Deputy Supervisor of Brookhaven Town, Eric Russo, at the installation ceremonies.

According to PSI rules, officers of a new chapter are appointed for 90 days, after which the membership can reelect them for one year or select new officers. Chosen to head the Upton Chapter were Betty Ivero (DEE), President; Audrey Blake (Tech. Info.), Vice President; Carolyn Albert (NSLS), Secretary; and Nereida Santiago (Reactor), Treasurer.

The purpose of the PSI organization is to encourage secretaries to keep active and to further their education. PSI members work toward achieving a Certified Professional Secretary rating, and college credits. They guide high school students who are planning secretarial careers, they hold workshops and provide speakers on a variety of subjects of interest to the membership.

Currently the membership is 25. In addition to BNL secretaries, all secretaries who work or live near the Lab, are eligible to join. Susan Carlsen, Bldg. 535, is membership chairman.

The Upton Chapter of PSI will meet the third Monday of each month. The first meeting will be a dinner meeting at 5:15 p.m. on June 21 at Berkner Hall. Dinner is $6.50 per person and checks made out to PSI Upton Chapter should be sent to Susan Carlsen by June 16.

Water Log

What happened at the Lab on Saturday while many of us were at home catching drips with buckets or pumping out our basements? A spot check by the Bulletin showed that not much damage was done by the torrential rains over the weekend.

With all of the flat roofs on site, various leaks did occur here and there. And down in the biology fields, water was so deep that a trench was dug across the far end of Brookhaven Avenue so the fields could drain to the south.

Where the Peconic River leaves the site boundary, the Safety and Environmental Protection Division monitors river flow over a weir. For months, there has been just a trickle. In fact on Friday, when field technician Duff Henze went out for a routine check, the flow was barely measurable.

Records show that by Saturday, 5 a.m., water was flowing over the weir at a rate of 400,000 gallons per day. By mid-morning, the flow had gone up to a million gallons per day, and by 7 p.m., two million gallons. At that point, the needle went off the chart. S&EP estimates the flow finally peaked at over four million gallons per day.

Were any weather records broken? Meteorologist Bob Brown reports that 7.36 inches of rain fell on Saturday. That amount approaches the record precipitation of 8.63 inches that fell on September 11, 1954, during Hurricane Edna. This weekend's rainfall was not caused by a hurricane, but rather a low pressure system that started in West Virginia and slowly moved northeast, carrying a lot of moisture from the ocean.

Making Blood Count

Brookhaven's Summer Blood Drive will be taking place on June 23 and 24 between 10 a.m. and 3 p.m. at the Gym. The need for blood is particularly acute at this time due to increased demand over the July 4th Holiday. Pledge cards have been mailed to all employees and should be returned, along with any questions, to Len Emma or Elaine Liguori in the Director's Office, Ext. 3334. Extra pledge cards are available, and prompt written response is important to relieve scheduling difficulties.

Picnic Plans

To celebrate BNL's 35th year, a huge anniversary picnic for Laboratory *employees and their immediate families* is planned for Saturday, July 17, from 11 a.m. to 7 p.m. The theme of Picnic '82 is "This One's For You" and the price proves it. The general admission of $2.50 per person entitles each picnicker to a complete day, including food (served from noon to 4 p.m.), refreshments, games, contests, entertainment and activities. For their free admission, children under 3 can also enjoy everything offered at Picnic '82, including the antics of Bow-Wow the Clown (not Bozo as the flyer indicated).

Only 2,500 tickets are available on a first come, first served basis, and ticket sales will end July 2. Tickets can be purchased from Blanche Laskee, Bldg. 185, Ext. 2873; Betty Pergan, Bldg. 179A, Ext. 2937; Rosalie Piccone, Bldg. 355, Ext. 3160; Marge Stoeckel, Bldg. 134, Ext. 2459; or the BERA Film Service Office. Rain date for Picnic '82 is Sunday, July 18.

Runways (Cont'd)

other patching materials — polyester-styrene and modified magnesium phosphate. The group will also experiment more with pre-mixing, a method that will require extending the working time, since all three formulations start to harden in less than 20 minutes.

More tests at the Air Force base are scheduled for next spring. Besides the three materials BNL is developing, others are being researched by Battelle Columbus Laboratories in Ohio. From all of these, the Air Force will choose two or three repair methods, based on their materials properties, ease of storage and placement, and cost. The final contenders will be tested under more realistic conditions in Europe and Asia.

Arrivals & Departures

Arrivals

Benaissa Baggoura ... Nuclear Energy
Mark R. Hjelmfelt ..... Energy & Env.

Departures

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

David G. Keil ..... Energy & Env.
Zvi Ovadyahu ..... Physics
Kamta Rai ..... Applied Math
Robert W. Zane ..... Accelerator
Carmen M. Zopf ..... Energy & Env.

Signs Of Summer

The 30th year of the Summer Student Program got under way this week with the arrival of 78 students from 58 colleges and universities. These students will be here for 10 weeks, working under DOE grants.

The arrival of these students marks the beginning of summer at Brookhaven, which means an influx of scientists with younger children to the Laboratory. Parents are being asked to keep their children in the apartment area when not supervised, and employees should exercise special caution when driving on site, particularly in the area of the swimming pool. To facilitate these precautions the pool entrance has been changed to the Medical parking lot side of the building. Entry can no longer be made from Center Street.

Basic Math

A tutorial session in basic mathematics is being offered in Personnel. The course will be given for the benefit of employees who plan to take mathematics courses in college or technical school and need a refresher in arithmetic and algebra. Some computer programming in Basic will also be covered. If you are interested in taking this course, call June Herbert on Ext. 2878 by Tuesday, June 15.

Continuing a long tradition of cooperation, a 17-person delegation from Japan visited BNL on June 2 and 3 for the Third Japan-U.S. High Temperature Gas-Cooled Reactor (HTGR) Safety Technology Seminar. The Japanese group, which included representatives of both research and industry, was headed by Tatsuo Kondo of the Japan Atomic Energy Research Institute. In the photo above, Dr. Kondo makes a special presentation to Walter Kato (left), Deputy Chairman of BNL's Department of Nuclear Energy, who organized the seminar. Also on hand are Charles N. Kelber (right), Deputy Director, Division of Accident Evaluation, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission (NRC), and Robert Minogue, Director of the Office of Nuclear Regulatory Research, NRC. Minogue addressed the group on NRC perspectives at a banquet at the Brookhaven Center the first evening of the seminar. In addition to BNL and the NRC, U.S. participants came from Los Alamos and Oak Ridge National Laboratories, General Electric Co., General Atomic Co., and Gas Cooled Reactor Associates. During two intensive days of continuous presentations, the group received a general overview of the status of HTGR safety technology and, in subsequent sessions, discussed such topics as accident delineation and assessment, materials, fuels and fission products and structural issues. —Photos by Humphrey

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Kids Summer Program

This summer's recreation program for children will begin on Tuesday, July 6, and end on Friday, August 27.

Swimming Classes

Place: BNL Swimming Pool

Activities: Each child will be scheduled for one swimming lesson every week for a total of eight lessons. American Red Cross certificates will be awarded to those children who qualify.

Time: Monday through Friday — 1:30 to 3 p.m.

Fee: $15 for each child upon registration. Each child will also pay the daily admission fee of $1.25, or present a season ticket.

Participation: Children of all Laboratory employees. A minimum height of 48" is required.

Registration applications may be picked up at the Recreation Office, the BERA Film Service Office (between 9 a.m. and 1 p.m.), and the swimming pool during open hours. Mail or deliver application with registration fee (checks payable to BERA) to the Recreation Office, Building 185, no later than June 25.

Tennis Program

Place: BNL Tennis Courts

Activities: Basic tennis instruction and tournaments

Time: Monday through Thursday — 3 to 4 p.m.

Fee: No fee or registration required

Participation: Children of all Laboratory employees. Children will provide their own racquets and balls.

Friday Pool Specials

Place: BNL Swimming Pool

Activities: Water games and contests

Time: Each Friday — 3:15 to 4:30 p.m.

Fee: $1.25 daily pool admission, or present season ticket. No registration required.

Participation: Children of all Laboratory employees.

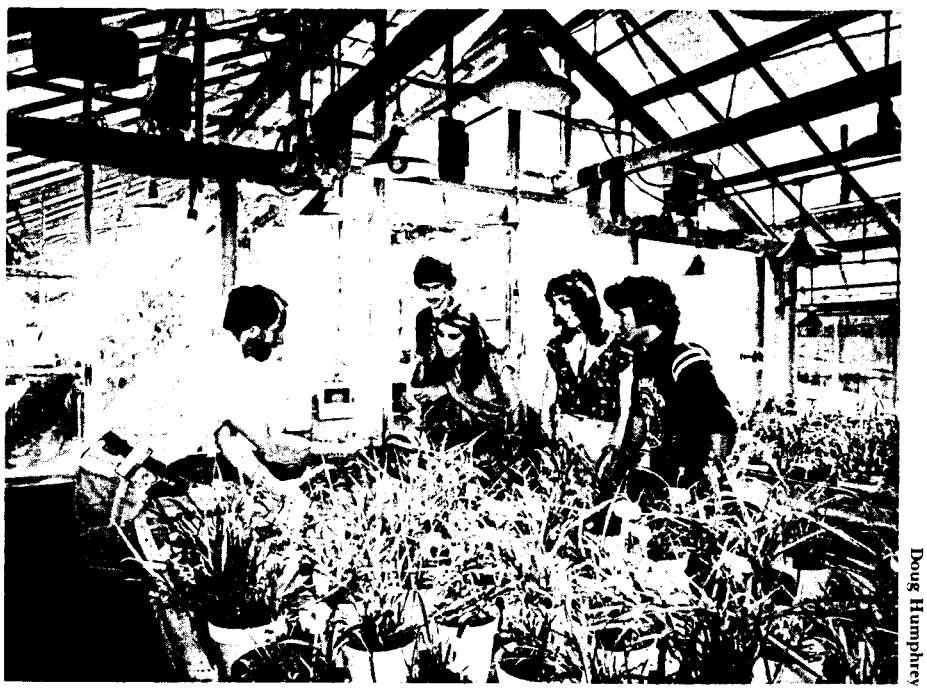
Equipment Demo

Hipotronics Inc. will present a clinic on high voltage and ultra-high voltage technology next Tuesday, June 15, from 10 a.m. to 3 p.m. in Berkner Hall, Room C. Hipotronics Inc. manufactures high voltage dc power supplies, hv cable fault locators, hv dc power packs, isolation transformers, corona detectors, the Peschel variable transformer and high current circuit breaker test sets. Typical instruments and apparatus will be available for viewing, and two company representatives will be on hand for informal discussions of applications, technical information and operator safety relating to high voltage.

Afro-American Club

The Afro-American Culture Club will hold its monthly meeting on Tuesday, June 15 at noon in room D, Berkner Hall.

The issues to be covered are the summer picnic, ratification of the By-Laws, and some new business. All members are urged to be present, and anyone thinking of joining is welcome.



Doug Humphrey

Some of the award winners were able to visit the Lab last week. At the Biology Department greenhouse, Neal Tempel explains to the students how the spiderwort plant is used in experiments.

Awards Go To Local Students

Eight seniors from local high schools were each awarded $100 from the Alexander Hollaender Fund which is administered by BNL's Biology Department. The students were nominated by their schools as outstanding biology students, and will be entering college this fall. Their awards will be used to purchase books in the biological sciences.

The award winners are:

John Bogdan, Riverhead H.S.

Shauna Carroll, Shoreham-Wading River H.S.

Gerianne Frakaloss, Rocky Point H.S.

Jo Ellen Fico, Longwood H.S.

Margot Garant, Earl L. VanderH.S.

Noelwah Netusil, Miller Place H.S.

Benjamin Peierls, Bellport H.S.

Gail Petters, Patchogue-Medford H.S.

Alexander Hollaender, a distinguished biophysicist, established the fund in 1978 for the use of the Biology Department. He suggested the money be used for unforeseen expenses of Biology Department members not covered by the regular budget, and to strengthen ties with the surrounding communities by helping high school students interested in pursuing a career in biology. Among his many activities, Hollaender has been a consultant to AUI for a number of years.

So far, the fund has provided grants-in-aid to students attending the Biology Symposium, loans to students within the department, and an award to Arthur T. Pitschi, Patchogue-Medford High School, for a solar hydroponic greenhouse maintained on site.

Berries Come Lately

Strawberry lovers your hour is at hand. The inclement weather of past weeks has delayed the start of the strawberry season here on Long Island, but local growers say the berries should be at their peak by the weekend of June 19th. Many people enjoy picking their own fruit and there are a large number of local farms (some of which are listed below) which cater to this interest.

The annual Strawberry Festival sponsored by the Mattituck Lions Club will be held on June 19th at Mattituck High School (rt. 25 east of Mattituck). This popular event will include the High School and U.S. 26th Army Bands, a karate demonstration, an air rescue demonstration, the Long Island Banjo Society, coronation of the Strawberry Queen, sky divers, arts and crafts exhibitions and sales, games of skill, amusement rides, and mountains of old-fashioned homemade strawberry shortcake topped with whipped cream. Admission is $1.

Osborn Farm: Main Street, Wainscott (537-1323). 8 acres. Dawn to dusk, Mon.-Sat. 70¢/qt. including container. Children especially welcome.

Lewin Farms: Sound Avenue, Wading River (929-4327). Next to Wildwood State Park, 50 acres. 7 a.m.-7 p.m. 65-75¢/qt. Containers available.

Fritz Lewin Farm: Corner of Sound and Edwards Avenues, Calverton (727-3346). 8 a.m.-6 p.m. 50¢/qt. Containers may be purchased.

Sabat Farm: 116 Sound Avenue, Baiting Hollow (727-2426). 7 a.m.-3 p.m. 60¢/qt. Bring your own qt. containers.

William J. Polak, Jr.: Church Lane, Aquebogue (722-3049). 4 acres. 8 a.m.-6 p.m. 65¢/qt. Containers available at cost.

Ferdinand Schmitt Farm: 26 Pinelawn Road, Melville (423-5693). 10 acres. 8 a.m.-4 p.m. 80¢/lb. including container.

Kenneth Glover: 633 Horse Block Road, Brookhaven (286-8721). 50 acres. 75¢/lb. Containers may be purchased. At least one adult for every two children.

Sep's Farm Stand: A.P. Sepenoski, Jr. Route 25, East Marion (323-3612). 5 acres. 8:30 a.m.-5 p.m. Prices not available. Containers may be purchased.

Henry Schwenk: Montauk Highway, Bridgehampton (537-1377). 2 acres. 8 a.m.-6 p.m. Prices not available. Containers may be purchased.

Young's Orchard: 54 Sound Ave., Riverhead (727-5363). 4 acres. 8 a.m.-6 p.m. 55¢/lb. Containers may be purchased.

Cain Farms: Main Road, Route 25, Jamesport (722-3036). 7 a.m.-6 p.m. Prices not available. Containers may be purchased.

R. Hogner: 120 Dayton Ave., Manorville (878-1774). 2 acres. 8 a.m.-sunset. 70¢/qt. Containers 5¢ extra.

Edwards Farm: N. Edwards Ave., Calverton (727-0472). 9 acres. 8 a.m.-6 p.m. Prices not available.

South Breeze Farm: 260 Old Country Road, Huntington (423-5914). 8 a.m. Come early. 80¢/lb. including container.

John Berezny: Sound Ave., Riverhead (727-4661). 2 acres. 8 a.m.-5 p.m. Prices not available. Containers may be purchased.

Wickham Fruit Farm: Main Road, Cutchogue (734-6441). 9 a.m.-5 p.m. Mon.-Sat. Prices not available. Bring your own qt. containers.

Green Thumb: Montauk Highway, Water Mill (726-4989). 10 acres. 60¢/lb. Bring your own containers. Please call ahead.

Hodun Farms: (727-2618). 8 a.m.-5 p.m. 60¢/qt. Containers available at cost.

Brook Nursery: Brookhaven (289-0876). Fireplace Neck Road, Brookhaven Hamlet. 2 acres. 9 am.-4 p.m. Prices not available. Containers may be purchased. Must call ahead.

Theater Group

The Theater Group will meet at 8 p.m. on Wednesday, June 23 in Berkner Hall auditorium. The main item of business will be the election of officers for the next year. The slate of candidates is:

President - Karl Swyler
Vice President/Treasurer - Kurt Fuchel
Secretary - Penny Baggett
House Committee Chairman - Bob Kinsey
Program Committee Chairman - Tony Fainberg
Advisory Committee Chairman - Bill Love

Nominations will also be accepted from the floor. All members and prospective members of the Theater Group are urged to attend.

Mountain Club

All are invited to meet and plan for a Carmens River canoe trip on June 20, a July camping expedition on Fire Island, a July Delaware River canoe trip and other summer activities. The meeting will be held at the Brookhaven Center on Wednesday, June 16, at 7:30 p.m. Call Al Kuehner, Ext. 4226, in reference to the Carmens River trip if you can not attend the meeting.

WIS Party

Come and meet Brookhaven's Women In Science at their third annual Cocktail Party in the Brookhaven Center on Tuesday, June 15 from 5 to 8 p.m. Hot and cold hors d'oeuvres and a cash bar will be available. Make reservations by sending a check for $3.00 per person, payable to BNL-WIS, to Ellen Gannon, Building 801.

Motorcycle Club

A meeting will be held on June 14 in the Recreation Building at 5:15 p.m. The next club ride will be discussed along with future events.

Cafeteria Menu

Week ending 6/18/82

Monday, June 14		
Cream of mushroom soup	(cup)	.65
	(bowl)	.75
Western omelet w/hash browns		1.75
Kielbasi & sauerkraut		1.85
Hot Deli — Pastrami	(bread)	1.80
	(roll)	1.90
Tuesday, June 15		
Beef barley soup	(cup)	.60
	(bowl)	.70
Salisbury steak & 1 veg.		1.80
BBQ spare ribs & 1 veg.		1.90
Hot Deli — 8-foot hero		.90/inch
Wednesday, June 16		
Turkey okra soup	(cup)	.60
	(bowl)	.70
Sauerbraten w/potato pancake		1.90
Stuffed cabbage & 1 veg.		1.80
Hot Deli — Sausage & pepper hero		1.90
Thursday, June 17		
Pork & cabbage soup	(cup)	.60
	(bowl)	.70
Chinese pepper steak on fluffy white rice w/ toasted Chinese noodles		1.90
Turkey tetrazzini		1.75
Hot Deli — Sandwich steak w/peppers & onions	(bread)	1.85
	(roll)	1.95
Friday, June 18		
Clam & celery bisque	(cup)	.65
	(bowl)	.75
Chicken pattie Parmesan & 1 veg.		1.80
or w/spaghetti		2.00
Macaroni, ham & cheese		1.75
Hot Deli — Corned beef on rye		1.80

Did you know?

The first picture was taken in the 80" Bubble Chamber on June 2, 1963.

Did you know?

Thirty years ago, on June 10, 1952, the Cosmotron first reached full beam energy.

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.

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

1705 SITE PLANNER - Requires a bachelor's degree in architectural engineering or the equivalent experience plus computer programming capabilities. Will assist principal architect in the long range planning and developing of the Laboratory site and its building space management. Will design and develop computerized building and site data bases. Plant Engineering Division.

1706 PROJECT ENGINEER - Requires a BSEE and substantial experience in the design of high power radio frequency systems. Will be responsible for developing analog and digital circuitry for the feedback systems required to correct beam line instabilities in the storage rings. Will interface all systems to the control computer. National Synchrotron Light Source Division.

Autos & Auto Supplies

71 DODGE SWINGER - 6 cyl., 14 mpg, new tires, dependable, clean interior, $800 firm. David, 924-3476 after 5.

76 KAWASAKI - KZ400, 7 K mi., custom seat, new battery, many extras, excel. cond., asking $800. 589-8394 eves.

63 CHEVY II - George Hrabak, Ext. 3536.

79 CAPRI - RS-302, 4 spd., p/s, p/b, TRX package, low mi., $6,200. 473-7919 after 5.

80 TRIUMPH - TR7, white, convertible, extras, 17,000 mi., $6,900. J. Klein, Ext. 2294 or 298-8805.

79 MGB - convertible, 2 tops & hood cover, 31,000 mi., new tires, brakes & complete tune-up, am/fm 8-track stereo, undercoating & 5 yr. rustproofing, showroom condition. 878-0516 after 6 p.m.

80 VESPA MOTORCYCLE - 200cc, 700 mi., travel trunk, great commuter, $1,400 or best offer. Harry, Ext. 3675 or 744-2581.

75 PLYMOUTH VALIANT - Brogham, 4 dr., 6 cyl., auto, excel. in & out, $2,700. Joe, Ext. 7961 or 878-2655 eves.

TIRES - (4) Sears Superguard, w/w, A78x13, excel. cond., $75/all. Lou, Ext. 3365 noon.

76 HONDA 550(4) - 13 K easy mi., fairing, trunk, roll bars, backrest, cruise control, mint, extras, $1,000. Ext. 3319.

81 PONTIAC T-1000 - 4 dr., hatchback, auto, 6,000 mi., warranty, great economy car, $5,100. Ext. 3985 or 265-3612.

PARTS - for 1969 Chevelle SS, reasonable, will trade also. Greg, 399-4213.

76 VW DASHER - 4 dr., auto, $2,400. Marj, Ext. 3396.

77 HONDA 750 - custom hardtail springer, elec. start, custom paint, $1,550. 654-9261.

75 HONDA - 550cc, 8,000 mi., $900. 744-4105.

80 CHEVETTE - 4 dr., hatchback, 20,000 mi., auto, a/c, excel., $5,300.

286-8119.

73 HONDA MOTORCYCLE - CB750, excel. cond., custom seat, quartz light, sissy bar, $900. Ext. 5385 or 654-2076 eves.

TRIUMPH MOTORCYCLE PARTS - 650cc, wheels, forks, stock and custom. Tom, 325-1759 after 6 p.m.

DUNE BUGGY - VW sand rail, radials, completely rebuilt, less motor, $1,300. 929-8749.

76 FORD VAN - 6 cyl., new clutch, muffler, paneled, insulated, am/fm tape, good cond., $2,000. Ext. 5385 or 654-2076 eves.

79 MGB CONVERTIBLE - 2 tops, hood cover, 31,000 mi., new tires, brakes, complete tune-up, am/fm 8-track stereo, undercoating & 5 yr. rustproofing, good cond. 878-0516.

73 PINTO FASTBACK - excel. running cond., new parts galore, sunroof, clean inside & out, $666.50 or best offer. Ext. 4432 or 928-8379.

73 SUPERBEETLE - new motor, body, interior mint, new radials, am/fm 8-track, $2,650. Debbie, Ext. 2895.

79 GMC PICKUP - 3/4 ton, $4,500. 878-9582 or 878-0953.

59 BONNEVILLE - 2 door, p/s, p/b, a/c, 4 spd., 389, all or parts for sale, cheap. Tom, 698-9130.

73 MAZDA WAGON - piston engine, 4 door, runs well, needs body work, $700. Ext. 3811 or 744-4789.

76 CHEVY PICKUP - ½ ton, 350 eng., 3 spd., two tone color, 8' bed cap, white slat wheels, air shocks, $3,200. Steve, Ext. 4297 or 929-6877.

TIRES - (4), GT qualifier Dunlop radials, GR-70-15 with 4 Monte Carlo rims, $180. Steve, Ext. 4297 or 929-6877.

77 HONDA - 400cc, Super Sport, excel. cond., 4 cyl., garaged, $900. Ext. 2032 or 281-2257 after 5 p.m.

76 PACER - 6 cyl., p/s, p/b, a/c, auto. Ext. 2500 or 661-6078.

RADIAL TIRE - 165x13, new, mounted on 1978 Datsun F10 wheel, asking $30; G78x14 tires, fair cond., $10 each or 2 for $18. John, Ext. 3292.

69 TOYOTA CORONA - red, rebuilt engine, new starter & voltage regulator, new paint, very good cond., $800. 751-7140.

65 YAMAHA MOTORCYCLE - 250cc, extra engine & misc. parts, $175. Lee, Ext. 7629 or 929-3023.

56 CHEVY - new tires, air shocks, mint interior, traction bars, $2,000 firm. Jack, 821-0737.

78 HONDA MOTORCYCLE - Goldwing, GL1000, 4,000 mi., like new, $2,600. 473-8783.

79 DODGE OMNI - hatchback, 4 door, auto, p/s, am/fm stereo, new tires, good mileage. Frank, Ext. 2350 or 475-6187.

67 FORD DUMPER - F500, needs work, good rubber, $1,000. 473-6863.

78 YAMAHA - 650 Special, low mi., very good cond., $990. Brian, Ext. 3612.

80 MAZDA SPORT PICKUP - immaculate, stereo w/tape, 22,000 mi., 26 mpg local, 40 mpg highway, cap. 727-7741.

74 DATSUN B210 - 2 door sedan, very good cond., $1,000 or make offer. Ext. 2611 or 751-4098.

71 VW BUG - rebuilt engine, new trans., good rubber, runs well, $550. 878-2681 eves.

80 YAMAHA - XS850, shaft drive, full fairing, 2,000 mi., mint cond., $2,595. John, Ext. 4255 or 929-4450.

SHOCKS - spring loaded levelers for GM intermediate cars prior to 1978. Ext. 3919.

68 CHRYSLER NEWPORT - very good cond., many new parts, radials, $600. Ext. 4372 or 282-3188.

Boats & Marine Supplies

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

DINGHY SAILS - new, red dacron, 32 sq. ft., $35, worth $70, also other surplus sails. Joe, Ext. 4069 or 261-7825.

25' CHRIS CRAFT - 1959, in good cond., engine rebuilt 1982, still under guarantee, sleeps 4, galley, stand up head, can demonstrate, $1,700. 281-0360 after 6 p.m.

18' RUNABOUT - 1960 Dorsett, glass, 40 HP Evinrude, elec. start, trailer, $550. 878-9582 or 878-0953.

25' PACEMAKER - 1966, wood, sleeps 4, head, galley, 220 HP Palmer, F.W.C., $2,500. 878-9582 or 878-0953.

16' HOBIE - 1981, special edition, trailer, sail box & many extras, new cond., $3,900 firm. 744-1081.

8' HYDROPLANE - Sea Horse, fiberglass, used twice, teak trim w/oars, $275. 286-8868.

18' GARVEY - clam boat and 40 HP Johnson eng., plus extras, good cond., asking $800 for both, $450 for motor, $350 for boat. John, Ext. 3292 or Jeff, 286-1348.

Free

GUINEA PIG - and hamster, both females, Lee. Ext. 7629 or 929-3023.

HUSKY/SHEPHERD - 1 yr. old, moving to apartment, must give away, excellent with children. 399-0864.

Yard Sales

MOVING SALE - contents of home, June 12th & 13th, Sat. & Sun., 10 to 5, 375 Pond Rd., Bohemia. 567-5619.

MOVING SALE - 6/12 & 6/13, 10 a.m. to 4 p.m., furniture, glassware, more, 35 Center La., Ronkonkoma. 588-3779.

YARD SALES GALORE - Sat., June 12, throughout Shoridge Hills, off No. Country Rd., Shoreham, rain date, Sunday.

3-BLOCK YARD SALE - June 12 & 13, rain or shine, 9 a.m. to 4 p.m., Fairway Drive, Middle Island.

YARD SALE - June 11 & 12, furniture, lamps, riding lawn mower, etc., 5 Dogwood Lane, W. Patchogue. Lorraine, 289-0876.

YARD SALE - new & old items, childrens clothing, furniture & more, Sat. & Sun., 10 to 5, 107 Prince St., Patchogue. 289-1957.

GARAGE SALE - Sat., June 12, sunshine only, 31 Southern Blvd., E. Patchogue.

Miscellaneous

COLOR TV - 19", Hitachi, 3 yrs. old, beautiful color, excel. cond., $200. 281-4541.

TUMBLING BARRELS - machine and 2 rubber lined barrels (110 volt), $100. Fred, Ext. 4407.

SLIDING SHOWER DOOR - for 5' tub, good cond., $35. 289-0413.

TV ANTENNA MAST - used but good cond., $10. Bill, Ext. 2378 or 286-0243.

RACCOON COAT - full length, new, never worn, size 8, original cost $500, sell $250; ½ kt. diamond heart shaped ring, brilliant stone, asking $1,500, may be appraised. Ext. 2309 or 473-9180.

BEDROOM FURNITURE - 4 piece, contemp., $150; double bed, $50; dresser, $15; misc. items, reasonable offer accepted; upright freezer, good cond., $75. Ext. 2969 or 399-3314.

G.E. AIR CONDITIONER - excel. cond., moving, must sell, 12,000 B.T.U., $150. Ext. 4487.

ANTIQUE SOFA - early Victorian, beautiful, $900 firm; antique easel (for picture display), $150. Pat, 472-1956.

DINING ROOM - antique table, chairs, china closet, buffet; 3 piece living room set, sleep/sofa, rocker, chair; Castro convertible sofa, opens into twin beds; Sears fan, large floor model, multiple speeds, exhaust, timer. Ext. 3392 or 475-8330.

LAWN BOY - self-propelled, $150; other mowers. Joe, 475-8440.

SCROLL SAW - Sears, tilting table, 18" throat, excel. cond., $50. 289-0413.

RABBITS GALORE - white adult male, assorted half growns, make an offer. Roger, Ext. 3578 or 878-4864.

BANJO - 4 string tenor, good beginners, $60. Tim, Ext. 3436 or 724-7741.

POOL - 12'x3' round, filter, ladder, like new, 1 season old, $45, boy's bike, 20", like new, $35. Richie, Ext. 2175 or 734-7342.

BUNK BEDS - $50. HR2-1875 after 5:30 p.m.

DEN FURNITURE - 5 piece foam block, good cond., comfortable, $40/piece or $150/set. Peter, Ext. 3695 or 732-0257.

KENMORE CHEST FREEZER - 15 cu. ft., white, 2 yrs. old, hardly used, excel. cond., $200. 929-6489.

REFRIGERATOR - 14 cu. ft., brown, good working cond., asking $120. Ext. 4315 or 924-0425.

GAS GRILL - w/tank, needs burner, $45. Mike, 286-2454 after 6 p.m.

ELECTRIC LAWN MOWER - Sears Craftsman, good cond., $30. Al, Ext. 5128.

AIR CONDITIONER - 6600 BTU, 115 V, 7-½ amp., Philco, good cond., best offer. Ext. 4341 or 475-4005.

TENNIS RACQUET - Wilson Advantage, 4-5/8 M, strung w/Blue Star, like new, w/cover & press, $50. Ext. 3412 or 473-7667.

BANJO - 4 string tenor, good beginners, $60. Tim, Ext. 3436 or 727-7741.

G.E. COLOR TV - 19", $150 including table; Bradford freezer, 16 cu. ft., $130; man's 3 speed Raleigh bicycle, $60; woman's Ross bicycle, $25; Sears lawnmower, $60. 744-6347.

FULL SIZE HEADBOARD - frame & footboard, white, $40. Ext. 3347 or 878-2702.

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.

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

RICHMOND, RHODE ISLAND - wooded building lot, 1.13 acres on Rt. 2, ideal for split-level or earthbirm home, very low taxes, $9,000. Steve, 728-9165.

THREE VILLAGE - ranch, beautifully landscaped, private ½ acre in Setauket, 3 bdrms., 2 full baths, w/w, a/c, l/r, d/r, eik, separate family room w/fireplace, 2 + car garage, full basement, $98,990, negotiable. 751-8058 eves/weekends.

EAST ISLIP - building plot, 75'x136', excellent school district & location, $6,500 or $3,000 down w/terms. Rich, Ext. 4482 or 277-1129.

SHOREHAM-WADING RIVER - 4 bdrm. colonial on acre, Axeman-Anderson boiler, 12" insulation, deck, full basement, quiet location, $89,900, mortgage assumable at 10%. Lee, Ext. 7629 or 929-3023.

RIDGE - Cul-De-Sac, 3 bdrm., d/r, eik, f/r, $56,000, assume 8-½% mortgage. 929-8781.

WADING RIVER - lovely wooded building plot, north of 25A, exclusive area, slightly under 2 acres, owner asking $24,500. 928-0158.

MASTIC BEACH - cape, 4 bdrm., eik, large living room w/wood burner, d/r, gas hot water & cooking, full porch, 160x100, low taxes, 8-½% farmers mortgage. 281-0360.

BIRCHWOOD - at Blue Ridge, condominium, 15 min. from Lab, 3 bdrms., many extras, facing golf course, low 60's. 698-7213.

PORT MALABAR - on Florida's East Coast, ¼ acre property, a General Development Corp. community, just 1 hr. from Disney World & Orlando. Ed, 585-2088 after 4 p.m.

WADING RIVER - secluded 4 bdrm. colonial, 2 baths, d/r, den, f/p, 2 car garage, full basement, private beach, Ext. 7727 or 929-4631.

BELLPORT VILLAGE - 7 room cape, large living room w/fireplace, 2 baths, eik, basement, 2 car garage, excel. cond., owner, $63,000. 286-8972.

For Rent

SPRING HILL, FLORIDA - near Tampa, 2 bdrm. house, by week or month, golf, tennis, lakes, beaches, 5 mi. to Gulf, 90 mi. to Disneyland. Ext. 4530 or 261-2719 after 6 p.m.

SHOREHAM - share house, walk to beach, tennis, June 28 - Labor Day, references required. 821-1953.

BROOKHAVEN HAMLET - 6 weeks summer rental, 3 bdrm. 286-0612.

PORT JEFF STA - studio apt., private entrance and kitchen, $200 + util. Ext. 3492.

COLONIAL WOODS - new 3 bdrm. townhouse, 10 min. from Lab, w/w, 5 new appl., Blue-Ray III, swimming, tennis, $550/mo., avail. July. Ext. 3591 or 265-0501.

VERMONT CHALET - beautiful furn., stone fireplace, woodland trails, pond & lake, swimming, boating, fishing, nearby Alpine slide, tennis, golf, antiques, etc., weekly rentals. 757-5599.

VERMONT - Cape Cod, 3 bdrm., fireplace, fully equipped, beautiful view, hike, fish, canoe, summer theatre, auctions, Alpine slide, family oriented, avail. weekly or weekends, reasonable. 732-6499 after 6 p.m.

S. JAMESPORT - charming older home in country setting, 3 bdrm., l/r, d/r, kit., porch and utility room, walk to private beach, 25 min. from Lab, avail. Sept. 1, $300/mo. plus util. Walt, Ext. 2907 or 698-0576.

Car Pools

PATCHOGUE - van pool, 1 opening, leave name and phone. Ext. 3284.

MATTITUCK-SOUTHOLD - one or two people, 8:30 to 5:00. Mac, Ext. 4227 or 298-8383.

ROCKY POINT - summer student needs ride. Will share expenses. Eileen, Ext. 4461.

Lost & Found

LOST - lady's gray spring jacket, from Brookhaven Center on 6/1, reward. 924-5495.

Wanted

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

SHOP MANUAL - for 1971 Plymouth Valiant, to buy or borrow. George Hrabak, Ext. 3536.

APARTMENT - 1 or 2 bedroom in Bohemia, Sayville, or Ronkonkoma area, have small well-behaved pet. 567-5619.

LOVESEAT/COUCH - reasonable for basement playroom. Renee, Ext. 3316 or 698-1362 after 6 p.m.

AMBITIOUS PERSON - $200-$300/month, 6-8 hrs/wk. 698-5861 after 7:30.

PAPER CUTTER - must have at least 12" blade. Rich, Ext. 3803.

APARTMENT - 1 bedroom, Setauket, Port Jefferson, Mt. Sinai area, need beginning of July. Nick, 331-2942.

BUYERS - for wholesale housewares, gifts & gourmet items, unbelievable prices. 277-1129 eves.

TRICYCLES - broken or bent. Lindsay, 744-5448.

IRONING BOARD - and pad, cheap. Ext. 2671.

DRUM SET - used, good cond., reasonable. Bob, 732-9517 eves.

INTERMEDIATE TENNIS PARTNER - available to play after 5 p.m., weekends. Anna, Ext. 3005.

TAPE RECORDER - Panasonic, portable, model #2309A, good cond., reasonable price. John, Ext. 3292 or 286-1348.

CB - for car, 23 or 40 channel, good cond., and CB car antenna; 28 mm lens for Minolta Bayonnet mount, reasonable price. John, Ext. 3292 or 286-1348.

APARTMENT - one bdrm. near Lab. Jain, Ext. 2710.

CANOPY - for 18' trailer w/poles, reasonable. Ext. 2964.

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

RELIABLE CAR - good mechanical cond., will pay up to $400. 821-9395.

Services

Services are listed as a courtesy to BNL employees. They are neither screened nor recommended by the ***Bulletin.***

HOUSE SITTING - free, caring, experienced, any period after June 6. J. Allentuck, Ext. 2412.

EXTERMINATING - licensed professionals, all phases of pest control & termite specialists. No job too small, free estimates. 281-5445.

ELECTRICAL WORK - reliable, reasonable. Joe, 399-0864.

STEVE'S AUTO CLEANING - compounding & waxing. Ext. 4297 or 929-6877 after 5:30 p.m.

GENERAL CONTRACTOR - carpenter, extensions, dormers, garage conversions, finished basements, decks, kitchens, Lic. #7601-41. Jim, 698-2501 after 5 p.m.

BABYSIT IN MY HOME - for the summer. Peggy, 399-4629.

KAYAK LESSONS - basic thru Eskimo rolls, local bays and creeks, $10/lesson. Tim, 281-7873.

SPRING CLEAN-UP - yard work, landscaping, also light auto repairs, lowest rates possible. 289-9811 or 289-4868.

HOUSEPAINTING - interior/exterior, professional quality materials, insured. Bob, 289-7657 after 6 p.m.

LIMO SERVICE - luxury chauffeured Caddy, for proms, weddings, airport, night out. Roy, Ext. 4664 or 744-8779.

BABYSITTING - reliable 16 yr. old, days, nights, weekends, for the summer. Bellport area. 286-3906.

TILE SETTERS - ceramic quarry tiles, no job too small, free est. E. Harris, 475-6460.

VERTICAL BLINDS - mini-blinds, wovenwood shades, discount prices, completely installed. Tony, 928-9241.

BATON TWIRLING - join Marie's majorettes now, June 21. Call for information Marie Natoli, 286-0211, certified instructor.

AUTO AIR CONDITIONING SERVICE - by appointment. 924-5192 after 4 p.m.

LAWN CLEAN-UP - yard work, landscaping; auto repairs, lowest rates possible. 473-3974 or 289-4868 or 289-9811.

ASPHALT PAVING - and sealing. Bob, 475-4382.

HOUSEPAINTING - experienced college student, professional results at fraction of cost, interior/exterior, references. John, 929-4450.

SMALL APPLIANCE REPAIRS - vacuums, all small appliances, No. Patchogue. 654-3900.

PLUMBING & HEATING - Lab discount. John, 654-8189.

HOME IMPROVEMENTS - vinyl & alum. siding, alum. trim, roofing, gutters & leaders, custom carpentry, free estimate. Charlie, 744-3160.

COMPLETE HOME SECURITY SYSTEMS - burglary, fire, medical, affordable prices, Lab discount. Tony, 286-8330.

PIANO LESSONS - highly experienced, proven results, specialize in beginners, free trial lesson. 286-8119.

HOUSE CLEANING - and/or babysitting, hours flexible, experienced, references available, college student. 286-8119.

CHEMISTRY TUTOR - regents coming soon, very experienced. 286-8119.

HOUSE PAINTING - very reasonable. Ext. 4070 or 475-7272.

WALLPAPER HANGING - no job too small. Ext. 4070 or 475-7272.

CARPETS INSTALLED - repaired, quick dependable service, free estimates. Jim, 821-0187 after 5 p.m.

HOME INSPECTIONS - by licensed professional engineer. John, 473-8338 after 5 p.m.

SPACKLING TAPING - anytime, anywhere, free estimates, 30 yrs. experience. Bill, Ext. 3277 or 286-8185 after 5:30 p.m.

ALUMINUM SIDING - gutters & leaders, trim, roofing, free estimates. Mike, 286-2454 after 6 p.m.

MOTHER'S HELPER - speaks English/French, seeks summer job w/French family. Carla, 744-2816.

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