

Computer Can't Tell Oil From Sewage

Long Island bathers may prefer oil slicks to raw sewage, but to the BNL computer, there is little difference . . . as long as it floats.

Meteorologist Arthur Tingle, DAS, has been using a mathematical computer model to study hypothetical oil spills in the New York Bight, an area extending from south of Atlantic City to east of Montauk Point. When a pollution crisis hit Long Island beaches last month, environmentalists found that the model worked equally well in tracing sewage floating ashore.

Using the computer model, Tingle was able to calculate that anything floating in a region 45 miles wide and 100 miles long south of New York Harbor from June 1-24 would land on one of Long Island's beaches. The estimated travel time for any pollution in the area was one to ten days, but he expects that 90 percent of the pollution arrived on a beach within three days.

In addition to regular dumpings by ocean-going ships in New York's three major shipping lanes and debris from two recent pier fires, Tingle said that much of the pollution problem could have come from raw sewage in the New York Harbor, the New Jersey shoreline, or an explosion in the Bay Park sewage treatment plant on Long Island.

"Communities in the metropolitan area dump over 400 million gallons of raw sewage into the Hudson River and along the ocean coastline each day," said Tingle. He estimates that at least 40 percent of the material that was afloat near the metropolitan sludge dumping site between June 2 and 23, washed ashore on Fire Island. The computer model also estimated that any material released into the ocean from the Bay Park explosion on June 3 and 4 would have landed on Fire Island in about a week.

The computer model is really a series of coordinated mathematical formulas which treat speed and direction as the "velocity vector" of the floating material at any point on a grid of data points. This velocity vector is the sum of the ocean current velocity vector and three percent of the wind velocity vector.

The current velocity vector on the surface is calculated according to a driving force provided by the wind and a drag force from the ocean floor. The model also considers the "Coriolis force," a correction for deflection of the current towards the right in the northern hemisphere due to rotation of the earth.

The model, which was designed with the help of Tingle's co-worker, Dwight Dieterle, accounts for a slight "sailing effect" provided by the wind for floating material. This vector is estimated as three percent of the total wind speed, though two to five percent of the wind speed can have this effect.

For material traveling short distances from south of Long Island, the model gives results that are accurate within one day and 15 kilometers (1 kilometer is equal to .62 miles). When material is released 25 kilometers from shore, Tingle warns that the model's error could exceed three days for a travel time of ten days to the shore.

"At the moment we have no observations other than wind speed and direction . . . there is no data on actual currents to check the model against," Tingle explained. "We did check the model against current-meter observations for last year and found a half-day lag between the model and observed current. Something could move 10-15 kilometers in that short a period."

Tingle plans to do some "fine tuning" on the model by applying some current-meter observations taken from buoys which collected data in the ocean during February and March of this year. "This will help us refine the accuracy of our model," said Tingle, "because we can modify its assumptions in comparison with the observed situations."

"The model is pretty good in winter-time, but during the summer we need to know the bottom currents as well, because the ocean is stratified," he said. "We can't make it more accurate until we get better input data, but even then I don't see much more accuracy. There are too many unknown factors."

In addition, the model was not capable of investigating the Hudson River as one of the sources of pollution in detail. This is because it was designed to study floating hazards off-shore, rather than specifically trace pollution from rivers and inlets.

"The only thing particularly unique about this model," said Tingle, "is that we had it ready to apply to the immediate problem. Originally, it was created to study current patterns throughout the year in connection with research on the possible effects of off-shore oil drilling and off-shore nuclear power plants."

Normally, input related to a hypothetical hazard, like an oil spill, would be given to the computer with a set of meteorological conditions for a specific day. By calculating the final outcome of this event, researchers can compare the relative potential impact of various off-shore operations and judge their safety.

The computer also responds to "real time" analysis. The model can act as an early warning system when a true accident takes place on the ocean if it is given the meteorological data and the geographical position. Once the velocity vector of the floating material is computed, the model can estimate the beach that will be hit and the date of the event.

In the recent beach pollution crisis, Tingle created hypothetical sources of floating material and provided the computer with the actual weather conditions. He then compared the time and place of arrival with the events which took place on Long Island beaches in the month of June. By backtracking, he had hoped to identify the sources so that the pollution could be stopped.

"We wanted to eliminate potential sources, but it turned out that we couldn't," said Tingle. "The problem was too persistent and so vast that we couldn't pinpoint a



Meteorologist Art Tingle at Smith Point beach on Fire Island, one of the beaches closed on June 15 and 16 because of the pollution washed ashore.

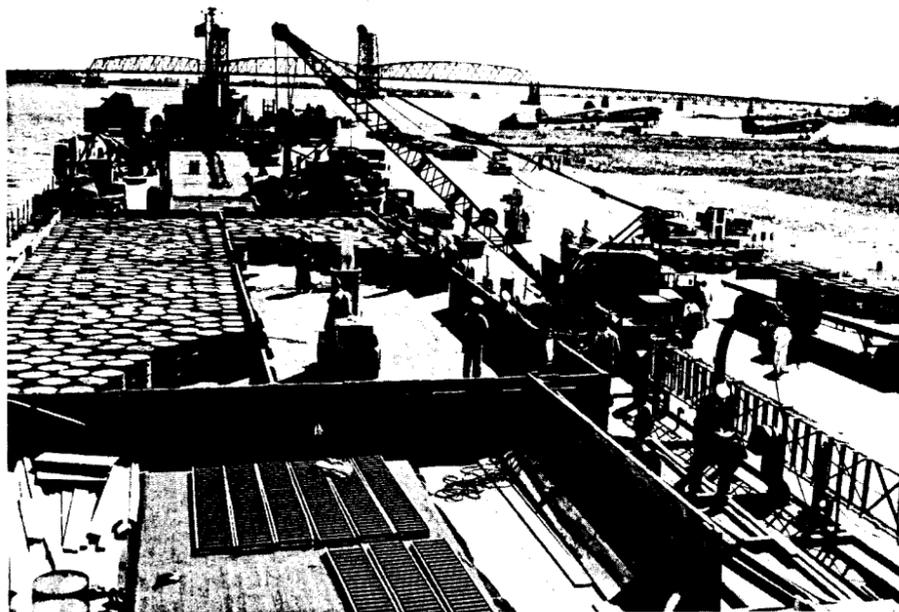
particular source. Any source out there (in the central area of the New York Bight) would have contributed."

Tingle explained that a rare persistent southwest wind, which appears an average of once in four years, was responsible for the beach pollution on such a widespread scale. This same weather condition happened last year, but the effect was not the same.

"I can't see how the beaches wouldn't have been covered by the pollution if it was floating in the general area south of Long Island," said Tingle. He suggested that, "People found things on the beaches, but didn't comment on it. People find debris on the beaches all the time, but usually not things like sludge balls and plastic items."

"The pollution last month," Tingle added, "seemed to be a rare combination of discreet events with the right meteorological conditions, but there had to be something else that contributed to the problem. Meteorologically speaking, something like this - only on a smaller scale - should happen every year."

—Clifford Cockerham



Loading radioactive waste drums aboard the Navy LST 519 at Floyd Bennett Field, Brooklyn, New York, in May of 1955 for sea disposal.

From The Ocean Floor To The Lab's Door

For over 20 years, low level radioactive waste, packed in concrete-filled, 55 and 80 gallon drums, has been lying under 10,000 feet of water over a 100 square mile area in the Atlantic Ocean. From 1946 to 1962, this area, about 250 miles south of Brooklyn, was a U.S. radioactive waste dump site.

Next week, two drums of this waste will be retrieved from the ocean and brought to Brookhaven on August 6 for analysis and testing. The Environmental and Protection Agency (EPA) is responsible for the development of a permit program for controlling ocean dumping of all wastes, including nuclear. In order to develop effective controls, the EPA is making this survey to discover how the drums have withstood the rigors of the sea and to determine the distribution of any released wastes.

ERDA has selected Brookhaven for this program because of the Laboratory's proximity to the site, and for its safety and technical expertise in nuclear waste research.

At a press conference in Berkner Hall on July 21, EPA regional representative Paul A. Giardina, and Meyer Steinberg, Head of the Process Technology Division in DAS, briefed the press on the proposed undertaking. An EPA videotape on "A Survey of Ocean Disposal" gave background on the Atlantic sites, as well as on the Pacific site near the Farallon Islands off San Francisco.

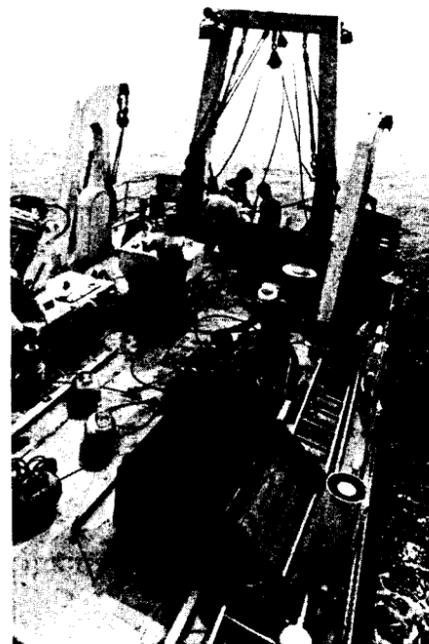
Three vessels will participate in the Atlantic retrieval - the Research Vessel *Cape Henlopen*, the *Alvin*, a U.S. Navy manned submersible operated by the Woods Hole Oceanographic Institution, and its mother ship, the *Lulu*. The *Alvin* will locate the drums, already identified by EPA in trial runs, and fasten the special lifting apparatus around them. The drums will be suspended above the *Henlopen* and monitored for radioactivity before being placed in the 75-inch long heavy gauge steel containers, which are the same kind used for shipping jet engines. Estimates are that a container, plus an 80-gallon drum, will weigh 2,100 pounds.

The containers will be transferred from the *Henlopen* to an LCM vessel outside the LILCO Nuclear Power Station Dock at Shoreham. After the LCM lands the containers at the dock, they will be placed on a BNL flatbed truck and escorted to the Laboratory. The containers will be housed in the Radiation Development Laboratory of DAS at HIRDL.

Brookhaven health physicists will maintain surveillance of the drums and containers from the point of recovery until they reach their destination at Brookhaven.

Peter Colombo, group leader of the Radioactive Waste Research Program, will be in charge of the operation. The drums will undergo physical tests on the strength and durability of the solidified concrete and contained radioactive materials; chemical measurements of the corrosion of the contents and the steel con-

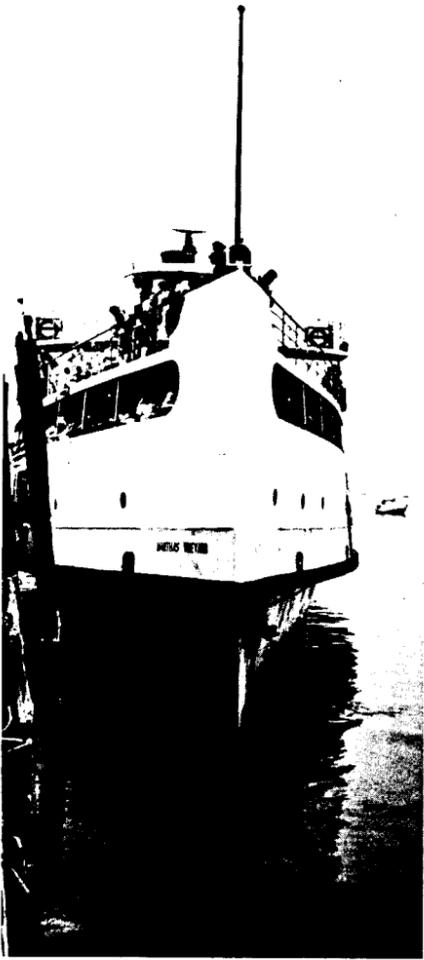
(Continued on page 2)



View of the rigging equipment on the stern of the R/V Cape Henlopen that will be used for retrieval of drums from sea.



Paul A. Giardina, EPA's Regional Radiation Representative, meets the press at the briefing on ocean disposal of radioactive material held at the Laboratory on July 21.



At A Leisurely Pace

There is more than one way to get off the Island during the summer months . . . one of the more restful is the ferry. This mode of travel is a pleasant way to visit the smaller islands or cross the Sound to New England. The *Bulletin* offers this brief nautical listing as a guide for summer travel.

From Port Jefferson . . .

The widest variety in ferry rides is found only 15 miles from the Laboratory in Port Jefferson. In addition to regular service, the Bridgeport and Port Jefferson Steamboat Company offers a number of cruises and tours at reasonable rates.

Sun and sea breezes may be enjoyed for an entire day with the "Mariner's Delight" cruise. For adults the fee is \$3.50 and children under 12 are half-price to ride all day on regular departures without disembarking. Music lovers can take advantage of a Dixieland-style banjo band provided from 6:30 p.m. until the final docking at 10:00 p.m. only on Saturday nights. Alternatively, "Rock on the Sound," a lively moonlight cruise, provides a modern rock band from 10:30 p.m. to 1:30 a.m. every Friday night from July 23 on.

The Port Jefferson ferry company offers packaged tours of sightseeing attractions in Rhode Island, Connecticut, and Massachusetts. They include round-trip passage to Bridgeport, bus transportation from Bridgeport, admission charges to specific points of interest, and dinner for all passengers.

All tours leave Port Jefferson in the morning and return at 10:00 p.m. The public is encouraged to bring box lunches, but there is also an opportunity to buy lunch on the tour. Reservations are required 72 hours in advance for the package tours and must be accompanied by a \$10 deposit per person.

The tours leave the Long Island dock at 6:30 a.m. and continue by bus from Bridgeport. The first goes to Newport, Rhode Island, where sightseers visit a restored colonial village and enjoy a ten-mile shoreline drive to the historic mansion of Cornelius Vanderbilt. The other tour features a trip to the Old Sturbridge Village in Massachusetts, a typical eighteenth century New England village.

If that is too early in the morning, two other package tours leave at 10:30 a.m. Transportation buffs are taken on a visit to the Branford Trolley Museum and then travel to East Hadlyme, Connecticut, to see a medieval castle which was once the home of Broadway actor William Gilette. Another choice leads to the Mystic Seaport Maritime Museum, a 40-acre outdoor museum which re-creates the shops of nineteenth century American seaports. Skilled crafts of the era are demonstrated along cobbled streets and restored vessels are open for boarding.

To avoid the City's traffic on the way off the Island, the Bridgeport and Port Jefferson Steamboat Company offers regular

service across the Sound at 6:30 a.m., 10:30 a.m., 2:30 p.m., and 6:30 p.m. Passenger fare is \$3.50 one-way, \$6.00 round-trip on Sundays, and \$5.00 round-trip on other days. Half-fare is charged for children under 12.

One-way passage for a car and driver is \$14.00, but there is an additional charge of \$2.00 to make car reservations. Their best deal is \$17.50 for one-way passage of a car with unlimited passengers on weekdays. Bicycles are \$1.50 each way.

Tour Prices

- Monday: Newport, Rhode Island (adults \$24, children \$22)
- Tuesday: Branford Trolley Museum (adults \$18, children \$16)
- Wednesday & Saturday: Mystic Seaport (adults \$21.50, children \$17.50)
- Thursday & Saturday: Old Sturbridge Village (adults \$22, children \$19)
- Friday: Rock on the Sound (couples \$8, singles \$5)

The Long Island dock of the Bridgeport and Port Jefferson Steamboat Company may be reached from the Laboratory by taking the William Floyd Parkway north to Route 25A, west on Route 25A to Route 112, and north on Route 112 to the Port Jefferson Harbor. Additional information may be obtained by calling the ferry company at 473-0286.

From Orient Point . . .

About 45 miles east of the Laboratory on the North Fork, is the Cross Island Ferry Service. A ferry departs from Orient Point for New London, Connecticut 11 times a day. The prices are competitive with the Port Jefferson ferry rates for regular service, but fewer specials are offered.

The Cross Sound Ferry Service does offer two tours of the Submarine Forces Library and Museum in combination with tours of either the Mystic Seaport or the Mystic Marinelife Aquarium. Tour groups leave Orient Point at 9:00 a.m. and return at 5:00 p.m. Adult passage is \$12.50 and \$6.50 for children under 12. For further information call 323-2415.

From Other Areas . . .

In addition, at least ten other ferries service the popular beach and resort areas. Schedules may be obtained by calling the following numbers:

- Bay Shore to Fire Island (583-5037)
- Bay Shore to Ocean Bay Park and Seaview, Fire Island (589-1844)
- Bay Shore to Fire Island (665-5045)
- Greenport to Shelter Island (749-0139)
- North Haven to Shelter Island (749-1200)
- Patchogue to Davis Park and Watch Hill, Fire Island (475-1665)
- Sayville to Fire Island (589-8010)
- Sayville to Cherry Grove, Fire Island (589-3622)
- Sayville to Sunken Forest, Fire Island (589-1844)
- Southold to New London, Fishers Island (788-7463)

Enroll Your Child In Nursery School

The Upton Nursery School for three and four year olds, is now accepting applications for September enrollment. The cooperative nursery school is open to children of all Laboratory employees.

The children attend school two or three mornings a week and participate in a varied program including art, music, outdoor activities, and field trips. The teachers are professional, and the classes small enough that each child receives individual attention. To keep tuition fees low, parents cooperate in the running of the school and assist the teachers at each session.

For further information, call enrollment chairperson, Sharon Paschos, 928-4270.

CREF Unit Values

1975			
January	\$30.67	February	\$32.80
March	33.77	April	36.12
May	38.07	June	39.88
July	36.81	August	35.86
September	34.31	October	35.89
November	36.61	December	36.34
1976			
January	\$40.31	February	\$39.76
March	40.75	April	40.10
May	39.69		
	June	\$41.60	

Upon publication of the updated BNL telephone directory, the telephone listing for all emergencies will be 2222.

What Did He Say?

Here are some more puzzlers which translate into well known sayings. The following example will show you what we mean:

Prompt suturing enables the baseball team to survive

translates into

A stitch in time saves nine.

The puzzlers and their authors are:

1. You can get jury duty, but you may not be impaneled for the trial. (M.R. Burns)
2. Unemployed cowboys amuse Rosemary's lover. (D. Lloyd and R. MacGregor)
3. Chronological insects enjoy a feathered shaft. (N.P. Rathvon)
4. One coin in heaven is also merited. (W.F. Piel)

The answers will be published next week. Send your contribution to the *Bulletin* for publication in a later issue.

Ocean Retrieval



Peter Colombo, group leader of the Radioactive Waste Research Program, shows news photographers the steel container which will house the radioactive waste drums to be retrieved from the Atlantic dumping site.

Ocean Floor

(Continued)

tainer; and examination of the leachability of the radioactive components of the solid material.

Most of the questions from the press were directed at possible health hazards to the public through the food chain. Giardina said that although "we can't predict what we will get," the Atlantic dumping site has few fish and there is no health hazard from levels leaking out now from the drums. In both the Atlantic and Pacific sites, there are 85,000 drums containing 85,000 curies of activity, and he said, "85,000 curies of radioactivity gives a very dilute concentration."

Mr. Giardina said that there are no plans to retrieve the rest of the containers, as "this is not a problem that needs remedial action."

The retrieval of the drums is just one aspect of the operation. Giardina pointed out that "this operation will involve many other scientific tasks. Sophisticated current measurements and pathway analyses are other tasks that will be performed."

Suffolk County Health Department officials have been kept abreast of the project and Brookhaven is taking every safety precaution.



80-gallon test drum being brought aboard ship during recent trial runs in the Atlantic.

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**65-Mile Riverhead Run
A Confused Success**

With bicyclists from three or more Long Island clubs, the 65-mile Riverhead Run was a rousing success attendance-wise, but almost a disaster from the organization point-of-view. Cyclists from the Massapequa and Grumman clubs, some AYHers, and 12 from BNL, for a total of about 40, showed up at Riverhead at 9:00 Sunday morning.

An AYHer circulated a sign-up sheet and passed out abbreviated route maps. There was a desultory attempt to form groups according to speed, then a few riders got tired of waiting and started off. This triggered a chain-reaction with a rather large first group leaving immediately, followed by a somewhat smaller group, then trickles of two or three at a time. Inevitably, the main groups splintered into smaller groups, with some following the route precisely and others inventing their own way. Two BNL people, frantically pumping up tires during the exodus, started off the opposite way down the North Fork and passed the others, who were going counter-clockwise, at the north Shelter Island Ferry.

Most of the riders lunched at a favorite restaurant in Greenport, but a few brown baggers ate separately and finished much earlier as a result. The faster group followed the classic hare pattern and were caught up to by the tortoises at a rest stop, with the result that most finished at the same time, a little after 5:00 p.m.

One accident marred the day - a Massapequa man didn't watch where he was going and ran into a stopped car, wrecking his front wheel, but he was unhurt. There were two minor mechanical problems to BNL men, both correctable.

Everyone enjoyed the tour in spite of the problems, and it is hoped to organize another for mid-August. Watch the *Bulletin* for announcements. In the meantime, a copy of the AYH schedule, which has a one-day ride every week, is obtainable from Gerry Morgan, Ext. 4841, Bldg. 815. These are mostly Nassau or Western Suffolk rides.

BNL Attendees

Sharon Fontaine	Michael Kobasiuk
Frank Fridrich	Nancy Kublin
Nicholas Gmur	Gerry Morgan
Robert Harold	Lee Snead
Steve Howe	Debbi Shenk
Kenny Kao	Peter Tuhy

— Gerry Morgan

Selected Reading

- Nature 262, July 1, 1976**
Reflections on 200 years of science in the USA. N. Reingold. 9-13
- Scientific networks in the age of the American Revolution. A. Thackray. 20-4
- Nature 262, July 8, 1976**
Is the world getting naughtier? 83
- New Sci. 70, May 27, 1976**
An end to all soil problems? Plant culture system could revolutionise Third World agriculture. C. Tudge. 462
- Spirits, doctors and disease. Is a marriage of science and faith-healing possible? D. Gould. 474-5
- Intermediate conceptual technologist. A profile of John Williams and his odd notions. M. Sherwood. 476-8
- Science 193, July 9, 1976**
Experiment planned to test feasibility of a "Science Court." P.M. Boffey. 129
- Science and the press: Communicating with the public. 136
- Smithsonian 7, July 1976**
The pendulum swings as it becomes more apparent that Americans can cross at least one more river. R. MacLeish. 28-33
- Perhaps the answer is to think small as our industrial society searches for "appropriate technologies." W. Clark. 42-9
- Einsteins of the future probably will not find the freedom of the past in scientific research laboratories. D.S. Greenberg. 60-7

Where "Did" You Get That Hat?



Some of the children in the "Crazy Hats" contest from left are: Nicholas Budnick, Yoshiko Watanabe, Frederick Morgan, Yael Rudman, Takashi Ido, Jens Nitteberg.

Dig Those Crazy Hats

A Crazy Hat Contest kicked off the Friday mornings specials of the Children's Summer Play Session at the Recreation Building last week.

Hats of all colors, sizes and shapes draped the heads of the enthusiastic contestants. Many parents and friends witnessed a parade of puppets, feathers, balloons, sea shells, toothpaste, Christmas balls, flowers, and other paraphernalia carefully assembled with exacting precision.

The first, second, and third prize winners of the different categories were as follows:

Prettiest - Vicky Meadows, Linette Ma, and Takayoshi Ig; **Strangest** - Kyla Johnson, Randal Koene, and Fredrich Morgan; **Tallest** - Yael Rudman, Nick Budnick, and Daniel Schmidt; **Smallest** - Mike Birgeneau, Ruth Schmidt, and Elsa Mack/Frode Vaagen (tie); **Largest** - Takashi Ido, Yoshiko Watamake, and Kumud Marang; **Craziest** - Catherine Birgeneou, James Waite, and Kristian Nitteberg; **Funniest** - Patti Birgeneou, Kristi Morgan, and Sandra Cowley; **Most Original** - Paul Kisslinger, Christine Waite, and Linwood Ma; **Most Creative** - Kevin Cowley, Sandeep Narang, and Alejandro Vera; **Most Unusual** - Yumiko Okuno, Daisuke Okuno, and Angela Dang; **Nicest** - Yurie Klopfer, Jens Nitteberg, and Bradley Johnson; **Most Most** - Mark Geragaty, Rachel Bona, and Grim Nitteberg/Yoko Tanaka (tie).

Today's Treasure Hunt and next week's Scavenger Hunt promise to be big events of the Program. Be there, kids - you'll all have a great time!

ERDA Service Awards



On June 25, the day he retired as ERDA's Area Manager, John P. Jewett awarded a 10-year pin to Helen Hurley (center) and a 20-year pin to Ruth Neuss. Not pictured is Leonard Belkin who received his 30-year pin.

Arrivals & Departures

Arrivals

Bruce A. Lein Reactor
Michael W. McDonell Biology
Edward A. McGilly Plant Engrg.
Nancy E. Overton Biology
Kenneth R. Perkins Applied Science
Alan Schulhoff Applied Science

Departures

Chin-Tung Lin Chemistry
William A. Lynch, Jr. Plant Engrg.

Cafeteria Menu

Week Ending July 30, 1976

Monday, July 26	
Corn Chowder	
Beef Liver & 1 veg.	1.10
Scrambled Eggs, Sausages & fr. fr.	1.05
Tuesday, July 27	
Beef Noodle Soup	
Knackwurst & Sauerkraut	1.05
Sauerbraten & Potato Pancake	1.30
Wednesday, July 28	
Cream of Potato Soup	
Beef Chop Suey on Rice	1.05
Davy Jones Fish Fry	
\$1.40 plus tax	
Thursday, July 29	
Chicken Vegetable Soup	
Cheese Ravioli & 1 veg.	1.00
Roast Chicken, Stuffing & 1 veg.	1.10
Friday, July 30	
Fish Chowder	
Spaghetti & Clam Sauce	1.00
Breaded Pork Chop & 1 veg.	1.30

Dive For Money

Last Friday's pool special, the Penny Fetch, was a huge success. More than 100 young swimmers dove for quarters, nickels, dimes, and pennies. Youngsters from seven to twelve years old jumped in the water time and again and popped out with their hands full of change. Parents cheered, friends shouted encouragement, and lifeguards kept a watchful eye on all. A great time was had by everyone.

Winners were:

Over 10	
1st - Shiela McKerry	
2nd - Tim Jochen	
3rd - Bob Bruno/Lyndon Ma	
7-9	
1st - Todd Lehman	
2nd - Tricia Nielson	
3rd - Kevin Elmore	
4-6	
1st - Kevin Cowley/Kristi Morgan	
2nd - Pamela Dawson	
3rd - James Waite	

Soccer

John Skalyo

BNL held its own in the second week of play in the Brookhaven Town Summer Soccer League by beating Chi-Chi 1-0 and by tying Miller Place S.C. 0-0. The score of the first game came on a nice pass by Kydes through the center; the speedy Dwyer caught up with the ball and broke in alone on the goalie, beating him to the short side. Chi-Chi seemed to display some of their championship form of last year in the first half but BNL controlled the game in the second half.

Both games were marked by consistent defense by the BNL backline of Fairchild, Levine and Pitcher and the cool, sometimes remarkable, play of Feiler in goal.

The game against Miller Place S.C. found Dwyer hitting the cross bar early and Batchelor hitting the right post from one yard outside the penalty area on a direct kick late in the second half (the posts are part of a goalie's defenses).

Games coming up are against Port Jefferson Station at Ward Melville H.S. on Monday, July 26, and a rematch with Miller Place H.S. on Monday, August 2. No game on Wednesday, July 28.

Softball

Ed Taylor

League I

Ravens 8 (5-2) - Hawks 6 (3-4)

The Ravens had a big 7 run third inning and held on to salvage the victory. The triumph was a complete team effort. Leroy James stroked a homerun for the Ravens. Fletcher Johnson had a big "K" for the Hawks.

Old Timers 10 (4-3) - Blue Jays 5 (2-5)
No highlights available.

League II

Six Pax 12 (1-0) - Dirty Sox 6 (0-1)

The Six Pax were led by Artie Dick (4 for 4), Ed Meir and Bobby Vignato (both 3 for 4) and Chuck Carlson (HR).

Bubble Boys 8 (1-0) - Metallurgy 3 (0-1)

Kollmer and Smith both hit homeruns for the Bubble Boys. Metallurgy turned over 3 doubleplays in a losing effort.

League III

Circuits 20 (1-0) - Medical 2 (0-1)

"Lets go Mets" Woody and Jeff Gaffney hit 2 homeruns apiece to propel the Circuits past Medical. Al Mack and Frank Haibon also hit well for the Circuits. The hit Tom Weldon got off the Bio-Meds was when he hit Woody with a rock.

Phoubars 22 (1-0) - Sweathogs 16 (0-1)

Guy Mastrion, Gordon Smith, Ed Bukowski and Ken Kowalski produced the big hits for the Phoubars.

League IV

Power Packers 14 (5-2)

Charlie Browns 6 (3-4)

The Power Packers, playing with only 9 men, got two homeruns from Jim Lynch and a sparkling defensive catch from left-fielder Bill Schoenig.

Nuke Powers 17 - Streakers 9

Nuke Powers 11 (1-6) - Streakers 15 (5-2)

George Harris and Mike Bannon both legged out homeruns for the Streakers in losing the first game. In the second game the Streakers combined good hitting and good fielding to earn a split.

League V

Oh Kays 22 (1-0) - Diamonds 9 (0-1)

The Oh Kays exploded for 8 runs in the fourth and sixth innings to coast to victory. Kay Hunt and Debbie Antonio both struck out in this contest.

Odd 15 17 (1-0) - T.N.T. 9 (0-1)

Jean Weber played well at shortstop for T.N.T.

Turkeys 10 (1-0) - Balls & Strikes 2 (0-1)

No highlights available.

Final Standings (First Half)

	Won	Lost
League I		
Ravens	5	2
Old Timers	4	3
Hawks	3	4
Blue Jays	2	5
League II		
Six Pax	6	1
Dirty Sox	3	4
Bubble Boys	3	4
Metallurgy	2	5
League III		
Circuits	7	0
Phoubars	3	4
Medical	2	5
Sweathogs	2	5
League IV		
Streakers	5	2
Power Packers	5	2
Charlie Browns	3	4
Nuke Powers	1	6
League V (Mixed)		
Oh Kays	7	0
Balls & Strikes	5	2
Diamonds	5	2
Turkeys	3	4
Odd 15	1	6
T.N.T.	0	7

Official & Special Events

- Monday, July 26**
Oil-Fired Test Program Committee -
Berkner Hall - Room A
UV Radiation Workshop -
Berkner Hall - Room C
- Wednesday, July 28**
Dowling College Tour
- Friday, August 6**
Concert

Classified Advertisements

Placement Notices

Each week the Personnel Office lists personnel placement requisitions, currently being processed. The purpose of these listings is, first, to give notice of all non-scientific staff positions being filled and, second, to give employees an opportunity to request consideration for themselves through the Personnel Office. In filling vacancies, the Laboratory's objective is to give first consideration to present employees, as follows: employees within the immediate group having the vacancy, employees within the department or division, employees within the Laboratory as a whole.

For further information regarding a placement notice, or to request consideration for an available position, contact Supervisor, Personnel Placement & Development, extension 2874 or 2882.

152. **TECHNICIAN** - Temporary position. Assist in performing water chemistry analyses. Reactor Div.

153. **TECHNICIAN** - Part-time position. Tandem Van de Graaff Operations. Physics Department.

154. **TECHNICIAN** - AAS degree or equivalent in photographic science with extensive knowledge of both color and black and white darkroom procedures. Experience and training in machine operation, process cameras, quality control with some understanding of photographic optics and chemistry. Photography and Graphic Arts Division.

155. **CUSTODIANS** - Plant Engineering Division.

156. **STEAMFITTER A** - Two positions. Under minimum supervision lays out, constructs, or installs, repairs and maintains heat, steam and water distribution systems, related facilities and auxiliary equipment and piping and equipment utilizing heat, steam and water distribution services. Application deadline: August 2, 1976. Plant Engineering Division.

157. **SCIENCE ASSOCIATE** - Minimum BS degree or equivalent in oceanography and relevant laboratory and field experience in chemical analyses of sea water samples for inorganic, organic and biological constituents. Department of Applied Science.

158. **TECHNICIAN** - AAS degree or equivalent in mechanical technology or engineering science to assist in operation, maintenance and repair of the 7-foot bubble chamber and the 8° bending magnet. Shift work. Particle Detector Division. Accelerator Department.

159. **BUILDINGS & GROUNDS UTILITY WORKER** - Application deadline: August 2, 1976. Plant Engineering Division.

Autos & Auto Supplies

72 **DODGE** - Scamp, a/s, a/c, 6 cyl, low mi, excel cond, snow tires. \$2500. 281-4405 eves.

65 **COMET** - Blue 2-dr hdtp, ps/r/h, runs very well, 50,000 orig mi. \$300. Tim, 588-0154.

69 **MGB** - Needs engine work, otherwise good, radials, am/fm. \$500, will talk. Bill Wilson, Ext. 4442.

74 **HONDA** - 360 cc, used 6 mo, showroom cond. \$750. Ext. 4406.

73 **CHEVY** - Caprice, 4-dr hadtp, pb/ps, V8, vinyl top, am/fm stereo, 26,000 mi. \$2695. 929-8693.

72 **MERCEDES-BENZ** - 280 SE, burgundy, a/c, am/fm stereo, ps/pb, new Michelin steel radials, excel cond. Barbara, 821-0214.

67 **INTERNATIONAL** - ¾ ton, 6 pass truck. \$250. Chet Reed, 928-3014.

69 **CADILLAC** - Sedan de Ville, new radial tires. Ext. 3267, 473-2594.

67 **FORD** - Falcon, 4-dr sedan, auto, rebuilt engine, new brakes & muffler. \$450. Okuno, Ext. 4261, 3071.

65 **FORD** - Wagon, V8, std trans, needs work, good transportation. \$300. Bob, Ext. 4592.

70 **FORD** - Country Sedan Wagon, 351 cu in, approx 15 mpg, ps/pb, ac, roof rack, high mi, good cond, avail Aug 20. 929-8595.

66 **CHEVY VAN** - 6 cyl, paneled & carpeted, good running cond. \$800. Larry Arnold, Ext. 2021, 281-2136.

57 **VW BUG** - \$25. 744-4984.

73 **CADILLAC** - Coupe de Ville, excel cond, full power, many extras. \$4000. Charley, Ext. 4207, 475-5099 after 6.

68 **STATION WAGON** - American Motors, 6 cyl, std shift, blue. \$400. Phillips, Ext. 4235.

TRAILER HITCH - For Camaro. \$8. 581-0932 after 6.

VOLVO RADIO - AM, excel cond. Ann, Ext. 3143.

73 **DODGE** - Yellowstone camper, fully-equipped, sleeps 6, ps, ac, 16,000 mi. 475-2053 after 6.

67 **VW** - Fastback, good cond, new paint, radio & tape, 65,000 mi. \$600. Tony, Ext. 2023.

MAG WHEEL - For Oldsmobile, 14"x7", \$12; 12-volt battery, good, \$10; 2 F78-14 tires, \$5/pr. Ron, Ext. 2491, 473-5939.

71 **BUICK SKYLARK** - Very low mi, 2-dr, excel cond, ps, vinyl top, 6 cyl, auto trans. Ext. 2472, 473-8146 after 6.

54 **CHEVY** - Belaire, power glide, genl good cond, runs well, body sound, interior clean. \$275. Bob, 732-3296 eves.

65 **CHEVY** - 283 engine & trans, good cond. 928-7035.

TIRES - Recaps & used, most sizes, extra rims. Ken, 289-8212 eves.

TRUCK TIRE - 7:00x15 6-ply Dunlop. 289-8212 eves. 69 **DODGE** - Dart Swinger, 3-sp, excel cond. \$800. Bak, Ext. 3798.

TIRE - Snow, 650-13, Firestone. \$20. 744-5871.

72 **HONDA** - 70, road & trail bike, good cond, low mi. Ext. 4132, 924-4328.

71 **GREMLIN** - 80,000 mi, excel running cond, your offer. Ext. 3854, 928-4270.

Boats & Marine Supplies

18' **SPORTSCRAFT** - '71 bowrider, '71 Mercury 85 hp, '74 Billy trailer, navy top. \$1500. Marion, Ext. 2902, 281-5667.

18' **SOUTHBAY** - Cat boat, 7½' beam, completely rebuilt in '75, 2.5 hp outboard, head, sleeps 2. R. Stoehr, 363-8981 after 6.

INFLATABLE CANOE - 2-man, 10' long, w/seats, pump & paddle. \$50. Pete, Ext. 3297, 586-3579.

42' **ANTIQUÉ BOAT** - 1917 express cruiser, hull basically sound, Lathrop engine, sleeps 6, needs some restoration. \$1000 firm. 288-1151 eves.

SUNFISH - Excel cond. \$450. Ext. 4032, 751-1660.

16' **FIBERGLASS** - MFG, 50 hp Merc, trailer. \$700. Gerry, 281-7230 after 2.

17' **SAILBOAT** - Mobjack class, high performance, planing hull, completely equipped for racing, sails, spinnaker, trapeze, w/trailer. Joe, Ext. 4069.

MOORING - Mushroom anchor mooring, 50 lbs, ¼" chain & buoy. \$45. Joe, Ext. 4069.

23' **CRUISER** - Fly bridge, 233 FWC Merc cruiser in-board, full canvas, '75, vhf, swim platform, 50 hr, like new. Tony, Ext. 2023.

26' **PEARSON** - 6 sails, ice box, 9.5 Evinrude, many extras. Terry, 473-8426.

17' **O'DAY** - Day sailor, '72, excel cond, all fiberglass, custom trailer, 4 hp Evinrude, summer/winter covers, many extras. Asking \$3000. Charlie, Ext. 4526, 221-4894.

EVINRUDE - 40 hp, elec start, excel. \$350 or best offer. Ext. 4308.

15' **THOMPSON** - Lap streak, steering, extras, good cond. \$150. Israel, 665-7315.

EVINRUDE - 35 hp, running cond. Israel, 665-7315.

Miscellaneous

ANTIQUES - Chaise lounge, desk, piano stools, trunk. 472-1473.

GIUITAR - Stella Harmony, w/case, like new. \$50. 472-1473.

LAWN MOWER - Sears, self-propelled, rotary, 22" dual torque, slightly used, sacrifice. Cohn, 265-0501.

PIANO - Wurlitzer w/bench, white provincial, \$750; steno type machine w/standard case of paper, \$150. 286-8957.

DESK - Study center combo w/file cabinet, etc. \$75. Ext. 4727.

RECORD PLAYER - Magnavox stereo, good cond. \$25. Ext. 4047/4090.

WINDOWS - Wood frame complete w/aluminum storms & screens, (2) 30"x45", (3) 36"x30", \$15 each; Kitchenaid dishwasher, \$30; TV antenna, 12' mast, \$25. 286-2749.

LIGHT - Drafting table, \$18; fixture, light, w/o glass, \$4, w/glass \$5; plant hangers, \$3 ea. 744-5871.

SPRING COAT - Green checked, size 14, good cond, \$8; jeans, men's, 34-32, \$5 ea. 744-5871.

SHOES - Men's, 9M, brown leather, never worn, \$14; men's shirts, ls brown 15-33; ls white 15-34. Ext. 3609.

SHIRT - Men's, pullover, blue, med, \$3; melon spring coat, size 12, \$8. Ext. 3609.

PATIO DOORS - Sliding safety glass, 72" opening, \$75; glass panels for tub enclosure, \$25. 281-9853 after 4.

STEREO CONSOLE - Am/fm, excel cond, jacks for headphones. \$75. Al Mack, Ext. 4592.

CAMPING STOVE - Coleman, 3-burner, gas. \$15. Ext. 3156.

REFRIGERATOR-FREEZER - 17 cu ft, RCA Whirlpool, runs well, needs minor repairs. \$50 or best offer. Ext. 4671 or 924-6073.

STAMP ALBUM - Partially filled, perfect for beginners, \$10. 286-2265.

SWIMMING POOL - 18'x48", brand new, still in boxes, all aluminum, incl ss filter, pump, liner, thru the wall skimmer & safety ladder. \$750. 281-6992.

BICYCLE - Boy's, 10 spd, 24" Schwinn Varsity. \$40. Dominick, Ext. 3954.

TV - Magnavox, 23", b/w, console, good cond. \$35. 924-3236.

PLANTS - Japanese lanterns, African daisies, periwinkle, potulaca, etc. Ext. 2882.

BOOKS - 50 Hardy Boys, complete, excel cond. \$30. 286-2265.

STOVE - Antique, wood-coal burning stove, complete, excel cond. \$85. 727-4363 after 5.

PERUVIAN GUINEA PIGS - (3), \$2 ea. Frank, Ext. 2011.

TENT TRAILER - Apache Mesa, '67, full-length detachable canope, dinette, ice box, built-in cabinet, sleeps 6. \$350. 286-1213 eves.

TV - RCA Victor, old. \$20. 878-2591.

WASHING MACHINE - Wringer, good working cond. \$15. 878-2591.

TUBE TESTER - EICO, Model 636, excel, \$20; Sekonic zoom light meter, like new, \$15; Drake TR-22C, 2 meter fm transceiver w/extra crystals, like new w/nicads, case, etc, w/mobile mount, in orig box, \$150. 929-6646.

BICYCLE - Good cond, green w/chrome fenders, size 16. \$20. G. Woodson, Ext. 4033.

FREE - Box of white elephants, others cheap, browse during lunch hour, office, 510B, Physics. Osgood.

KITCHEN CABINET - Custom made, birch base, blue formica top, L-shaped to fit corner, 65"x44" along walls, 5 drawers, 2 cupboards, very good cond. \$120. 286-0384.

DINING RM SET - Drexel contemporary, walnut table, 6 chairs, leaves & pads, buffet, excel cond. \$450. Phil, Ext. 4518, 751-9038.

POOL FILTER - Model 1000 Dual cartridge filter flo, works well. \$20. Ken, Ext. 4581.

TV - Color, approx '62 vintage RCA, 21", plays, \$20; '65 RCA color 25" console, plays well, needs some work, \$45. Ken, Ext. 4581.

SNOW BLOWER ATTACHMENT - For Sears 7 hp elec start rider mower. \$65. Ken, Ext. 4581.

POOL - 4'x21', filter-vacuum, cover, pollow, buyer must dismantle, reasonable. 286-0376.

COUCH - Den, old. \$5. 289-1754.

WASHING MACHINE - Portable, Sears, 10 lb cap, needs work. \$25. 929-4903.

LADDER - Wood extension, 28', good cond. \$50. Tony K., Ext. 3499.

BABY CARRIAGE - Coach style, like new. \$50. Frank, Ext. 3664.

BATHROOM VANITY - 36" wide, white formica w/gold specs, single lever faucet, storage area, 3 yrs old. 588-7989.

COCKTAIL TABLE - & 2 end tables, Mediterranean, used less than 6 mo. \$145 takes all. 286-8517 after 5:30.

SOFA/SLEEPER - Maple, Danish modern, foam pillow, 2 bolsters. \$15. Donna, Ext. 2238, 589-6770.

FISH TANK - 10 gal w/cover. \$6. Ext. 4047, 4090.

POOL - 21'x4', ladder, filter, pillow, all accessories, reasonable, buyer must dismantle. 286-0376.

LIVING RM SET - 5-piece Mediterranean, like new, incl plastic covers. \$750 or best offer. 475-2053 after 6.

AIR CONDITIONER - Window mount, Westinghouse, old but good running cond. \$35. Joe, Ext. 4069.

LAWN MOWER - Snapper, like new. Ext. 3376, 281-1364.

SKY-MASTER CUBICAL QUAD - Tri band, fiberglass, disassembled, 1 broken arm, w/boom. \$25. 929-6646.

SPRINKLER - Melnor standard traveling sprinkler w/auto shut-off valve. \$15. Hans, Ext. 4581, 281-5563 after 6.

TRAILER HITCH - Class #3 w/receiver, w/anti equal bars for Chrysler productions. \$100. Ext. 3454.

BICYCLE - Boy's, \$10; writing desk, \$15; children's books, free. Bak, Ext. 3798.

AIR CONDITIONER - 6500 btu, Sears Coldspot. \$100. Bill, Ext. 4641, 732-5004.

FURNITURE - Spanish dining rm set, \$200; Bavarian china vase, \$60. 286-0405.

WET SUIT - O'Neil, used once, medium. \$80. Ext. 4308.

CLAM RAKE - 22 teeth combination skids, \$35; 2 section clam short pole, \$10. Israel, 775-7315.

REFRIGERATOR/FREEZER - 19 cu ft, side-by-side, harvest gold, clean but needs some work. \$25. Frank, Ext. 2022.

Ads left out of this issue because of lack of space need not be re-submitted in order to run in next week's issue

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 Rent

WADING RIVER - New 3 br hi ranch, 3 blocks from water, priv beach, 15 min from Lab, yearly rental avail Aug 1. \$350/mo. Ext. 3121, 744-5261.

MILLER PLACE - Waterfront, priv beach, 2 br, 1 bath, country kit, den, garage. \$300/mo + util, 1 yr or 9 mo lease from Sept 1. 928-0348.

VERMONT - Chalet, sleeps 12, all conveniences, lake swimming, fishing, hiking, located on 500 acres woodland, nearby theatre, Marlboro music, horse-back riding, golf, tennis, rented weekly, monthly, seasonal. 757-5599.

BROOKHAVEN HAMLET - Excel location near bay, 3 br, finished basement, 2 fireplaces, garage, screened porch, large dr, beautifully landscaped. Ext. 3694.

BELLPORT VILLAGE - Furnished 3½ rm cottage, screened porch, single or double occupancy, 1 yr lease, avail Aug 1. \$215/mo. 286-0932/286-3333.

WADING RIVER - 5 br house, garage, backyard, 3 min walk to priv beach, 20 min from Lab, avail mid Aug/Sept. \$400. 929-8595.

MASTIC BEACH - 3 br, fenced waterview ranch. \$260/mo. Mr. Daniels, 281-6692.

BELLPORT VILLAGE - 2 br house, walk to village & stores, furnished, ferry to beach, 12 min to Lab, rent July, Aug, Sept. 286-8945/286-1097.

EAST PATCHOGUE - 3 br Dutch colonial, furnished, all appliances, lovely setting, 1½ acres, avail Sept 1 for 1-yr rental. 289-3023.

FURNISHED RM - 2 rms & priv bath, share kitchen, use of washer & dryer, 15 min to Lab. \$45/wk. Jack, Ext. 4255.

WADING RIVER - Beach front, large basement apartment, fully furnished, a/c. \$250/mo, incl util. 929-8443.

MASTIC - Room w/kit priv, on water front, reasonable. Richard, 475-5076.

ROCKY POINT - Large, modern studio apt, walk to priv beach, large fenced yard, fireplace. \$150/mo. 821-0391.

For Sale

BELLPORT - Raised ranch, 5 br, 1¼ baths, 100x165 lot, deck, garage. \$40,000. Osgood, Ext. 3978, 286-2561.

SOUTH SETAUKET - 3 br ranch, den w/fireplace, large lr, eat-in-kit, basement, garage, brick patio, treed ½ acre, 3-Village schools. \$35,000. Ext. 3417.

WADING RIVER - Near Sound, fully deeded beach rights, 6-rm ranch, 2 br, bath, oil/hot water heat, fireplace, full basement, rear patio, taxes \$988/yr. Asking \$44,000. 929-6465.

WADING RIVER - ½ acre wooded lot, 3 br, large 2-car garage, full basement, fireplace, priv beach, washer, dryer, freezer. \$44,000. Al, 929-6940, Ext. 3535.

BELLPORT - 5 br, 2½ baths, large country kit, lr, dr, family rm, 2-car garage, sauna, screened patio, front porch, 1½ acres. Low 50's. 286-1091.

BLDG PLOT - 1 acre, approx 100x400', fully wooded, located on quiet & developed country rd, min from Lab, single homes throughout. 924-3236.

CENTEREACH - 3 br, ranch, eat-in-kit, den, 1-car garage, workrm, ¼ acre fenced, in-ground sprinklers, appliances, a/c, super clean, mid 30's. 698-7178.

BELLPORT VILLAGE - 8 rm house, 5 br, kit, lr, porch, 1½ baths, dock priv, low taxes, reasonable. Lu, 289-9407.

CALVERTON - 3 br townhouse, 1½ baths, a/c, w/w, sundeck, portico. \$25,000. 727-0501.

CAPE COD - 4 br, 1½ baths, eat-in-kit, dr, lr w/heater fireplace, full basement, ½ rec rm w/fireplace, ½ util rm, 2-car garage w/2nd floor work area, ½ acre landscaped plot, \$58,000. 744-6043 after 7.

SOUND BEACH - 3 br ranch, on 8 wooded lots, basement, garage, all appliances, rugs, many extras incl pool. Must sell. \$38,000 firm. 744-3074 after 6.

HOLBROOK - 3 rm house, separate 2-car garage on 150'x100' lot. 732-8241.

NORTH SHIRLEY - Cape, 5 rms & bath down, 2½ rms up, partially finished, garage, full basement, ½ acre, landscaped, fenced back. 924-8813.

ROCKY POINT - 5 br, kit, lr, dr, family rm, fireplace, basement, ac, beach rights, many trees, corner, 0.4 acre. \$39,990. Ext. 3861, 744-5741.

HUNTING CABIN - Fully furnished, winterized, located in Catskill Park southeast of High Point Mountain, 2 hrs from NYC, elec heat, extras, 1 ½ acres. \$8000, \$2500 down. 924-8552 or 727-0488 after 5.

Wanted

DONATION - Sturdy tables, chairs, any items that would be useful in crafts program. 286-1592, 286-8773.

EXPERIENCED TYPIST - For 60 page thesis, pica type. Olness, Ext. 4570, 751-2655.

BABYSITTER - Part-time after, on site or Holtsville area. Ext. 3123, 289-0532 after 6.

HEADERS - For '70 Pontiac Firebird, 350-2 bbl eng, good cond. Ron, Ext. 2491, 473-5939.

'57 **T-BIRD OR '57 + CORVETTE** - To restore, price must be reasonable. Ken, 924-3756 after 5.

HAND-MADE CRAFT ITEMS - For local store, consignment. 281-0843.