BROOKHAVEN BULLETIN

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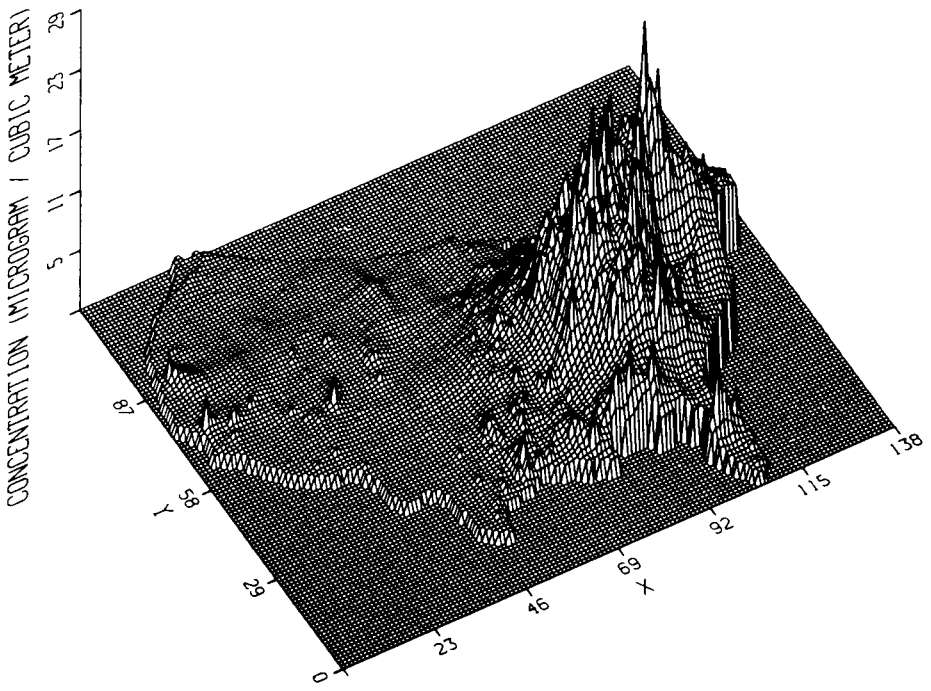
BROOKHAVEN NATIONAL LABORATORY



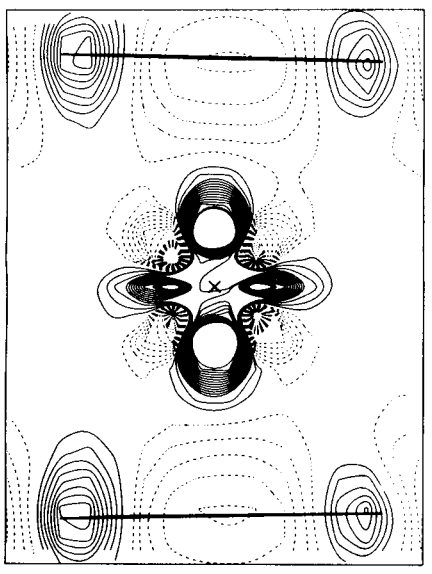
The "mountains" shown in this graphic are sulfate, SO_4, concentrations across the U.S., projected for the year 1990. This air pollution scenario is based on projected emissions from utilities and industries burning coal. Developed by Ronald Meyers and Lawrence Kleinman, Atmospheric Sciences Division, and by Richard Cederwall, now at Lawrence Livermore Lab, the map shows greater pollution concentrations in the East. The highest peak is situated over the heavily industrialized Ohio Valley. Unlike a contour map, this type of graphic readily illustrates peak values.

From A Computer Portfolio

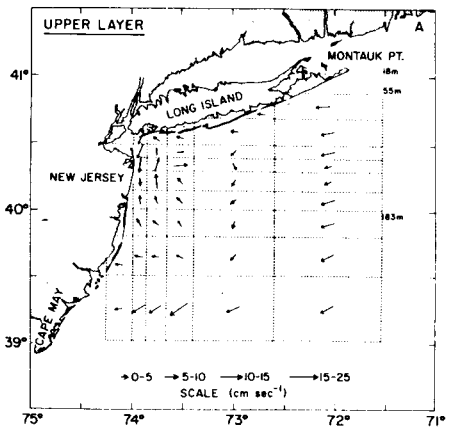
It's the end of the week, and you're settled in front of the TV set for another Friday night at the movies. The music begins, and twirling, three-dimensional graphics start to play across the screen. The network logo makes its customary appearance, followed perhaps by an ad for a leading manufacturer of jeans. Chances are, you have just been treated to a mini show of graphics generated by computer.

Computer graphics weren't invented for the TV industry. Irwin Lewis, Graphics Coordinator for the Applied Math Department, says that the process of pictorial communication between people and computers has been around a long time. BNL scientists were doing graphical representations of their data in charts and drawings back in the 60's.

Visuals have always been a good way to convey ideas, and in many circumstances, doing them by computer is a lot easier than drawing them meticulously by hand. A good computer graphic can convey information that might be more difficult to express in numbers or words.



Fusao Takusagawa, Chemistry, studies chemical bonding between atoms, specifically, how electrons are distributed around metal atoms. This graphic gives a two-dimensional view of the electrons bonding an iron atom (center) with two surrounding atom groups, cyclopentadienyl ligands. The entire compound is called ferrocenedicarboxylic acid, which Takusagawa studies using X-ray and neutron diffraction techniques.



In the summer of 1976, a $60 million shellfish loss occurred along the New Jersey coast because of an anoxia, or low oxygen, event. To study this, Andrew Stoddard, Oceanographic Sciences Division, developed a two-layer, time and space dependent computer model to simulate carbon, oxygen and nitrogen distributions in the New York Bight. This graph shows ocean current patterns (indicated by arrows) in the upper water layer during the early part of the event. Ocean current data were obtained in collaboration with the Atlantic Oceanographic and Meteorological Laboratories in Florida, and additional computer analysis and graphics of the current fields were done by Dwight Dieterle, Oceanographic Sciences Division, for use in the model.

At the base of every graphic is a program that tells the computer what to draw, dot by dot. That kind of tedious work, says Lewis, can be avoided by using "canned programs," which can be purchased commercially. The Math Department has also generated some of its own.

Once a program is written and fed into a computer, a common way to look at a graphic is to have it displayed on a cathode-ray tube screen (CRT). Using a CRT, a researcher can interact with a computer and watch the graphics change as new data is fed in.

If a researcher wants to get an actual print of a graphic, then a drawing device must be used. Mechanical or electrostatic plotters can do the job, but if the graphic application requires high resolution, then the Information International FR 80 in Graphic Arts is used. Lily Liu, Senior Graphic Arts Analyst, says that the FR 80 is at the forefront of micro-

(Continued on page 2)

Jane Setlow:

Views On Gene-Splicing Policy

Jane Setlow, a BNL molecular biologist, will be stepping down as chairman of the National Institutes of Health Recombinant DNA Advisory Committee (RAC), effective July first. She has been a RAC member since its inception in 1974, and has chaired sinced 1978. "Six years," she says, "is enough. I've had it. I'll be doing my own work now, on *Haemophilus influenzae* plasmids."

The RAC was formed by the NIH in response to public concern about the safety of recombinant molecule research, and consists of 40 NIH-appointed scientists, laypersons and government liaisons.

Setlow took the helm when the group was re-defining its purposes. In the beginning, the Committee was established to advise the NIH on potential hazards of and guidelines for recombinant molecule work. Things have changed since 1974.

"We had no idea," Setlow commented, "that by 1979 there would be industrial applications of recombinant work." In response to this new demand, the RAC duties expanded to advising the NIH on setting voluntary guidelines controlling gene splicing by pharmaceutical companies. Genetic manipulation, Setlow noted, can be used to produce marketable quantities of interferon, human insulin and human growth hormone. "It's changed the face of the pharmaceutical industry," she added.

Effects have just recently been felt in the Federal judiciary–two weeks ago, the Supreme Court issued a landmark ruling that artificial life-forms are eligible for patent under current patent laws.

Future products of genetic engineering, Setlow said, will probably include bacteria and yeast strains that can be programmed to produce alcohol for fuel and sugar for food.

Previously forbidden research on foot-and-mouth disease has recently received a green light from the NIH. Since the disease results in low cattle productivity, a vaccine, Setlow noted, will have a "fantastic impact" on Third World nutrition.

Deregulation Gradual

Increasing numbers of risk-assessment experiments have raised the scientific community's confidence in the safety of gene splicing (experiments) but infusion to the public has, up to recently, been slow.

"The big fear in the beginning," Setlow recalls, "was that you could create an Andromeda strain that would wipe everybody out. Well, the medical microbiologists were brought in and they said 'you just don't understand what infectivity and epidemics are all about. It's much more complicated than that. You can't by mistake put a little piece of DNA into *E. coli* and make it into a pathogen.'"

"The potential hazard of such work," she points out, "is from the organism you use to experiment with DNA, but not the recombinant DNAs themselves. The safest place to have a foul virus is inside a plasmid, inside *E. coli* (K-12, a non-infective laboratory strain) because it's not going to be infective there. It's infective everywhere else."

Relaxation of the guidelines proceeded slowly as these data became available to RAC members. "If we did anything drastic, I think we'd have Federal legislation in response to union complaints. But if it's done gradually, then it'll take quite a while before people realize there isn't anything left of the guidelines," Setlow said. She believes guidelines will be abolished eventually, but "it will have to be done very slowly."

Federal vs. Local Control

The final say-so over recombinant molecule work is up to the state or local government under who's jurisdiction lies a lab, university or genetic engineering company. Setlow sees local interference as potentially damaging: "There was a proposal in the California State Legislature that before you do any experiments in biology, you have to get a certificate from the State Health Commission. Well, you can't prove that any experiment is absolutely safe. If you knew what the answer was, you wouldn't be doing it anyway. That's been part of the whole problem: Can you prove that recombinant DNA manipulations are absolutely safe? And if you can't then there should be laws about it, which I think is rather an absurdity. What you can say is that the *probability* is approximately *this*..."

Doug Humphrey

Jane Setlow

Catalyst

If anything, Setlow thinks her impact on the RAC has been to "change the kinetics a little bit" and speed guideline relaxation.

In her first encounter with science policy, she found the political maneuverings foreign to her "straightforward way of doing things," and "kind of horrifying for a bench scientist like myself."

"I don't feel that any other experience I've ever had prepared me for that whole business," she said, "with the possible exception of raising four fractious young - that was helpful."

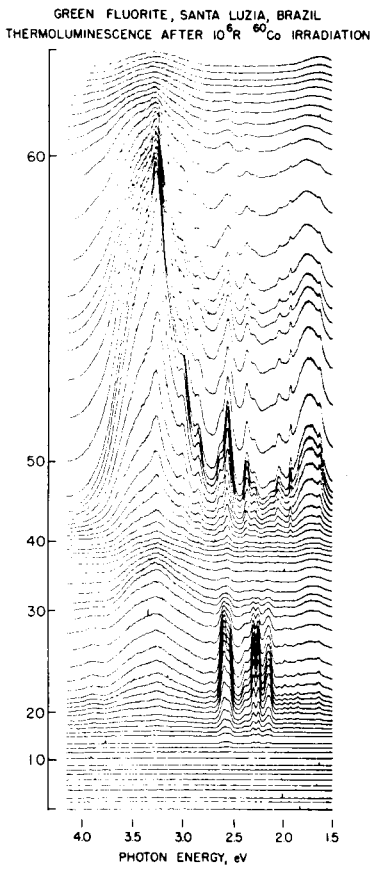
Setlow will be succeeded as RAC chairman by Ray Thornton, previous chairman of the House Science and Technology Committee and president-designate of Arkansas State University. He is an attorney and ex-congressman from Arkansas.

—James Kent

Computer (Cont'd)

graphics technology. The FR 80 consists of a high-speed computer that accepts graphic data, a translator to process the data and a precision electro-optical system that records the information on a high resolution CRT. Interchangeable camera systems photograph the face of the CRT and record it on either paper, up to 8½"x11", or film, from 16 to 310 millimeters. The graphic images can even be combined into motion picture format.

The computer graphics accompanying this story are only a sample of what is generated at the Lab. For full color, computer made movies, just turn on your TV set.



Thermoluminescence is light emitted from a sample when heated, after it has been exposed to radiation. This plot contains information on thermoluminescence of a sample of Brazilian fluorite. Each line corresponds to light emitted over a small temperature interval as the sample was heated from room temperature to about 450°C. Scientists in solid state physics developed equipment for measuring thermoluminescence, and Marilyn McKeown, Physics, developed the computer program for displaying the data in this form.

Service Award

Mort Rosen

Albert Geiger, (left) a Central Shops' Experimental Machinist, celebrated his 25th anniversary at BNL last month. Presenting the award was Robert Lehn, Manager of Central Shops. Geiger is on assignment at the Physics Department.

Equipment Display

The Xerox Corporation will exhibit its latest word processing equipment on Monday, June 30 from 10 a.m. to 4 p.m. in Berkner Hall, Room C.

Anyone interested in some of the latest office technology is invited to attend.

CHPS: Another Option For Health Care

Under the Federal Health Maintenance Organization Act of 1973, the Laboratory is again offering eligible employees the annual option of enrolling in the Community Health Plan of Suffolk, Inc. (CHPS), as an alternative to coverage under the AUI Group Medical Insurance Plan. This year the deadline for enrollment in CHPS is July 18, with coverage becoming effective August 1.

CHPS: What it is and how it works

The Community Health Plan of Suffolk (CHPS) is a federally qualified, not-for-profit, Health Maintenance Organization serving residents of the five western townships of Suffolk County and the eastern part of Nassau County. The facility is affiliated with two hospitals: St. John's Episcopal Hospital in Smithtown; and, for more specialized services, Long Island Jewish-Hillside Medical Center.

CHPS provides continuity of care under the direction of an internist (or pediatrician, for children), who is in effect the member's private physician. In addition to primary care physicians, specialists in such areas as gynecology, opthalmology, urology, dermatology and neurology, as well as registered nurses and supporting health care personnel, are on staff.

The CHPS facility is equipped to take X-rays and laboratory tests, immunizations, allergy treatments, eye examinations, well-baby care, and physical examinations. Care is available 24 hours a day, seven days a week. **A new feature** – This year the plan includes prepaid coverage for prescription drugs when ordered by a CHPS physician and filled at the CHPS Pharmacy.

Cost and Coverage

It is AUI's policy to subsidize the cost of CHPS by paying the same premium amount it currently pays for the AUI medical insurance plan. Over the past year the cost of the two plans was equal, resulting in no premium charges to employees electings the CHPS plan. However, this year the CHPS premium is greater than the AUI plan. The difference in premium, barring any unforeseen adjustments, will be $8.54 per month for individual coverage and $12.89 per month for family coverage. Employees electing to participate in CHPS will be required to pay the additional cost through payroll deduction, when the new premium takes effect August 1, 1980. Premiums are guaranteed for one year.

Which Plan for You?

A careful investigation of the benefits offered by both health plans is necessary to determine which one best suits an individual's needs. To help employees make this decision, information on CHPS, plus a detailed comparison of the benefits of AUI Medical Insurance and CHPS, will be mailed to the homes of employees next week.

Those who are interested in CHPS are encouraged to visit the facility at 3001 Express Drive North, Hauppauge (intersection of LIE exit 57 and Veterans Memorial Highway). Open house dates for BNL employees have been scheduled for July 9 and 16, at 7 p.m. If you are unable to attend, and have questions regarding CHPS, call (516) 582-9800.

Employees wishing to enroll, or terminate their membership, in CHPS can obtain the appropriate forms and applications at Personnel Services, Building 185 (Extension 2877).

Student Dance

Summer students! Shine up your best dancing shoes and pull out your bandana: a square dance is coming to Brookhaven Center, North Room, Thursday evening July 10, from 8 to midnight. Live music will back up our own caller, Willy Higinbotham from the Dept. of Nuclear Energy. Admission is $2. Free munchies; beer and soda also available. All dancers welcome, novices to pros.

For more information, call Renee Flack (Ext. 3316) during the day, or Ed Gottlieb (Ext. 2520) after 5 p.m.

Arrivals & Departures

Arrivals

Gary N. Gradney	Physics
Susan M. Morahan	Safety & Env. Prot.
James J. Mosca	Physics
Christian T. Neuberger	Applied Math.
S. Hilary Sorells	Energy & Env.

Departures

Gail A. Borruso	Medical
Bettie L. Evans	Biology
Michael D. Marx	Physics
Wynford D. Morgan	Medical

Weekend Tour

The Solar Technology Group is designing solar flat plate collectors that use low cost, high performance, thin film materials. The mini tour for the weekend will be at the Fan House, Build-704, where these and other collectors are developed and tested.

Visitors to the Lab will also see a slide show, "Brookhaven's Quest;" take a guided bus tour around the site; and visit the Exhibit Center.

Next weekend, July 5 and 6, the Lab will be closed to public tours.

Eglevsky Ballet

Potential patrons are reminded that principal dancers of the Eglevsky Ballet will be performing at Berkner Hall on July 17 at 8:30 p.m.

It is planned to sell all tickets by July 2, so those who wish to attend should purchase tickets soon. Tickets, at $9.00 each, are available from the BERA Sales Office, from Blanche Laskee (Personnel, Bldg. 185), and Gail Williams (Director's, Bldg. 460).

Digital Seminar

Digital equipment seminars on the MINC computer will be given on July 10 at 9:30, 11 and 1:30 p.m., in the large conference room, Bldg. 535.

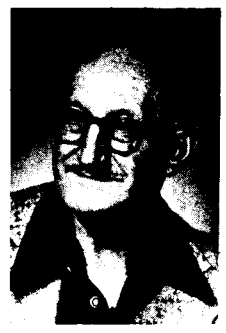
Retiring Today

Peter Ratyca

Marion V. Kaminski

Robert H. Quick

Arthur J. Engelbach



George R. Gerle

Mort Rosen

Arthur J. Engelbach, an electrician with Plant Engineering, has been with the Lab since August 13, 1962. Now plans to take it easy at his home in Coram.

George R. Gerle, Laboratory Custodian, joined BNL on November 23, 1970. Will spend his time hunting, fishing, and gardening at his Patchogue home.

Marion V. Kaminski, Stationary Engineer, Sr., at Plant Engineering, came to Brookhaven over 30 years ago, on March 22, 1947. He will now do some traveling and may relocate next year. At present he lives in Port Jefferson Station.

Robert H. Quick, Heavy Equipment Mechanic Operator and Group Leader, Plant Engineering, has been at BNL since August 23, 1965. Currently lives in Riverhead, but plans to relocate in Pennsylvania.

Peter Ratyca, is a Refrigeration and Air Conditioning Engineer, Plant Engineering, and has been with the Lab since January 21, 1952. Will now relax at his home in Middle Island.

A Musical Triplet: Finale

On Saturday, June 28 treat yourself to an evening of baroque music. The final concert in the baroque music festival sponsored by BERA will begin at 8:30 p.m. in Berkner Hall. Flutist Nina Barwell and harpsichordist Peter Wolf will be joined by guest artist Ronald Roseman, oboe.

Ronald Roseman is a composer, teacher, recording artist and member of outstanding chamber music groups. With the New York Woodwind Quintet, he has toured Asia, the United States, Europe, South America and the U.S.S.R. He has also appeared as soloist with the New York Pro Musica and the New York Philharmonic Chamber Ensemble and at the Casals and Aspen Festivals. Mr. Roseman is currently on the faculties of the Juilliard School, the State University of New York at Stony Brook and the Yale School of Music.

The program will include music by J.S. Bach, W.F. Bach, Graun, Quantz and Telemann.

Tickets will be sold at the door. General admission is $5; students and senior citizens are $3.

Ronald Roseman

No Bulletin Next Week

Because of the holidays, the *Bulletin* will not be published on July 4. Ads for the July 11th edition will be accepted up to 5 p.m. on June 30.

BROOKHAVEN BULLETIN

Published weekly
for the employees of
BROOKHAVEN NATIONAL LABORATORY

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CARL R. THIEN, Public Relations Officer

Cafeteria Menu
Week Ending July 4, 1980

Monday, June 30

Tomato vegetable soup	(cup)	.40
	(bowl)	.50
Cheese omelet & 1 veg.		1.30
Spaghetti & meatballs w/garlic bread		1.40
Hot Deli - Pastrami	(on bread)	1.45
	(on roll)	1.55

Tuesday, July 1

French onion soup	(cup)	.40
	(bowl)	.50
Macaroni & cheese & 1 veg.		1.30
Meatloaf & hash browns		1.45
Hot Deli - Corned beef	(on bread)	1.40
	(on roll)	1.50

Wednesday, July 2

Philadelphia pepper pot soup		.45
Southern fried chicken w/corn fritter		1.45
Breaded butterfly shrimpees & fries		1.75
Hot Deli - Sandwich steak, New York style	(on bread)	1.45
	(on roll)	1.55

Thursday, July 3
Snack bar service 9 a.m. to 2 p.m.

Friday, July 4
Snack bar service 9 a.m. to 2 p.m.

Diners Note

The Cafeteria will be open from 9:00 a.m. until 2:00 p.m. on Thursday and Friday, July 3rd and 4th.

The Vended Food Service in Building 912 will be in continuous operation.

Softball

League I
Ravens 18 - Source I 8
Phoubars 17 - Six Pax 14
Deegenerates 5 - Blue Jays 2

League II
Moles 16 - Titans 1
AMD 14 - Roga 4
Dirty Sox 8 - Cardinals 5

League III
Ice Pops 17 - Binary Bombers 16
Brewmasters 12 - Lights Out 3
Big Sticks 25- Nuke Powers 16
Ice Pops 12 - Medical 10
Huff & Puff 17 - Binary Bombers 7

League IV
Thrids 18 - Turkeys 11
Nads 11 - Random Sample 9
Balls & Strikes vs. Diamonds - Postponed
Survivors 15 - E-Z Riders 4

League V
Source III 8 - Who's on First 7
TNT 17 - Who Cares 10
No Names 16 - Underalls 2
No Feedback 16 - Mudville Sluggers 12

Theater Tryouts

On Wednesday, July 9 at 8 p.m. in the North Room of the Center, the BERA Theater Group will hold another round of tryouts for their annual Vaudeville Show. We need all sorts of talent, so come and show us your song and dance. For further information, call Liz Russell, Ext. 3940.

Golf

The third tournament of the BGA golf season will be held on Thursday, July 17 at Flagg Country Club. There will be a $5 green fee and a $1 entry fee. Assigned tee off times will begin at 11:30. Send entry fee to Ron Webster, Building 526, Ext. 2845, by July 14. BGA tournaments are open to all BNL employees, their spouses, and retired employees.

Sixty-four golfers took part in the second tournament held at Bellport Golf Course. Mike Iarocci won low gross, 18 holes, with a 87, and Lou Repeta won low net, 18 holes, with a twelve under par 59. Other winners were: low gross-front 9, Vinnie Racianello (41), low gross-back 9, Joe DePace (41), low net-front 9, Rich Mobley (36), closest to the pin and low net-back 9 Andrew Huber (27) and longest drive, Tom Romano.

Motorcycle Club

To prepare for an upcoming picnic and field meet, the club will hold a meeting on Monday, July 7 at 5:15 p.m. in the Recreation Building. Art Scholtz is organizing the event. Contact him at ext. 2021 for more information. He would also welcome volunteers.

Bowling

Priority applications for next season must be submitted by June 30. The final deadline is July 15 for all teams. Applications can be obtained from the various league secretaries or at the BERA Sales Office located in the Cafeteria. For additional information contact Rich Larsen, extension 3464 or Helen Keeley, extension 4649.

NYC Train Trip

The Hospitality Committee is planning a group railroad trip to the city on Wednesday, July 16. Departure will be at 7:55 a.m. from the Patchogue LIRR station. Round-trip fare is $2.45, children under six years ride free.

Reserve a ticket by sending your fare through the U.S. mail to P.O. Box 322, Upton, New York 11973, no later than **Thursday,** July 10. Make checks payable to "Brookhaven National Laboratory." Your tickets will be given to you on the train. Refunds will be made only if cancellations are received by the Friday preceding the scheduled trip.

Note: If anyone is interested in attending the matinee performance (2 p.m.) of the play "BARNUM" on Wednesday, July 16, please call (516) 654-1044 for details on purchasing tickets.

Bicycling

In the 8th Annual BNL Spring Bicycle Race earlier this month, 13 signed up for the 36 mile, two-lap bunch start and 23 entered the one-lap time trials. The best time of 81:04 for the two-lap event is a course record, as is the best lap time of 39:58.4 (23.60 mph), both by Robert Kujawski of Riverhead. In the combined time-trial, predicted-time event, George Young of the Suffolk Bicycle Riders Association turned in the fastest time of 44:14, and Randy Johnson (Physics) gave the closest prediction, with an estimate of 49:50 and actual time of 48:43.

Winners of the one-lap time trials were: Jr. Men - John Smith, 47:20; Jr. Women - Susan Seif, 65:50; Sr. Men - Phillipe Marcovich, 46:18; Veteran Men - George Young 44:14; Veteran Women - Joan Watson, 68:39.

Some Tips On the Rips

A summer at Brookhaven without excursions to the ocean is like a day without wine. The Great South Beach, so easily reached via William Floyd Parkway and the Smith Point Bridge is one of the most pleasant in the world. It doesn't quite present the perfect wave for surfers, but come July, the water is most inviting. The unshingled beach and open paths in the swale offer tranquil walking or strenuous jogging. It offers splendid solitude or the most frenetic social activity.

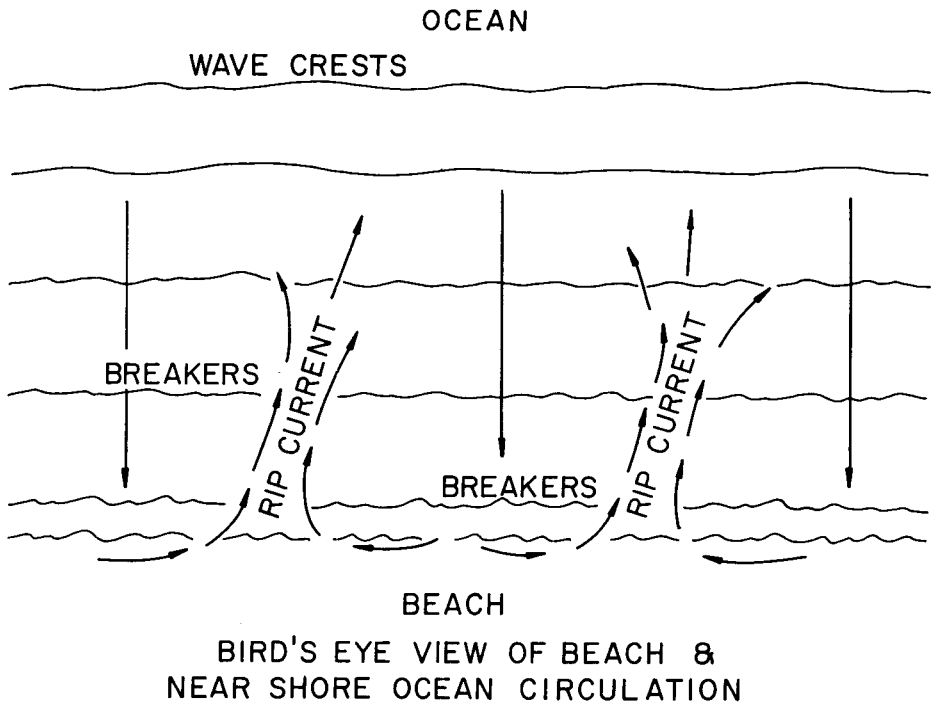
For the inlander or newcomer, a word about swimming in the ocean may be appropriate. Heavy surf should be left to strong and experienced swimmers. In moderate surf, diving seaward under the breakers is not only exhilarating, but safer than trying to bob over or to confront them.

On occasion, the surf sets up a circulation resulting in rip currents which can be dangerous. These rips are relatively narrow, high speed currents which return to the ocean the water brought shoreward by the wind and breaking waves. These currents are distinctly different from the so-called undertow which occurs at, and is confined to, the lip of the beach. They are not always easy to detect at sea level and must be treated with respect.

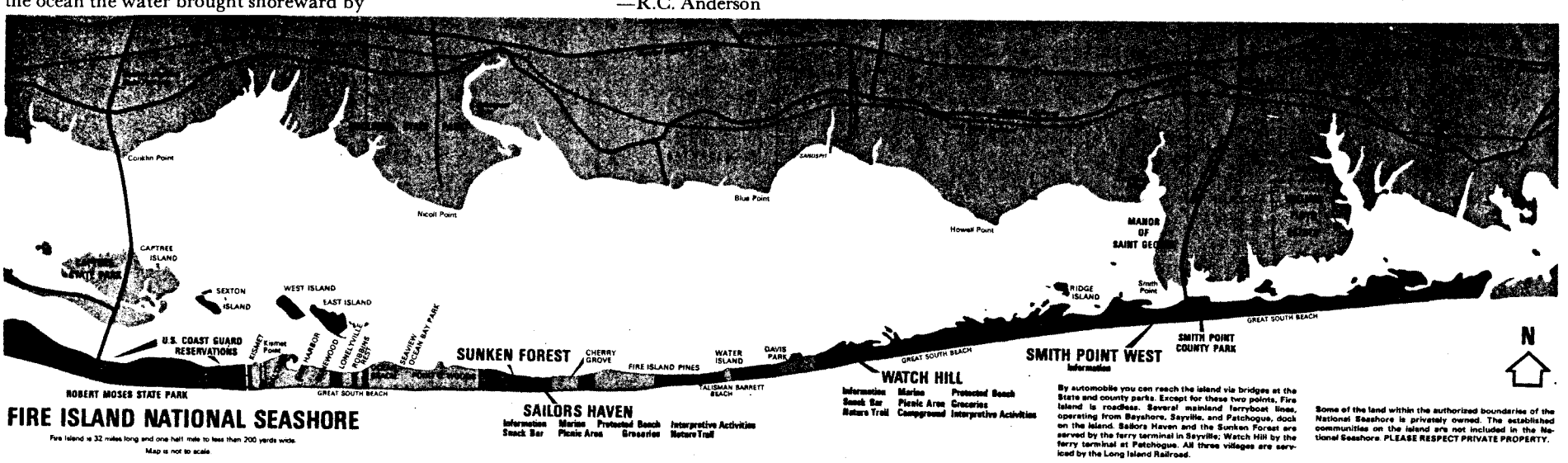
Surfers have come to use rip currents to return quickly out to the line of fresh breakers. However, anyone caught unwittingly in such a current should not try to swim directly to shore, but swim parallel to the beach until out of the current, and then to the beach. Remember also the extra buoyancy of salt water which makes floating a practical means of regaining breath and composure.

For most, the sun proves a greater hazard than the sea. Use of sunscreen lotions (especially on children) and hats, and the consumption of copious supplies of suitable beverages to combat dehydration, will make being at the beach comfortable, as well as safe. Enjoy!

—R.C. Anderson



BIRD'S EYE VIEW OF BEACH & NEAR SHORE OCEAN CIRCULATION



FIRE ISLAND NATIONAL SEASHORE

Fire Island is 32 miles long and one half mile to less than 200 yards wide.
Map is not to scale.

Information Snack Bar Marina Picnic Area Protected Beach Groceries Interpretive Activities Nature Trail

Information Snack Bar Marina Picnic Area Campground Protected Beach Groceries Interpretive Activities

By automobile you can reach the island via bridges at the State and county parks. Except for these two points, Fire Island is roadless. Several mainland ferryboat lines, operating from Bayshore, Sayville, and Patchogue, dock on the island. Sailors Haven and the Sunken Forest are served by the ferry terminal in Sayville; Watch Hill by the ferry terminal at Patchogue. All three villages are serviced by the Long Island Railroad.

Some of the land within the authorized boundaries of the National Seashore is privately owned. The established communities on the island are not included in the National Seashore. PLEASE RESPECT PRIVATE PROPERTY.

One of the most beautiful barrier beaches in the world, Fire Island is 32 miles long and one-half mile to less than 200 yards wide. Still relatively unspoiled and isolated, it is a combination of fine-grained quartz sand, twisted pines, marshes, wildlife, and dunes dotted with beach plum, wild rose, beach grass and poison ivy. Whipped into existence by wind and waves, it could also disappear by the same means. About the only thing that is prohibited on the beach is running on the dunes. As their fragile vegetation protects the existence of the entire island, visitors are cautioned to leave them undisturbed. Besides swimming in the ocean and strolling on the beach, visitors may cast in the surf for striped bass, bluefish, mackerel, weakfish and fluke. On the bayside, many other fish may be caught and treading for clams is popular. Guided nature walks are offered through the maritime Sunken Forest, a unique retreat from sun and sand. Although the eastern end of the island may be reached by automobile across Smith Point Bridge, regular ferry service is also available from Bay Shore, Sayville and Patchogue to points west.

Classified Advertisements

Placement Notices

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

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

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

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

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

LABORATORY RECRUITMENT: Opportunity, for present Laboratory employees.

1379. LABORATORY CUSTODIAN (2 positions) - Plant Engineering Division.

1380. BUILDING AND GROUNDS UTILITY WORKER - Plant Engineering Division.

1381. MESSENGER - Staff Services Division.

1382. SECRETARIAL POSITION - Requires AAS degree in secretarial science or equivalent experience performing diverse secretarial duties with ability to take shorthand. Will assist with all aspects of procurement; duties will include organizing, reviewing and expediting verbal and written communications and records. Contracts and Procurement Division.

1383. SECRETARIAL POSITION - Requires excellent secretarial skills including typing and shorthand. Working knowledge of technical typing involving mathematical symbols and Greek letters highly desirable. Will handle broad secretarial duties for two research groups. Responsibilities include typing of highly technical manuscripts, preparation of reports, expediting of travel reservations, and answering phones. Physics Department.

1384. CLERK-TYPIST (temporary - 13 weeks) - Requires general secretarial skills including good recordkeeping and typing ability. Will assist with quality control operations i.e., updating catalogue library, dispensing safety shoes and glasses and keeping various detailed records. Supply and Materiel Division.

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

1385. GEOCHEMISTRY ASSOCIATE - Requires MS or equivalent in marine sciences or related discipline. Knowledge of geochemical analysis of marine sediments is very desirable. Will collect and evaluate information concerning state-of-the-art methods for ocean disposal of low-level wastes and toxic substances. Will also develop techniques for new disposal methods for DOE-funded low-level waste ocean disposal program. Department of Nuclear Energy.

1386. DEVELOPMENT ENGINEER - Requires BS or MS and substantial experience in mechanical and civil engineering. Should have working knowledge of FORTRAN and be able to develop computer algorithms for solutions of structural static and dynamic problems. Department of Nuclear Energy.

Autos & Auto Supplies

73 PLYMOUTH - full power, excel cond. Donna, 732-6678.

TIRES - (4) Peerless Sprint GT (2) F60-15, (2) 670-15 mounted on Universal mags. $35 ea. Harry, Ext. 4722.

TIRE - 6.00-14, 6 ply rating, H.T. nylon for Toyota/Datsun pickup. $11. Jim, Ext. 7982 or 727-7741 after 6.

79 YAMAHA - motorcycle, XS-400, 1500 mi, mint cond, must sell. $1500. Rick G., Ext. 4100 or 472-1275.

74 DODGE DART - sport model, a/c, a/t, p/s, p/b, high mileage, good running cond. $900. Bob, Ext. 3370.

72 SUZUKI - dirt bike, 125cc TC. $350. Ron, Ext. 4082.

71 HONDA - 750cc, 8" extended forks, rectangular headlights, custom paint, king/queen seat, clean. $1300. Jim, Ext. 3457.

TUNNEL RAM MANIFOLD - fits 283, 327, 350 Chevy small block, brand new. $85. Joe, Ext. 2022.

UTILITY TRAILER - ideal for compact car, quarter ton, four foot box, new cond. 298-4566.

74 HONDA - 450, excel cond, 12,000 mi. $1,200. Brian, 727-0139.

TIRES - (4) 11-15 LT, Flot-Trac. $125. Ext. 4666.

MAG WHEELS - (4) w/13 inch BR70x13 radial tires. $175 or best offer. Eric, Ext. 2973 after 5 p.m.

67 VOLKS BEETLE - engine excel, body fair, int good, good trans. $500. Ext. 7110, 589-5490.

76 PINTO WAGON - p/s, p/b, a/c, luggage rack, a/t. Kevin, Ext. 4901, 924-7283 eves.

75 HONDA - CB200 windshield hwy bar, new batt, excel cond. $800. 666-2667 eves.

79 TOYOTA CORONA - 9000 orig mi, 4 dr, a/c, a/t, am/fm, radial, excel cond. $5800. 269-9254 after 4:30.

73 HORNET SPORTABOUT - a/t, a/c, good tires, high mileage, regular gas. $550. 286-8517 after 4:30 p.m.

70 DODGE CHARGER - a/t, a/c, p/s, good running cond. Ext. 3503 or 924-7338.

73 CHEV BLAZER - std drive, roof vent, tape deck, speakers, good mech cond. $750. Ext. 2206.

80 CHEVY CITATION - 4,000 mi. V6 eng, 2 dr hatch, warrenty, rustproofed polyglycoat, p/b, am/fm. Must sell. 331-1847 or 757-6578.

74 DATSUN - 260Z, 2 + 2, manual, 57,000 mi, good mileage, sacrifice. Ext. 3591 or 265-0501.

TIRES - (2) 670-15 on Ford rims. Bookless, Ext. 4510.

76 PLYMOUTH ARROW - low mileage, 5 spd, a/c, am/fm, like new. $2900. 234-7225.

69 FORD FAIRLANE - 4 dr sedan, a/t, p/s, p/b, 302 V8, am radio, new battery, running. $200. 736-2534 after 6.

73 BUICK REGAL - a/c, p/s, p/b, am/fm stereo, brown w/tan vinyl roof, 2 new tires, uses reg gas, best offer over $1000. 286-9013.

73 PINTO - 20,000 orig mi, manual trans, rear end coll, great for parts. $150. 938-3894.

71 VOLKSWAGON - pop top camper, red, recently re-built engine. $2000. Ext. 4039 or 878-4960 after 6.

79 HONDA - 185cc, street and trail, excel cond, 80 mpg. $950. Dave, Ext. 4597 or 286-1074.

75 FORD - Pickup w/cap, excel cond, new tires. $1995. 878-0524 after 6.

77 TRANS AM - bwn, T-Top, louvers, p/w, must see. $4800. 924-7677.

70 MERCURY COUGAR - 351 C 2661, a/t, pdb, p/s, 81,000 mi. $800. 862-9733 after 5 p.m.

69 CHRYSLER - Towne & Country sta wgn, good cond, all power. $675. Don, Ext. 2356 or 473-0871.

70 BONNEVILLE - 4 dr, loaded, everything works, no rust. $900 or best offer. Ken Orsini, Ext. 3354.

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

74 VW 412 - sta wgn, am/fm stereo, auto. $2295. Glenn, Ext. 3405 or 744-1679.

70 VW FASTBACK - 26 mpg, reliable, needs little work. $500. Ext. 2146 or 928-2984 after 6.

TIRES - new or used, repairs and service. Fred Usack, Ext. 4798 lunchtime.

74 FORD MAVERICK - 48,000 mi, excel cond. $2500 or best offer. Ext. 3395 or 758-9154.

Boats & Marine Supplies

19' BOWRIDER - Rehkin Volvo Penta, I/O, low hours. Sacrifice. AT6-0626.

30' EXPRESS CRUISER - sea kindly, fuel efficient, sleeps 4, many extras. 298-4566.

6 GAL - outboard gas tank. $12. John, Ext. 3354.

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

TRAILER WINCH - heavy duty, dbl geared. $10. 286-9260 eves.

1970 - 40 hp Evinrude w/controls. Ext. 2423 or 4970.

FIBERGLASS CANOE - John Dory, beautiful yellow, hardly used, must seen to appreciate. $300. Cindy, 878-8129.

SAIL FISH - $200. 744-5096.

16' FIBERGLASS - runabout, 40 hp Evinrude engine. $300. 821-1799.

10' SEVYLOR - rubber boat, oars, pump, seats, motor mt, Sea Cruiser "300," excel cond. Jim, 289-7470.

FIBERGLASS BUOY - 41" h, 13" dia, 23" dia base, 36" weighted draft. $20; 20 lobsterpots markers, $5. 744-5867.

SAILFISH - fiberglass over mahogany. $250. Sue, 286-0407.

THOMPSON 17' WOOD - 40 hp Evinrude, canvas and trailer, excel, ready for water. $700. 581-1993.

60' - 60 FAT RAYTHEON - D.F. Model Mark III transdorr and cables, excel cond. $75. 669-9202 anytime.

BOAT STOVE - Homestrand alcohol, stainless steel. Current price over $150. Bargain at $65. Two burners. Adams, Ext. 4278.

15' SKIFF - 40 hp Evinrude engine, trailer, 2 gas tanks. $350. 815 Roanoke Ave, Riverhead, PA7-1278.

Yard Sales

YARD SALE - June 29, including macrame items. 25 Cornwallis Rd, Setauket.

GARAGE SALE - June 27 and 28th, 9:30 am, 82 Kennedy Ave, Blue Point. Misc items, old bottles, etc.

YARD SALE - 110 E Woodside Ave, N Patchogue, June 27, 28, 29, 9-5 pm, furniture, toys, appliances, patio, household items.

YARD SALE - 40 Nottingham Dr, Middle Island, June 28 and 29, furniture, appliances, camera equip, toys and assorted gifts. 924-8723.

Miscellaneous

STRAWBERRIES - pick your own or ready picked, first picking, no herbicides/pesticides used, bskts extra. 289-0876, 286-0024.

KITCHEN SINK - cast iron, new in crate, 4 hole, almond color, self rim. Cost $130, will sell $90. Larry, Ext. 3365 or 698-8009 after 6 pm.

WASHING MACHINE - and dryer. 654-8810.

AIR CONDITIONER - 6300 BTU, 7.3A, good cond. $65. Ron, Ext. 4082.

SUBMERSIBLE PUMP - $5; clock radio, $3; 20"x20"x 24" Hi-Fi equip cabinet, $5. 744-5867.

AIR COND - 5500 BTU, used one summer, in orig box. $60. Ext. 2054 or 698-0013.

AMAZING HYBRID - poplar tree, grows to firewood in 4 years, cuttings $1 each. 924-3293.

DOUBLE BED - 2 bold shag carpets, coffee table, Hedstrom convertible carriage, dinette set. Ext. 3395 or 758-9154.

MAYTAG MODEL - DE606, auto electronic clothes dryer, excel cond. $150. Walt, 473-3295.

CAMPER - popup trailer, 1975 Viking, sleeps 6, gas range, gas heater, ice box. $1500. Bob, 727-0139 after 6 pm.

RED CARPET - padded 15x10', excel cond, $25; deluxe crib mattress w/bumpers, $20. 928-9448.

GERMAN ORCHESTRA VIOLIN - w/case, bow, and pitch-pipe, like new. 345-2841.

COUCH - 86" contemporary floral pattern. 698-3856.

BABY CARRIAGE - w/car bed, $10; Taylor bounce chair/walker, $5; large stroller, $5; Fisher-Price "busy box," $5. Bob, 289-8167 or Ext. 4317.

DIVERS WEIGHTS - 7 lb $7; 3 lb $3; belt, $3; child's snorkel mask, $2. Olson, Ext. 3382 or 289-8629.

EXAKTA VX-1000 CAMERA - 1.750 mm tele 400 wide angle 35, extender 2x & 3x, extension tube. $100. Dilip, Ext. 3742 or 345-3118.

OTTOMAN - w/cover Castro converts to single bed. Ext. 2461 or 325-9511.

DOUBLE STROLLER - good cond, new seats, $40; humidifier, original $20 now $5. Chris, Ext. 4612 or 281-7370.

MINN FATS - 4x7 Slatene pool table, new cond. $75. Ext. 4089 or HR2-0499.

RUG - 9x12 wool, light green scroll, Gulistan, good cond. Best offer. Ext. 2265.

BABY STROLLER - and carriage combination in excel cond. $20; full size mattress, like new $15; 5500 BTU air cond., used one summer, in orig box $60. Ext. 2054, 698-0013.

COMPOUND BOW - Wing Thunderbird, quiver and sights included, like new, used one season. $165. Ed Scarano, Ext. 2907, 475-5524.

AMPLIFIERS - for electric guitar, Gretch Electromatic, $25; Estey solid state, 4 ohms, $35. Ext. 4788.

26" ALUMINUM - folding travel/company bed w/ mattress, like new. $15. Ext. 4695.

1972 VACATIONAIR - h/trailer, 23 ft, sleeps 6, $2800. 924-9816 or 666-4312.

CONTENTS OF APARTMENT - for sale, Ethan Allen furniture and much more. Coram, 698-0861.

WASHING MACHINE - portable, very good cond, 5 lbs. 30x25x15". $115. Ext. 7699 or 744-7153.

FRANKLIN STOVE - all piping/two pieces slate, $300; large doghouse and chain link pen, $100. 924-3756.

PILLOWS - white w/strawberries. Sharon, Ext. 3793 or 878-2591.

STOVE - ari-tight Gibraltar #3, almost new, w/glass front. Cost $500 now $350, cash and carry. 588-0805.

EARTH STOVE - air-tight wood stove, back vented, thermostat, excel cond. $350. 929-3249.

STONE - granite for fireplace, gardens, barbecue walks; white, black and white, pink, 2 tons, all or part. 924-3553.

CRIB - w/mattress. $15. 744-9498 after 6.

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

BELLPORT SOUTH - colonial ranch, L/R, D/R, vaulted 15' ceilings, fam rm w/built in birch bookcases and sliding doors to 30' astro-turf patio, 3 bedrms, new eik, 2 car gar, out bldg, professional landscaping, brick ent patio. $34,000 Assumable 8¼% mort ($75 transfer cost). 286-3732.

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

WADING RIVER - summer cottage, priv beach, 3 rms and loft, can sleep eight, completely furn, dishes, cooking utensils. $14,000. Haynes, 757-4548 eves.

BELLPORT SOUTH - older Dutch colonial, 4 bedrms, 1½ baths on 1 landscaped acre, fruit trees, garden, flowers, playhouse, walk to beach and ferry, shops, golf, city water and gas heat. 286-2320.

SOUND BEACH - 9 yr old cedar ranch on ¼ acre, 3 bedrms, full bsmt, ohw heat, re-insul attic, oak floors, deck, shed, stockade fence, corner location. $33,500. FHA avail. Taxes, $1300. Dan, Ext. 2012, 744-6148.

SHOREHAM - custom built 4 bedrm colonial, white cedar shake shingles, 2½ baths, w/w carpeting, s/s, 2 car garage and full bsmt, 1 acre fenced and landscaped. Joann, 744-2821.

BELLPORT VILLAGE - 3 bedrm ranch, lg eik, att gar, patio, stockade fenced rear yard, 4 yrs old. $36,000. 286-0795.

CENTER MORICHES - L-ranch, full bsmt, fp, wood stove, w/w, a/c, D/W, ref, double oven, newly decorated, fenced yard, pool, landscaped, s/s, near beach and marina, 20 min to Lab. 8½% Mort. $48,500. 878-4984.

STONY BROOK - Gladstone colonial, 4 bedrms, w/w carpeting, ⅓ acre, cul-de-sac, Strathmore S, 8.5% assumable mort, taxes $1950. $52,900. 689-9645 after 6.

SHOREHAM - large 4 bedrms, 2½ bath colonial, wooded ⅓ acre lot on quiet street near Miller Ave School, North of 25A, 2 car garage, eik, fam rm. $68,000. 744-4787.

CENTER MORICHES - 1 bedrm, lg L/R w/dining area, wood stove, appli separate garage-workshop, near marina. $32,000. 878-4084.

WADING RIVER - property for sale, north of 25A, exclusive area, lovely wooded building plot slightly under two acres. Owner asking $20,000. 928-0158. NO BROKERS.

MANORVILLE - 3 bedrm ranch, 1 acre, 32' country kit, cathedral ceiling, 1½ baths, appl, bsmt, gar, assumable mtg at negotiable rate. $45,000. Pete, Ext. 3868/4574 or 878-1225.

CORAM - 4 bedrm, 2½ bath, executive corner colonial, priv, ½ acre, C/A, gas h/w heat, fp, professionally landscaped, covered patio, inground pool, redwood decks, much more. Relocating to Florida. $1600 taxes. Sewers. $50,000. 928-1294.

SHOREHAM - 4 bedrms, 2½ bath, 2 story colonial, bsmt, L/R, D/R, carpeting, lg kit, fmly rm, ½ acre, garage, private beach, 4 yrs old, assumable mtg. 744-9498 eves.

For Rent

WADING RIVER - Historic, 3 bdrms, lg kit w/high beamed ceiling, fp, recent re-insulation, ¼ acre, $400/mo. year round or possibly 8/1/80-Labor Day. Ext. 3974, 929-4068.

WADNG RIVER - 1 bedrm apt, furn/unfurn, priv. ent, priv. beach, $300/util incl. 929-8673.

YAPHANK - German Gardens, sm 3/rm bungalow, ideal for single. $190/incl elect & hot water. 475-0002 after 6.

BELLPORT VILLAGE - 1 bdrm, 2nd floor, unfurn apt, prvt ent, gar, util incl, close to golf, tennis & dock facilities. Lease $295/mo. 286-8850.

PATCHOGUE - 2 bdrm apt, bus couple pref., $325 heat incl; 1 bdrm apt. $210 heat incl. 475-5031.

RIVERHEAD - 2 bdrm house, $230/mo util extra, 1 mo security, no pets. 727-5621.

VERMONT CHALET - furn, stone fp, swimming, fishing, canoeing, pond, lake, woodland trail, nearby Bromeley slide, antiqueing, music fest, theatres, hiking. Weekly rate, Ext. 3448, 757-5599.

MIDDLE ISLAND - 6 mi from Lab, condo townhouse, 3 bdrms, 2 baths, 5 appl, use of club house, swim pool, tennis ct, Franz, Ext. 4337, 744-3235 eves.

Car Pools

HUNTINGTON - wish to add to two-man car pool. AL, Ext. 2094 or Bud, Ext. 2361.

VAN POOL - from Miller Pl. to BNL. Don, Ext. 3284.

HUNTINGTON/S. HUNTINGTON - or surrounding area, start or join car pool. 8:30-5:00 . Gerry, Ext. 4471/4460.

SELDEN/FARMINGVILLE AREA - paying rider needs ride M-F, 8:30-5. Ext. 3514, 732-3875.

PATCHOGUE - need driver for 3 man car pool. Phyliss Drive-Barton Ave area. Jack, Ext. 3085.

Wanted

GIRLS BIKE - 26" reg or 3 spd, pedal brakes, good cond. Ext. 3508.

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

ORGANIC CHEMISTRY - by Morrison & Boyd. Jory, Ext. 4324, 724-0470.

HOUSE SITTER - S. Setauket area, 6/30-8/10. Ext. 7618.

BABYSITTER - on site/wkends for a 2½ yr old while parents play tennis or work. Ext. 4020.

SQUARE DANCE CALLER - for on site summer student affair. Renee Flack, Ext. 3316.

MOTORCYCLES - bent/broken, any age or cond. Kevin, 281-8031.

GOOD HOME - for loveable kittens, mostly white, six wks old. Joyce, 475-8406.

PERSON - to share 2 bdrm house, 15 min from Lab. $150/mo plus ½ utilities. Warren, Ext. 3464, 924-7552.

WOMAN - to share six rm house w/other working women. Patchogue. $200/mo. 289-1619.

FLOOR OR WALL FURNACE - for LP Gas 10K to 20K BTU. Ext. 4278, Adams.

BICYCLE - boy's or men's 3 spd. Satoru, Ext. 3035.

GARAGE DOOR - 8x7. Ext. 4725, 473-8716.

YACHTSMAN ANCHOR - 20# to 30#. Don, 286-1205.

HOME FOR KITTENS - males/females, calico, black, black-white, red-white. Lois, Ext. 2959, 751-0023.

AWNING - or screened rm, w/poles, in good shape. J. Skora, Ext., 2819.

GAS DRYER - nat gas in good cond. Paul, 727-4859.

SPACE SAVER - spare for Chevy Nova Hatchback 14" w/rim. Ext. 4662, 298-4089.

OARS - 6 or 6½, reasonable. John, Ext. 2269 or 281-2626 after 6 pm.

RIDER LAWN MOWER - used/broken. Bill Sanchez, Ext. 3848, 698-3145.

USED GIRLS CLOTHES - sizes 10, 12, & 14. Ext. 3840, 924-6666 after 6.

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.

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