BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Meeting On Neutrons In Biology

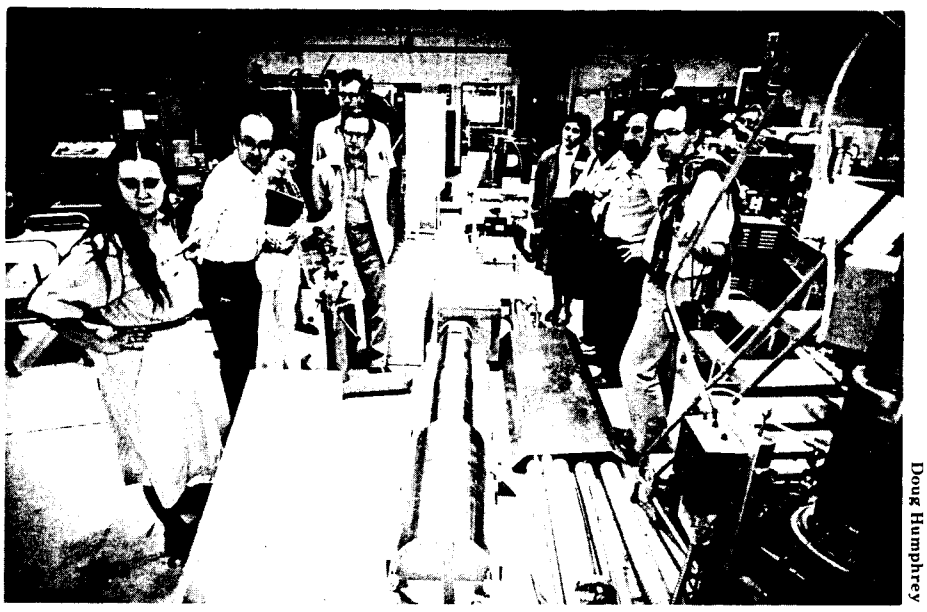
Sixty researchers from laboratories and universities in the U.S., Europe and Australia gathered here this week to review developments in "Neutrons In Biology — Neutron Scattering Analysis for Biological Structures," at the 32nd Brookhaven Symposium in Biology.

This conference was chaired by Biophysicist Benno Schoenborn who first developed a method for using neutrons to analyze biological structures at BNL in 1968. He was also chairman of a similar symposium — the first in this field — held at Brookhaven in 1975. Reflecting on the current conference, Schoenborn said, "Many of the things that were talked about at the last meeting were, perhaps, still preliminary or at the initial stages of analysis. Now, a lot of things have been worked out in detail. So this is the right sort of time to get together again, to see where we are and where we are going."

Though the researchers at this week's get-together may differ in their approaches, all are using neutrons to look at the structures of such substances as proteins or nucleic acids. "The neutron is a very good tool for determining what a structure is like," Schoenborn said, "It provides much more detail than you can get with x-rays."

One approach that generated a lot of interest at the 1975 conference was inelastic scattering. Basically, this work uses the fact that kinetic energies of neutrons change after a collision and enable one to look at vibrational modes in biological structures. Although the prospects were exciting, their actual implementation has proved difficult. One who has continued efforts on inelastic scattering is Sir John Randall (See "A Visitor's View") of the University of Edinburgh. Considered a forerunner in the field, he and his collaborator Dieter Middendorf of King's College, London, are working on inelastic scattering at the Institute Laue-Langevin (ILL) in Grenoble, France. At the symposium, they discussed the interaction of water with proteins, together with their use of inelastic scattering experiments with neutrons to study what happens to a simple enzyme when it becomes bound to its substrate.

Most scientists in this field are involved with elastic scattering, where neutrons have the same kinetic energies after a collison as they had before. Two techniques are generally used. The ILL has led European efforts to advance small angle scattering methods. Now, Oak Ridge National Laboratory has just commissioned a small angle scattering instrument that is being used mainly in polymer science and metallurgy. At BNL, the small angle spectrometer at the HFBR's cold source, completed over a year ago, has increased the intensities available here to bring them on a par with instruments at ILL. The small angle biology spectrometer is primarily being used by visiting scientists from universities and other research labs, working often in collaboration with Biology's Douglas Carlson and Dieter Schneider.


Doug Humphrey

Benno Schoenborn shows conference participants some new equipment for the H-3 port at the HFBR.

Scientists in the Biology Department have tended to concentrate more on protein crystallography. A new protein crystallography station in Biology allows data to be collected at least ten times faster then it was seven years ago, and that station is now in the process of being rebuilt to increase its rate by another factor of five. Reducing the time needed to collect data brings down costs and makes it possible to use smaller crystals for experiments. "This is very important for biological work," said Schoenborn, "because often you cannot get large crystals or very much material."

Assisting Schoenborn on the Symposium Committee were R. Douglas Carlson, Anthony Kossiakoff, Anand Saxena and Dieter Schneider. The Symposium was sponsored by the International Union of Crystallography and supported by DOE's Office of Health and Environmental Research.

— Anita Cohen

A Visitor's View

Sir John Randall

For 57 years, Sir John Randall has been involved in active research, marked by achievements ranging from the invention of the cavity magnetron to the founding of the first Biophysics Unit at King's College in London. At BNL this week for the 32nd Brookhaven Symposium in Biology, Sir John shared some of the highlights of his fascinating career.

He started as an industrial physicist on the research staff of the General Electric Co., Ltd., leaving that post in 1937 to become a Warren Research Fellow of the Royal Society at the University of Birmingham. Shortly before the beginning of World War II, Sir John was one of the many physicists to be sent to radar stations on the British coast to study the existing technology.

On their return to the University of Birmingham, Sir John and his younger colleague, Harry Boot, worked on improving radar systems by combining the qualities of a conventional magnetron with the newer technology of electro-magnetic resonators. "We decided to use a cylindrical construction with six resonators opening into a central anode-cathode space," Sir John says. "We made some crude calculations on the back of an envelope and went to work." They tested their device on February 21, 1940 and were astonished to see sparks streaming out from the output lead.

In the absence of proper measuring equipment, a series of decapped car headlamps of increasing power were successively burned out, showing that the available cw power of their device was considerable. And a simple Lecher wire system confirmed the wavelength of the radiation at 9.8 cm, only about 2 mm less than they had predicted.

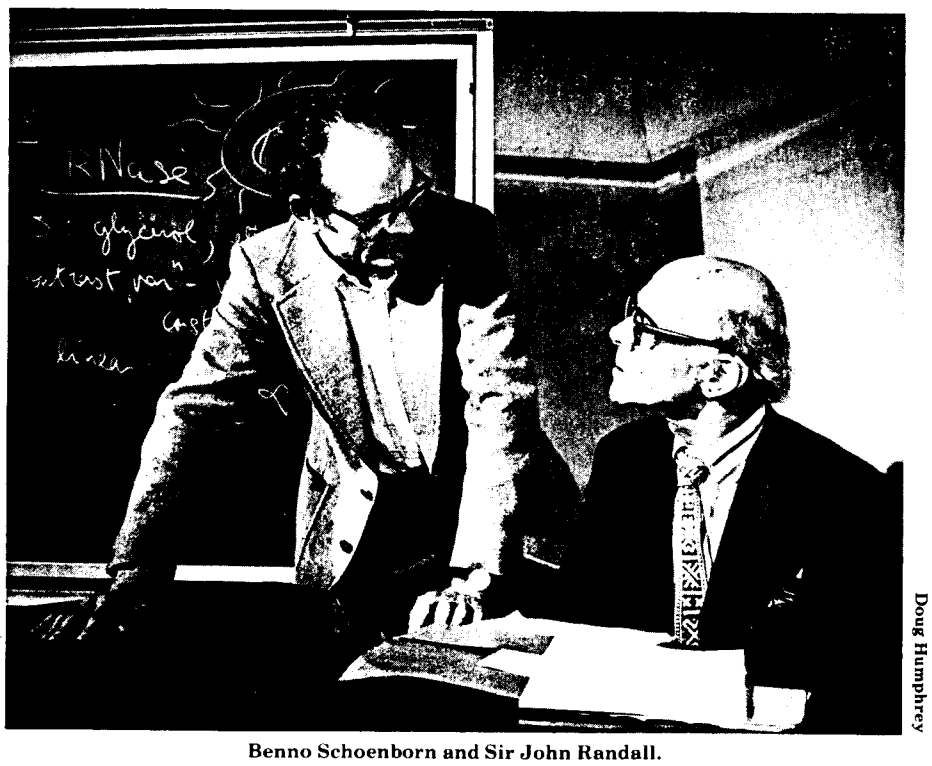
The rest of the magnetron story is history. This vital part of the Allies' radar systems was considered more than a practical contribution to the war effort; some believed that it helped shorten the war by at least one year.

During the war, Sir John began his conversion to biophysics. At that time, he says, "It was relatively new to find anyone with an interest in Biology in a Physics Department — the idea of a physicist who tried to understand biological structures and functions was unusual." But in 1947, with the support of the British Medical Research Council, he became founder and Director of the Biophysics Unit at King's College. When he formally retired in 1970, Sir John became Emeritus Professor there and Honorary Professor at the University of Edinburgh.

Now, he says, "I have been doing more research since I retired than before." Sir John and his collaborator Dieter Middendorf have a major interest in studying the adsorption of water by proteins. Having shown that the mechanism entails a jump process, they have also deduced the length of the jump and the rest time at each step. In parallel with this work, they are investigating possible changes in enzymes during reactions with substrates. Substituting inhibitors for substrates, they are conducting inelastic scattering experiments with neutrons to study these processes.

In the course of his career, Sir John has received many honors, including American recognition for his radar work. He received the John Scott award from the City of Philadelphia in 1957 and the John Price Wetherill medal from the Franklin Institute in 1958. In addition to the several major awards he has received in Britain, Sir John was knighted in 1962.

(Continued on page 2)


Doug Humphrey

Benno Schoenborn and Sir John Randall.

Honorary Degree For Schoenborn

An honorary Doctor of Science degree was conferred on Benno Schoenborn, senior biophysicist in Biology, at the commencement exercises of the New Jersey Institute of Technology held May 27. In a letter informing Schoenborn of the award, President Saul K. Fenster wrote, "As we look with optimism and commitment to our second century, we seek to honor a very small number of persons whose contribution should be recognized by our highest distinction in the discipline represented by our programs of instruction and research."

Schoenborn's contributions were previously recognized in 1980 when he received the E.O. Lawrence Memorial Award for his innovative development and creative application of neutron scattering and diffraction techniques to the analysis of macromolecular structure and biological function. His pioneering efforts in this field began in 1967, the year he joined the BNL staff. Since then, he has worked to make neutron scattering techniques and facilities available to the biochemical and biophysical community. As the world leader in this field, he has made Brookhaven this country's center for neutron protein crystallography and inspired the development of other centers for neutron scattering analysis. Among those are the National Bureau of Standards, Oak Ridge National Laboratory, and the Institute Laue-Langevin, Grenoble, France, a European laboratory operated jointly by Britain, France and Germany.

The scientific community is also well-acquainted with Schoenborn's work in two other fields: the interaction of inert gases with proteins and the structures of large biological molecules and cellular components.

In addition to his work at Brookhaven, Schoenborn has been Adjunct Professor of Biochemistry at Columbia University since 1978.

Tandem Fills The Bill

At an international symposium in Stockholm, Sweden, this week, atomic physicist Keith Jones presented a paper on an experiment done at BNL's Tandem Van de Graaff facility. The experiment involved an international team of scientists and made use of the Tandem's unique acceleration/deceleration capability.

About 60 experiments are done at the Tandem each year. Out of that number, close to 75 percent can only be done at the Tandem. Typically, these involve outside users from all over the world who seek out the Tandem because it is the only place where their particular experiments can be run. This was the case for the acceleration/deceleration experiment.

About eight years ago, a trio of scientists — Reinhold Schuch, Heidelberg University; Horst Schmidt-Bocking, Hahn-Meitner Institute in Berlin; and Itshak Tserruya, Weitzmann Institute in Israel — had an idea for doing an experiment to study quasi molecules. They did some initial work, which suggested further experimentation that could not be done with existing accelerators at that time.

Years went by, and along the way they collaborated on other experiments with scientists from Brookhaven. Through that association, they eventually realized that the one place where their quasi molecular experiment could be done was at BNL's Tandem, and four months ago, the experiment was run. Besides the original trio, the final group of collaborators included the BNL atomic physics group of Keith Jones, Brant Johnson and Mati Meron, and Wang Da Hai, a visiting scientist from the Institute for Atomic Energy in Peking.

The quasi molecular experiment required acceleration and deceleration of a heavy ion beam, only possible at a facility like Brookhaven's, with two machines that can be coupled together. Several other laboratories have paired machines, but the ones at BNL were the only machines capable of producing the beam required for this difficult experiment.

A quasi molecule is created when a highly charged ion, in this case, a chlorine atom with a charge of plus 16, has a near collision with a gas target atom. For a billionth of a billionth of a second, the atoms come together. At that moment, the atomic electrons rearrange, and they can move from outer orbits to inner orbits, emitting x-rays in the transition. By measuring the energy of the x-rays, it is possible to define the electronic structure of a quasi molecule during its brief existence.

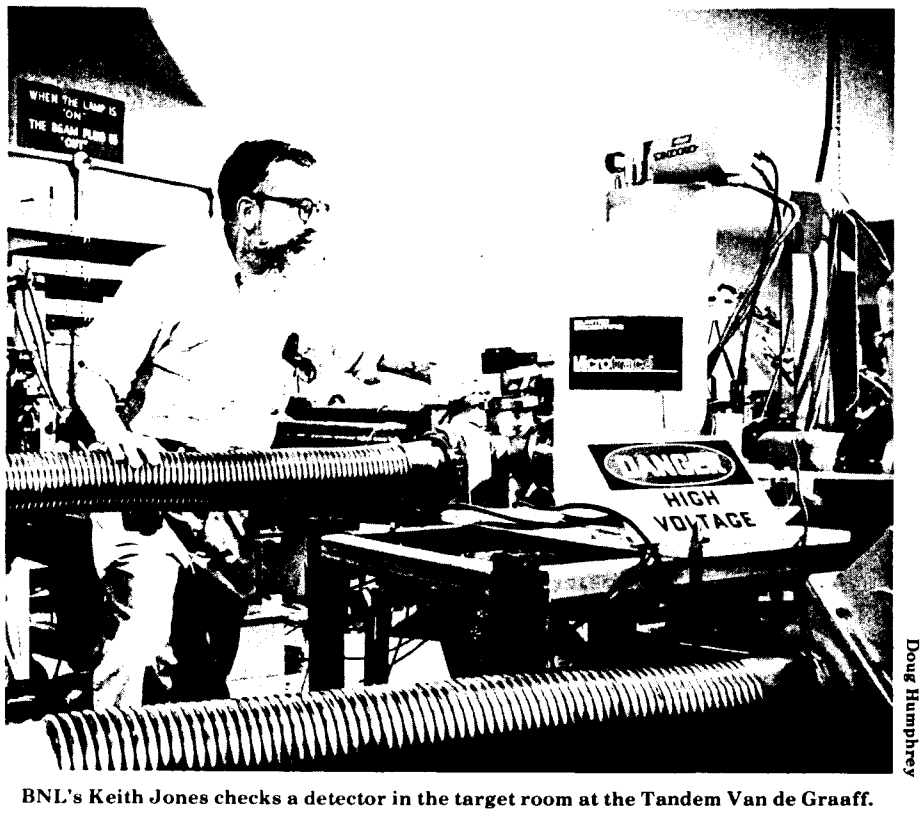
The researchers say quasi molecular interactions are very difficult to calculate theoretically because they are so complex. Therefore, to learn more about what happens during this state, much experimental data must be gathered.

Next, the collaborating scientists will extend the experiment to other types of beams and targets, as they look for answers to more refined questions about quasi molecules.

This research at BNL was supported by DOE's Fundamental Interactions Branch of the Division of Chemical Sciences, Office of Basic Energy Sciences.

—Mona S. Rowe

The quasi molecular experiment was done in six days of around-the-clock machine time. During one of the midnight shifts, Keith Jones found time to photograph two of his colleagues, at left, Horst Schmidt-Bocking, from the Hahn-Meitner Institute in Berlin, and Itshak Tserruya, Weitzmann Institute in Israel.



Doug Humphrey

BNL's Keith Jones checks a detector in the target room at the Tandem Van de Graaff.

Doug Humphrey

Joseph Weynand (right) Lab Computer Security Coordinator, discusses computer security actions with Bob Jansson, MIS Operations Manager.

Computer Misuse: Steps Toward Prevention

Computers have revolutionized our lives. They process data, control machinery and turn numbers inside out. There is a great deal of information stored in automated information systems and it was recognized about a decade ago that something should be done to develop controls to safeguard personal, proprietary information and other sensitive data.

And so a new business has been born. It is called computer security and that means any action which protects computer hardware, software and information data.

Awareness that sensitive data should be protected led to the Privacy Act of 1974, and later to the Freedom of Information Act which guaranteed that individuals had the right to access their personal records. In a 1978 memorandum, the Office of Management and Budget mandated that computer security programs be formulated by all government agencies by 1984. This was implemented by DOE Order 1360.2 in 1979.

At Brookhaven, the development of a program was initiated by the Management Information Systems Division (MIS) with the assistance of AUI internal audit. The major portion of BNL's sensitive computer applications are processed at MIS and it was decided to concentrate on the development of a workable methodology that would promptly provide the necessary safeguards for that area, and a prototype for use throughout the Lab.

Most of the safeguards evolved for MIS will be internal, but some will be apparent to users. A control system, currently in place, determines who will have access to various business applications, and new physical controls on the output distribution will reduce the possibility of hard copy being inappropriately disclosed.

Responsibility for the computer security program has been transferred recently to the Security and Plant Protection Group under the direction of Robert Young. He is assisted by Joseph Weynand, Laboratory Computer Security Coordinator.

In the future they will be looking into the computer security needs of the other departments and divisions, says Weynand. This phase will require the appointment of a computer security representative by each department and division, and the inventory of all computer applications. The representatives will work with Weynand in conducting a risk analysis of their organization's sensitive applications and in the development and implementation of the necessary safeguards. "Our goal is to take reasonable precautions without hindering normal operations," says Weynand.

A new DOE directive has been drafted which may require a security check for all personnel who have access to sensitive or critical data. At Brookhaven, sensitive/critical refers mostly to salary and other personal data, financial matters such as accounts payable and purchasing, and proprietary information. This security check will not be required for those who have "L" or "Q" clearance.

In time, the BNL security plan will become part of the daily routine. Just as computers will be forever with us, so too computer security.

Randall (Cont'd)

By his own definition, Sir John is something of a natural philosopher as were the founding Fellows of the Royal Society in the days of Charles II. He describes a natural philosopher as "a physicist with a wider view." Recalling the variety of his own work, including his early studies of F-factors in simple crystals, his research on the interactions of electro-magnetic radiation with matter, his probes into the luminescence of solids and his present investigations of neutron and synchrotron radiation, Sir John says modestly, "I have spanned a fair range of science." — Anita Cohen

Basic Math Course

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

Arrivals & Departures

Arrivals

Clement Auguste ..... NSLS

Departures

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

James L. Alberi ..... Instrumentation
Herbert Banks ..... Contr. & Proc.
Marie V. Brenner ..... Fiscal
James M. Dosch ..... Plant Engrg.
Josephine C. Gazzola ..... Fiscal
Subrata Ghoshroy ..... Accelerator
Maria C. Srivastava ..... Accelerator

BROOKHAVEN BULLETIN

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Letters To The Editor

To the Editor:

I always enjoy the delightful and informative health notes by Caroline Kramer, R.N., which often brighten the pages of the Bulletin. The recent item on "The MSG Syndrome" (May 21) was a splendid example. It is certainly important for us to be aware of the telltale symptoms of this "Chinese Restaurant Syndrome," which are most disagreeable even though they disappear within one or two hours.

However, I was surprised to see that Nurse Kramer had neglected to complete her description of the entire complex pattern of symptoms that occur within the time frame under discussion. I refer, of course, primarily to the well-known OHL, or "One Hour Later," effect which usually sets in about the time the MSG syndrome has nearly run its course. In the OHL syndrome, about one hour after partaking of Chinese food, the patient begins to feel weak, unable to concentrate on work, vaguely discontent around the midsection, and generally just a wee bit "peckish," as the English might put it. The best remedy for this ailment, which affects virtually everyone who eats a Chinese meal, is to ingest some type of substantial victuals as soon as the first symptoms appear. Many swear by the curative powers of a Big Mac and fries, but in fact practically any protein-rich and hearty form of nourishment will suffice. Relief is usually immediate, the victim returning to his former good spirits within minutes after treatment. In exceptional cases, the patient may insist on playing softball for the rest of the day.

Of course I make no claim of originality in this matter, but merely wish to pass along to my fellow man what I have learned from others. If even one sufferer finds relief from the dreaded OHL syndrome after reading this letter, I shall have my reward.

Salubriously yours,
Neil V. Baggett

Cafeteria Menu

Week Ending June 11, 1982

Monday, June 7		
Cream of potato soup	(cup)	.65
	(bowl)	.75
Ham & potato au gratin		1.75
Beef liver w/ onions & 1 veg.		1.75
Hot Deli: Meatball hero		1.90
Tuesday, June 8		
Lentil soup	(cup)	.60
	(bowl)	.70
Roasted turkey w/stuffing & giblet gravy		1.85
Corned beef & cabbage w/parsley potatoes		2.05
Hot Deli: French toasted ham & cheese		1.75
Wednesday, June 9		
Beef noodle soup	(cup)	.60
	(bowl)	.70
Old fashioned beef stew on egg noodles		1.90
Baked ziti w/ thick meat sauce & fresh broccoli & garlic bread		1.85
Hot Deli: BBQ pork sandwich	(bread)	1.80
	(roll)	1.90
Thursday, June 10		
Split pea soup	(cup)	.60
	(bowl)	.70
Veal pattie parmesan & 1 veg.		1.80
or w/ spaghetti		2.00
Sauted chicken breast on rice		1.85
Hot Deli: Roasted top round of beef	(bread)	1.90
	(roll)	2.00
Friday, June 11		
Fish chowder	(cup)	.65
	(bowl)	.75
Beef hash & 1 veg.		1.75
Breaded fish filet & 1 veg.		1.80
Hot Deli: Clam boat		1.90

Doug Humphrey

Life sciences area in the Exhibit Center.

Lab Tours Start Sunday

As the summer season gets into full swing on Long Island, Brookhaven once again becomes a favorite tourist attraction. This year, tours of the Lab are on Sundays only, from June 6 through the end of September.

The free tours begin at Berkner Hall, with a showing of "Brookhaven's Quest." Visitors then board buses for a guided bus ride around the Lab site, stopping at the Exhibit Center for a walking tour. New at the Exhibit Center this season are several displays, the result of continuous updating by the tour and exhibit staff, Janet Tempel and Jackie Mirzadeh.

The new art and archeology exhibit explains neutron activation techniques used, for example, to reveal an art forgery or trace the journey of an ancient ship. The *Tradescantia* exhibit describes a plant whose flowers change color in response to a variety of environmental mutagens.

Another exhibit, to be completed this summer, discusses the new PETT VI, which has been recently installed on site. PETT VI is the latest design of a machine built to do brain scans for a major study of metabolism and neuroscience.

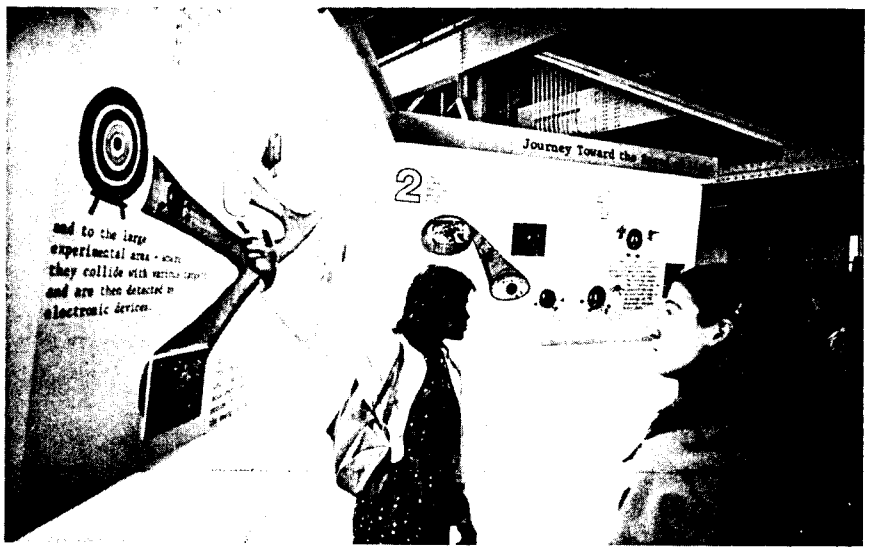
Repeat visitors to the Lab will find an expanded Camp Upton exhibit. It now includes a slide show that traces the Lab's history from the Army trenches to the sophisticated machines of today.

Plan now for special tours of the Brookhaven House, a conventional residence built to demonstrate how passive solar and thermal mass materials can be used to cut heating costs. Tours of the house have been tentatively scheduled for July 11 and September 12. The Bulletin will announce these special tours as they come up.

The Sunday tours run continuously between 10 a.m. and 3 p.m., and the complete program takes about two-and-a-half hours. Refreshments are available at the cafeteria, and visitors may also stop at the Science Store in the Exhibit Center. The store sells souvenirs and unusual gift items ranging in price from 10¢ to $6.

Did you know?

The first Biology Symposium at BNL was held on July 12, 1948.



Doug Humphrey

A description of the AGS is graphically done in colorful cartoons.

WIS Party

The third annual cocktail party of the Women in Science will be held on the patio at the Brookhaven Center on Tuesday, June 15, at 5 p.m. Hot and cold hors d'oeuvres will be served and a cash bar will be available. Reservations are requested. Please make reservations by sending a check for $3 per person, payable to BNL-WIS, to Ellen Gannon, Building 801, by June 10.

Quilting Club

On Tuesday, June 8, the Quilting Club will meet at the Fashion Sewing Store, Route 25A in Rocky Point, at 10:30 a.m. Machine quilting techniques will be demonstrated by Rosemary Florio, local quilting instructor. There is no fee for this demonstration and refreshments will be served. Please call Bernie Benz, 928-1068, for information or reservations.

Motorcycle Club

There will be a special meeting of the Motorcycle Club on Monday, June 7, at 5:15 p.m. at the Recreation Building. All people who wish to go on the trip to Battleship Cove should attend. The trip is scheduled for June 12 and 13.

Lecture Reminder

Marshall Elzinga will present the last Brookhaven Lecture of the season on Wednesday, June 9. He will speak at 8 p.m. in Berkner Hall about "Molecules On The Move."

Softball

Scores for week of May 17

Leagues I and II

Blue Jays 8 — Roga 2

Roga, due to an injury, had to play with 8 people. For Roga, Lew Snead was 3 for 4. For the Blue Jays, G. Oldham was 3 for 4, Nick Pisco had a home run.

Ravens 13 — Ice Pops 12

Mac Thomas called it a slug-fest — a lot of long ball hitting. For the Ravens, Greg Mack was 4 for 4, 2 doubles and 2 home runs. Leroy James was 3 for 4 with a home run. Mike Shepard was 4 for 4. For the Ice Pops, Tony Mendez had a home run.

Phoubars 14 — Moles 3

For the Phoubars, Dave Jensen had a home run.

Six Pax 19 — Big Sticks 6

For the Six Pax, Ed Meier Jr. and Frank Gaetan had home runs.

Leagues III and IV

AMD 14 — Lights Out 2

Titans 13 — Electric Co. 6

The Electric Co. was shut out for 5 innings and then came back with 6 runs, including home runs by Walter Ammen and Joe Frazier.

Dirty Sox 26 — Random Errors 8

Magnuts 14 — Medical 3

League V

TNT 14 — No Names 13

E-Z Riders 10 — Nads 9

Survivors 15 — Turkeys 5

League VI

Random Sample vs. The Source

Game rained out.

Underalls 14 — Who's On First 13

Mole-esters 8 — Mudville Sluggers 6

The Mole-esters won thanks to a triple by Ray Kutzman.

Who Cares 24 — No Feedback 15

Richie Chester was 6 for 6 with a home run. Good over-all playing by the girls.

Classified Advertisements

Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position, with consideration given to candidates in the following order of priority: (1) present employees within the department, with preference to those within the immediate work group; (2) present employees within the Laboratory as a whole; and (3) outside applicants. In keeping with the Affirmative Action plan, selection decisions are made without regard to age, race, color, religion, national origin, sex, handicap or veteran status.

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all non-scientific staff positions; second, to give employees an opportunity to request consideration for themselves through Personnel; and, finally, for general recruiting purposes. Because of the priority preference policy stated above, each listing does not necessarily represent an opportunity for all candidates. As a guide to readers, the listings are grouped according to the anticipated area of recruitment.

Except when operational needs require otherwise, positions will remain open for one week following publication date.

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

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

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

1701. MEDICAL ASSOCIATE - Requires a BS in a life science discipline. Experience in animal handling and cytogenetic research is also required. Will perform developmental and testing duties as it relates to the National Toxicology Program contract. Medical Department.

1702. REFRIGERATION AND A/C ENGINEER -(2 positions) Requires competence with troubleshooting, repairing, installing and operating commercial/industrial air conditioning and refrigeration equipment including steam absorption, centrifugal and helical screw refrigeration machines. Successful completion of refrigeration and A/C apprenticeship program or related coursework is highly desirable. Must be available to work shifts as required. Plant Engineering Division.

1703. EXPERIMENTAL MACHINIST - Requires experience in job print interpretation, layout, and machine set-up. Candidates must demonstrate ability and imagination in all phases of machine work. Will function as all-round machinist for non-production work in research and development shop. Project assignments range from raw material work in research to final assembly. Central Shops Division.

1704. STATISTICS ASSOCIATE - Requires MS in statistics and a background in biostatistics to provide applications statistics support for the inhalation toxicology program. Applied Mathematics Department.

Autos & Auto Supplies

76 CHEVY PICKUP - 1/2 ton, 350 eng., 3 spd., 2-tone color, 8 ft. bed, cap, white slat wheels, air shocks, $3,200. Steve, Ext. 4297 or 929-6877.

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

77 TRUCK CAMPER - 11-1/2' Aristocrat, loaded, mint cond., must sell. Mike, 878-1325.

SNOW TIRES - (2) new w/rims, P165/80R13 w/w, steel belted radial, Sears road handler, $70. Ext. 5200.

75 HONDA MOTORCYCLE - 200 cc, extras, asking $600. Kristin, 744-6287 or Ext. 3372.

G.M. RIMS - (2) with snow tires, 7.75-15, $10. Dave, Ext. 4520.

TRAILER HITCH - class II H-D for 76-80 T-Bird, $35. 472-0339.

76 TOYOTA COROLLA - deluxe, excel. cond., $2,400. 727-0790.

76 CAMARO - orange/black int., stereo, louvres, Corvette rims, excel. in/out, must see, $3,750. 585-3417.

SNOW PLOW FRAME - hydraulic, electric, for truck, lights and switches, no plow, $200. 727-2861 after 5 p.m.

69 TOYOTA CORONA - red, rebuilt engine, new starter & voltage reg., new paint, very good cond., $850. 751-7140.

79 FORD-F150 - 4 wheel drive, roll bar, am/fm cassette w/power booster, 36 in. tires, many extras, $7,000. 724-0742 or 981-5993 after 6 p.m.

76 FORD GRANADA - 2 dr., p/s, p/b, am/fm, auto, 302 eng., 80,000 mi., $1,600. 585-4038 or Ext. 3908.

80 FIAT STRADA - new radials, am/fm stereo, Rusty Jones, r/wiper, 31/mpg. Jim, Ext. 2231.

78 VIKING - 17' XL model, pop-up camper, sleeps 6, excel. cond., asking $2,000. 286-0505.

72 PLYMOUTH DUSTER - 6 cyl., standard, high mpg., mech. excel., $650. Joe, Ext. 7961 or 878-2655 eves.

76 KAWASAKI - KZ-400, 7 K mi, custom seat, many extras, excel. cond., asking, $800. 589-8394 eves.

4 CUSTOM BUMPERETTES - to fit 74 & up GT Vega, $30, firm. 878-9102.

74 CHEVY - step van, V8, 4 spd., refrigerated, insulated, fiberglassed, heavy duty front & rear, $4,000. 654-5169.

74 HONDA 750K - new Conti tires, 16" wheel, K&Q seat, sissy bar, luggage rack, hwy. pegs, 4 into 1 exhaust, black enamel paint, $1,250. Ext. 2309 or 473-9180.

77 MUSTANG II - rebuilt 302 V8, new paint, excel., original owner, $2,600. 472-1473.

74 LINCOLN CONTINENTAL MARK IV - fully loaded, rebuilt eng., gold, w/gold vinyl top, clean in and out, $2,300. Robert, Ext. 2309 or 473-9180.

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

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

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

77 MATADOR - 4 door sedan, 18,000 mi., automatic shift, power brakes, steering, no air cond., $3,800. 289-6228.

B.F. GOODRICH TIRES - (4) 155SR13, steel belted radials, new, $100. Gordon, Ext. 4095.

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

78 PONTIAC WAGON - Grand Safari, auto, a/c, 9 pass., low miles, mint in & out. 751-4214.

79 DATSUN 210 - 2 door sedan, 35 mpg., am/fm radio, 4 speed stick, asking $3,350. Don, Ext. 7611.

80 AUDI DIESEL 5000S - 5 spd., red, p/b, p/s, a/c, am/fm cassette, cruise control, 19,000 mi., $11,900. 941-4999.

TIRES - (2) 875x16.5. Fred, Ext. 4798.

80 KAWASAKI - KX125, low time, exec. cond. 477-0264 after 5 p.m.

74 GRAN TORINO - high mi., new exhaust, shocks, needs engine work, good body, $650. Ken, Ext. 2350.

76 OLDS STARFIRE - 5 spd., 6 cyl., am/fm cassette, good cond., excel. gas. 475-8380 eves.

75 RABBIT - new radials, carburetor, 34 mpg highway, $1,400. Bob, Ext. 5286.

POP-UP CAMPER - mini truck (Toyota, Datsun) slide-on, sleeps 4, full kitchen, heater, used once, $1,500. 751-0461.

SHOCKS - load levellers (rear) for GM mid-size car. Ext. 3919.

80 SUZUKI - GS1000L, excel. cond., many extras, warranty, $2,900. Ext. 7187 or 981-9474.

73 CAPRI - 40,000 orig. miles, needs front fender & hood, $800. Stan, Ext. 3558 or 473-0484 after 6 p.m.

81 DODGE ARIES K - 11,000 mi., 4 door, blue, mint cond., custom, $6,200 firm. George, 588-1713.

78 PLYMOUTH VOLARE - 2 door, 6 cyl., 4 spd., a/c, p/s, am/fm cassette, new tires, 47,000 mi., excel., $2,990. Mano, Ext. 4660 or 924-4054.

78 TRANS AM - 6.6 LT, gold, beige interior, p/s, p/b, de., am/fm 8-track, t-top, last time offered $4,995. Roy, Ext. 4664 or 744-8779.

HONDA - 750cc, many extras, must sell, mint, $1,600. 698-5088.

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

RADIALS - (2) 175x15RS on Volvo rims, new inner tubes, $25 for pair. Ralph, Ext. 2368 or 928-6654.

69 DODGE CHARGER - body excel. cond., primed, $450, neg. 473-5890 after 5.

81 YAMAHA - XS850, full Yamaha fairing, 2,000 mi., travel trunk, showroom cond., garaged, $2,795. John, Ext. 4255 or 929-4450.

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

67 FORD DUMPER - F-500, needs work, good rubber, $1,000. 473-6863.

SUZUKI - GS-1000E plus accessories, mint cond., $2,500. E. Edwards, Ext. 4027 or 286-1121.

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

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

Boats & Marine Supplies

32' CHRISCRAFT - Sea Skiff Twin 283, Chevys FWC, sleeps 6, camper canvas, good cond., $3,200. 286-8476.

58 COLUMIB BOAT - 28', sleeps 4, fresh water cooled eng., compass, depth finder, galley. 399-2149.

18' CABIN CRUISER - w/tilt trailer, 80 HP O.B., $3,200. Carl, Ext. 5329 or 281-7627 after 5 p.m.

80 CRUISER - 20' Beachcomber, 150 HP Johnson, power trim/tilt, cuddy cabin, porti-potti, compass, horn, windshield wipers, bilge pumps, full canvas, E-Z loader trailer-4900 lb capacity, electric double cable winch, immaculate. 981-5993.

BOAT TRAILER - $50. Ext. 2969.

18' GARVEY - clam boat and 40 HP Johnson eng., plus extras, good cond., $800. John, Ext. 3292 or 286-1348.

TRAILER WINCH - heavy duty, stainless steel cable, excel. cond., Ext. 4069 or 261-7825.

MERCURY OUTBOARD - 90 HP, 1979 leftover, immaculate, stainless propellor, tanks, controls, extras, $2,200. 286-0263 eves/weekends.

25' WHEELER - fiberglass skiff, 225 HP Chrysler inboard, fly bridge, $6,000. 286-8062 eves.

17' ISLANDS DAY SAILOR - fiberglass, hard sails, mooring cover, 6 HP Evinrude, extras, $1,500. 751-0461.

WIND SURF BOARD - complete fiberglass, $595. Dinos, Ext. 4666 or 477-1783.

20' BAYLINER - 76 Liberty, 130 Volvo, I/O cabin, trailer, extras. John, 541-4792.

Free

CALICO KITTEN - female, long hair, 6 weeks old. Lee, Ext. 7629 or 929-3023.

Miscellaneous

MATTRESS & BOXSPRING - full size, excel. cond., reasonable. 727-0661 after 5 p.m.

GUITARS - EKO, 12 string, $85; Hagstrom bass w/case, $65. Ext. 2923.

ROTOTILLER - 36" For use w/yard tractor, never used, orig. $350, asking $200; power spreader, 1/2 bu., attaches to farm tractor, PTO shaft, used 2 hrs., $60; Wright recip. saw, very good cond., but needs carb. work, orig. $320, asking $75. 929-4522 after 5 p.m.

TYPEWRITER - Royal portable, excel. cond., $40 firm. Ext. 3514.

MOUTON LAMB JACKET - fits sizes 14-16, brown, good cond., $75. 475-0144 after 6.

BOY'S BIKE - 20", high rise, like new, $35. Richie, Ext. 2175 or 734-7342 after 6 p.m.

POOL - 24'x4', w/all equip., $175; chandeliers; buffet; medicine chests; bath vanity; headboards. Jake, Ext. 4532.

ELECTRIC WELDER - Lincoln, 180 amp, 2 cyl. Wisconsin eng., 99% rebuilt. 878-1561.

AIR CONDITIONERS - (3) 6,000 BTU, $200 ea.; 8,000 BTU, $200; refrigerators, 12 cu. ft., 3 mo. old, like new, $200, 10 cu. ft., 6 mo. old, $175. Juan, 399-4394 after 6 p.m.

GARDEN TRACTOR - w/plow, harrow, sickle bar, snow plow, grader blade; Three Gang mower, needs some work. 878-1561.

ROTOTILLER - Sears, 6 HP, good cond., $300. 924-6582.

WASHER & DRYER - heavy duty, large capacity machines, 3 yrs. old, make offer, must sell, moving. Ext. 5138 or 924-4237 eves.

SHOWER SPLASH GUARDS - for bathtub, unopened pair w/adhesive, sand color, $4. Linda, Ext. 2733.

MATTRESS & BOXSPRING W/FRAME - full size; dining table & four chairs; 10 speed bicycle. Ext. 4360.

DARKROOM ENLARGER - DeJur professional, old but functional, $50 or best offer. Eric, Ext. 2671 or 941-3609.

MAPLE TREES - 8-10 ft., $10/ea., 3/$25, u-dig. Ext. 7154 or 754-1392 eves.

G.E. AIR CONDITIONER - 14,500 BTU V115, 7-1/2 amps; TV reclining chair, new condition. Ext. 3392 or 475-8330.

TWIN BED - w/mattress & spring, $25 or best offer; large 50 yr. old dresser, has front of small drawer missing, good for storage, best offer; brown sofa, $20; large old wooden dresser w/closet, desk & 4 deep drawers, $70. Ext. 3755 or 878-9571.

UPRIGHT FREEZER - $75; washing machine, needs work, $20. Ext. 2969.

TENNIS RACKET - Dunlop Volley II, mid sized, 3L strung w/Staytite nylon, Neumann leather grip, treated w/Drytack, asking $40. Ext. 2671 or 744-1354.

KITCHEN TABLE - w/4 mustard swivel chairs (some rips), table is wood grain, octagon, good cond., $65. 475-6981.

NYLON RUG - beige, 12'x14' w/foam rubber pad, $170. 286-0466.

LOVESEAT - country style, beige, browns, blues, excel. cond., $150. Joe, Ext. 7961 or 878-2655 eves.

PORTABLE TYPEWRITER - Royal Electric, $50. 878-0071 after 6 p.m.

COMPUTER - Sinclair ZX-81, $85. Dick, Ext. 4255.

KITCHEN CABINET - Armstrong ceiling tile; electric range, needs work. Ext. 4660.

TOYS - used but in good cond., cheap, in Shirley area. Helen, 281-8848.

BUNK BEDS - twin size, matching dresser, 2 desks, 2 chairs, asking $250 or make offer. Ext. 4069 or 261-7825.

TAPE RECORDER - Sears portable cassette, ac or battery, excel. cond., $20. 744-9677.

KITCHEN CABINETS - $60; Tappan wall oven, $30; Cooktop, $30; portable dishwasher, $60. 929-4886 after 5 p.m.

PIANO - for kids to pound on, u-haul it, $150; queen size bed set, $25. Ext. 3262.

COLOR TV - 19", new Sylvania superset electronic tuning, warranty, $395. Ext. 3985 or 265-3612.

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

ACCORDION - made in Italy; mother of pearl, small size, $65 or best offer. 821-1525.

DINING TABLE - w/5 captains chairs, 45" diameter w/extension pieces, orig. $1,200 asking $500. Jean, 325-8624.

G.E. PORTABLE DISHWASHER - excel. cond., $80. 286-2155.

FISH TANK - 55 gal., fuly equipped, w/pump, $175. Ext. 7187 or 981-9474.

ILLARDI PLAYER PIANO - needs work on main bellows, $200. Frank, 281-8427.

WALNUT CHEST/MIRROR - 42" with combination drawers/doors, excel cond. 584-7750 after 6 p.m.

TURNTABLE - BIC model, w/Shure cartridge, like new, $50; 8-track player/recorder, ff, replay, dual recording meters, $50. George, Ext. 4612.

YARDSMAN VAC. SWEEPER - 5 HP, excel. cond., can be used w/rider, $200. 878-1056.

MARIGOLDS - mixed colors, $1.10 per dozen. Bill Stars, Ext. 4278 or 298-9648 eves.

AIR CONDITIONER - 6600 BTU, 7-1/2 amp, 115 V, Philco, good cond., best offer. Ext. 4341 or 475-4005.

PARAKEETS - 2 w/cage, exotic colors, owner raised, lovable, acrobatic clowns, sacrifice, $35. Kelly, 744-3069.

BROCADE CHAIR - blue, $35; (2) mahogany 3-drawer chests, $75 for both; antique white dining table, 4 chairs, $50. 924-6878 after 6 p.m.

UPRITE FREEZER - 6'x3', works fine, $75 takes it away. 924-6751 eves.

VACUUM CLEANER - Sears, canister, good working cond., $40; child's bicycle seat, $4. 924-3066.

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

SOFA - converts to queen bed, orange/yellow/brown, contemp. style, good cond., $150. 698-6437 eves.

CONN THEATER ORGAN - like new, perfect cond., orig. $2,400 asking $1,200; air conditioner, 2800 BTU, hardly used, asking $200. 588-6215 after 4:30.

For Sale

Real Estate advertised for sale or rent is available without regard for the race, color, creed or national origin of the applicant.

PORT MALABAR - property on Florida's east coast, 1/4 acre, a General Development Corp. community, just 1 hr. from Disneyworld & Orlando. Ed, 585-2088 after 4 p.m.

SHOREHAM-WADING RIVER - 4 bdrm. colonial on acre in Shoreham-Wading River School District, Axeman-Anderson boiler, 12" insulation, deck, quiet location, mortage assumable at 10%, $89,000. Lee, Ext. 7629 or 929-3023.

BELLPORT VILLAGE - 7 room cape, sunny eik, l/r with f/r, 2 baths, basement, 2 car garage, excel. cond., owner, $63,000. 286-8972.

MASTIC BEACH - 4 bdrm. cape, l/r, d/r, eik, gas hot water & cooking, full porch, $1,000 year taxes, 160x100 property, near stores & bay, asking $28,000. 281-0360 after 6.

RANCH - 3 bdrm., full basement, garage, new roof with power vent, air cond., oil hot water heat, fenced back yard, storage shed, $37,000. Carl, 281-7627 after 5 p.m.

SMITHTOWN VILLAGE - Head of the Harbor, 12 rms., 3 bdrm. custom contemp. house, c/a, f/p, close to beach and shopping, 13% mortgage, 2 acres & extras. 751-0461.

MIDDLE ISLAND - 3 bdrm. colonial, 2 baths, l/r, d/r, den/fireplace, apt. in basement w/private ent., 2-3/4 acre wooded, walk to golf course, assumable mortgage. Mano, Ext. 4660 or 924-4054.

MILLER PLACE - spacious tri-level ranch, w/income apt., 2 bdrm., dinette-kitchen, l/r, bath upstairs, 1 bdrm., kitchen w/dinette, bath, l/r with picture window, 2 car & storage shed, 3/4 acre, patios, etc. 744-2536 or 732-9324 after 6 p.m.

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

For Rent

VERMONT CHALET - beautifully furn., stone f/p, wkly rentals, woodland trails, pond & lake swimming, boating, fishing, nearby Alpine Slide, tennis, golf, antiques, etc. 757-5599.

BERKSHIRES CHALET - 3 hrs. from NYC, 3 bdrms., 2 baths, fully equipped kitchen, elec. heat, deck w/spectacular view, near lake, hiking trails, available weekly or weekends. 929-6946 after 6 p.m.

SOUTHAMPTON - spacious new ranch, 3 bdrms., 2 baths, d/r, l/r, m/r, large kit., deck, fireplace, bar, $5,000 full summer. 293-0223.

SOUND BEACH - furnished room, share 2 bdrm. apt., kit., l/r, bath, room has full size bed, phone & TV, walk to pvt. beach, great for summer, $200/mo. incl. util., male pref. Roy, Ext. 4664 or 744-8779.

CORAM - excel. 1 bdrm apt., at North Isle Apts. sublet, avail. June 25, $400/mo. Ext. 7577 or 473-7720.

PATCHOGUE VILLAGE - 2 bdrm. apt., fenced yard, garage, all appliances, gas heat, near shopping. 289-0012.

E. MORICHES - small cape cod, 1 acre waterfront with sandy beach, suitable for couple, $375/mo. plus utilities. Mona, Ext. 2347 or 878-9384 eves.

Car Pools

STONY BROOK/STRATHMORE VICINITY - established carpool needs rider/driver. Morris, Ext. 4192.

EAST ISLIP - 3-man pool desires other rider/-driver. Ext. 4532.

WEST BABYLON - summer student needs ride from West Babylon in exchange for gas money. Maggie, Ext. 2285.

Lost & Found

FOUND - Woman's brown belt, size 10. Ext. 5316.

Wanted

KILN - w/kiln siter to fire porcelain. 744-5652.

BUSINESS ASSOCIATE - excel. income oppty., spare time, tax favored. 698-5961.

NEED JOB AS MECHANIC - in Patchogue vicinity, reliable, hard working, young man. Glenn, 732-3350.

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

AIR COMPRESSOR - 80-100 PSI, 15 to 20 gal. tank. Ron, 732-6712.

TWO BEDROOM APARTMENT - or house to rent, Lab vicinity. Terri, Ext. 2484.

BABYSITTER - 1 p.m. to 10:30 p.m., Westhampton beach area, mature person w/own transportation to my home preferred, need immed. 288-6367 mornings.

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

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

CAMPBELLS SOUP LABELS - send to F. Chandler, Bldg. T-89, for St. Mary School, East Islip.

CLEANING PERSON - 1 day/week, E. Patchogue area, references required. Elaine, Ext. 3331 or 289-8155 after 5:30.

THREE PERSONS - who would be interested in increasing annual income, for interview appointment call 732-6647.

GOOD HOME - needed for male Tabby, orange/-white, well behaved. Joann, 889-2755 eves.

CHAIRS - dining room or kitchen; area rug, approx. 9'x12'; garden tools. Ext. 5506 or 928-7328.

BABY CRIB - and/or dresser in good cond. 821-1525.

FEMALE HOUSEMATE - to share spacious 3 bdrm., 2 bath house, in secluded area, 5 min. to Lab. 924-4054.

CAR - 72 to 75, good running cond., Pinto/Dart class. Jon, 928-6654.

MATURE WOMAN - for child care, 3 days/week, our home, own transportation, C. Moriches area. Roger, Ext. 3578 or 878-4864.

TIRES - in fair to good cond., C78-13 or 650-13. Susan, Ext. 4267.

CANOE - 17' or larger preferred, will consider others. Hary, Ext. 3783.

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.