BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

BNL Shares Logic With Industry

Imagine an electronic logic device so powerful that it can access data at speeds in excess of 330 megacycles —a factor of two faster than any other commercial memory element of its size available today.

Ed Platner did imagine it, and that's why the first such integrated circuit (IC) has been perfected and is ready to go into production at RCA's silicon-on-sapphire facility in West Palm Beach, Florida.

Over ten years ago, Platner, a physicist with the Lindenbaum/Ozaki group, delivered a paper introducing the concept of using shift registers to facilitate the readout of proportional wire chambers. These chambers are particle detectors in which the significance of an event is determined by digitally measuring the relation of charged particles to a series of wires. Shift registers, Platner hypothesized, could provide digital delay as well as storage of the wire numbers involved in the charged particle passage. His idea, however, was ahead of its time. The technology necessary to create such an ultra-high speed serial in/serial out electronic logic device simply did not exist.

About four years ago, the technology reached the point where Platner's idea was "barely feasible." At about the same time, the drift chambers came on the scene. These new particle detectors could not only detect which wires had signals on them, but also the distance from the wires the particle passed. This made Platner's idea doubly useful, because the logic device he envisioned would accomplish both tasks and with a time resolution of three nanoseconds.

He recognized that this speed could add to the capability of the planned Multi Particle Spectrometer II, where drift chambers would replace the original spark chambers in the MPS built at the Lab by the Lindenbaum/Ozaki group in 1975. This was the real motivation for pursuing the concept when the technology was still so young.

Even though the technology was new, Platner realized that there was one type of microcircuit that could work. He visited more than twenty IC manufacturers and asked them to submit quotes for designing and manufacturing a logic device that would meet his specifications.

"Out of all the companies," Platner said, "only two thought they had a chance to do it and actually quoted on it. RCA won simply because they had the best offer."

Development of the IC was a collaboration. RCA's engineers contributed expertise in solid state technology while Platner and the MPS group at BNL contributed a knowledge of logic. Together, they developed a tiny chip, 0.13"×0.15". Its 14,000 transistors are created using what Platner called "the silicon sapphire process — a very exotic solid state technique that makes possible extraordinarily fast logic functions."About 350 ICs are made on one sheet of very finely polished sapphire 3" in diameter and about 0.040" thick.

Once the IC was designed, however, RCA could not test the device because the company had not yet developed the necessary ultra-high speed logic expertise. But BNL had. "Because of the state of the art nature of electronics in high energy physics," Platner explained, "our business has always been in the realm of ultra-high speed logic." It was most practical, then, to design test circuits at the Lab.

So, about six months ago, Platner enlisted engineer Charlie Zein. "I explained the problem and outlined possible solutions," Platner said, "then he went ahead and did it." Zein designed a test fixture containing a computer that is programmed to control the sequence of a dozen tests and determine if a particular chip is good. If the IC fails, the computer also records which test it failed.

"The testing process is very precise," Platner said. When an IC comes into full contact with a probe card, the equipment goes through a sophisticated series of tests taking about one second. If an IC is defective, a small needle ejects a drop of ink through the center of the probe card onto the chip.

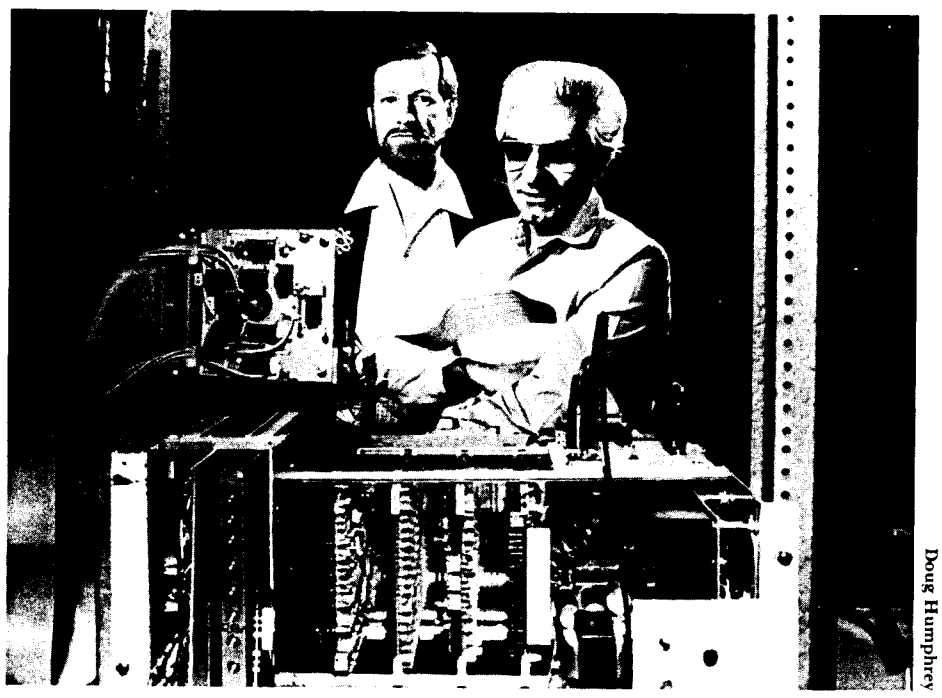
Zein's test fixture, Platner said, "is pretty remarkable. The RCA people said that if they had to build a circuit of that sophistication from the beginning, it would cost them over a half million dollars."

"We wanted to make this a commercial product because it would cost us less," Platner said. "Custom-made, each IC costs $50. In commercial production, the cost will go down to $5 to $15 each."

When the MPS II goes on-line, 4,000 of these four-channel memory elements will have been used in the new drift chambers. These tiny ICs will serve in place of 1,000,000 feet of cable and over 16,000 individual wires. And because of the IC's speed capability, the MPS II can use increased beam levels. The MPS was limited to 300,000 particles/second; the MPS II will run at 5 million particles/second, producing 15 times more detection sensitivity.

Aside from the MPS II, Platner sees this IC as being useful for many applications in high energy physics; for example, in ultra-fast ADC functions or very fast logic analyzers. On a commercial level, the memory element can be used in digital oscilloscopes. "The fastest ones today go to about 20 megahertz (MHz); this chip could allow one to go to 200 MHz," he said. "In general, this development should be very useful to the electronics community."

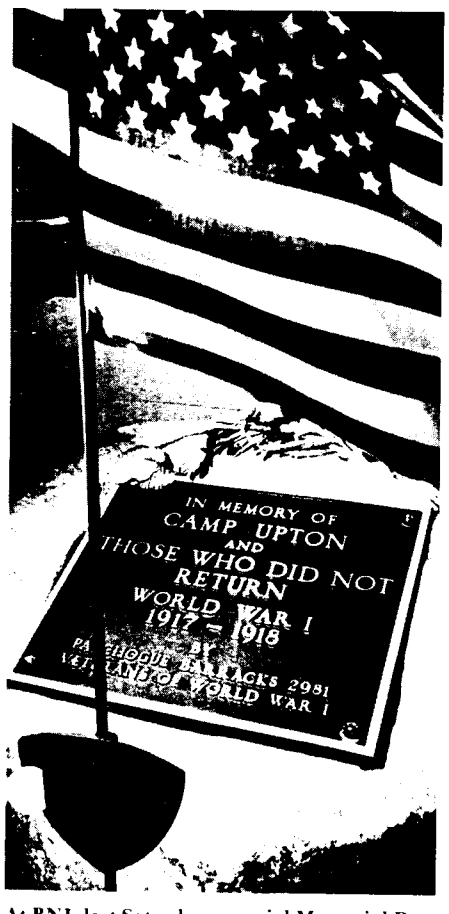
Platner sees this advance as just another step in the evolution of electronics, where the speed and density of ICs seem to double almost every year. Still, he admits, "Normally you don't develop circuitry that's a factor of two faster than anything else that exists. We had a high level of confidence. We also had a lot of guts."



Doug Humphrey

To test the ultra-high speed electronic logic device conceived by Ed Platner (left), Charlie Zein (right) designed this test fixture. When the tiny ICs are brought into contact with the probe card (upper left), they undergo a series of tests. If any are defective, the built-in computer prints out an analysis of the failure. Defective chips are also identified visually because Zein designed the fixture to be compatible with inker equipment owned by RCA.

In Memoriam To Camp Upton Veterans of WWI



Doug Humphrey

At BNL last Saturday a special Memorial Day observance was organized by the Veterans of World War I, Patchogue Barracks No. 2981. The ceremony focused on the dedication and presentation of a plaque in memory of those who trained at Camp Upton during WWI. About 150 people, including representatives of many veterans' organizations, gathered for the observance. They were welcomed by BNL Associate Director Vincent O'Leary and heard remarks by Lou Harson, BNL Principal Architect. Later (from left), O'Leary; Raymond M. Burns, Sr., Barracks Commander; Marion L. Pond, Adjutant; and Harson, posed for a commemorative photo. Burns and Pond were among those whose efforts resulted in the remembrance.

American Academy Elects Samios

Nicholas P. Samios, Deputy Director for High Energy and Nuclear Physics, was elected a Fellow of the American Academy of Arts and Sciences at the Academy's 201st annual meeting on May 16, 1981.

Entering its third century, the Academy is a national honorary society founded in 1780 by John Adams and other leaders prominent in laying the philosophical foundations of the United States. Its 2721 members, together with 480 foreign honorary members, represent the mathematical, physical and biological sciences, as well as law, administration, public affairs, theology, fine arts and the humanities. A primary function of the Academy is to foster the gathering together of individuals absorbed in their respective specialties in science, scholarship and art for their mutual reinvigoration in the common enterprise of understanding and discovery. Concurrently, the Academy will pursue in contemporary terms its historic function of advancing improvements in agriculture, arts, manufactures and commerce.

Samios was one of 75 U.S. and 11 foreign scholars elected this year. Other BNL scientists who hold this honor are Gerhard Friedlander, Maurice Goldhaber, Richard Setlow, Harold Siegelman and George Vineyard.

Lecture Reminder

The last BNL Lecture of the season will be given by A. Bertrand Brill, Head of the Nuclear Medicine Division in the Medical Department, on Wednesday, June 10, at 8 p.m. in Berkner Hall. His talk is entitled "Nuclear Medicine — Update 1981."

A buffet supper is served at 6:30 p.m. in the Brookhaven Center before the lecture. Many find it convenient, and it is a pleasant way to meet members of other departments. Reservations for the buffet should be made in advance by calling Ext. 3541 before 5 p.m. on the day of the lecture.

AUI Scholarship Winners

Out of 67 applicants, 12 sons and daughters of BNL employees have been selected as winners of the 1981 AUI Trustee Scholarships. They will each receive $1500 per year, for up to four years, to help defray their college expenses. The winners were chosen by an independent committee reporting to the College Scholarship Service which administers the program for AUI.

Roger Bailey

Marianne Borie

Roger Bailey...son of Roger C. Bailey (Pl. Eng.)...grad of Freeport H.S....will attend Cornell Univ....resident of Freeport.

Marianne Borie...daughter of Martine O'Connor (Med.)...grad of Bellport H.S.... will attend Tufts Univ....resident of Bellport.

Elise Sheila Brown...daughter of Virginia Brown (Pers.) and Hugh Brown (Accel.)... grad of Bellport H.S....will attend Williams College...resident of Brookhaven.

Jennifer Brown...daughter of Donald Brown (Accel.)...grad of Bellport H.S.... will attend Webb Inst....resident of Bellport.

Elise Brown

Jennifer Brown

Deborah Chasman

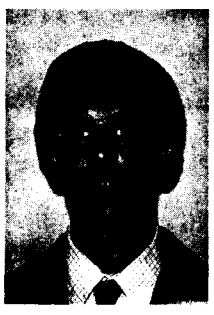
Eric Fajer

Deborah Chasman...daughter of Chellis Chasman (Phys.) and the late Renate Chasman (Accel.)...grad of Ward Melville H.S....will attend Harvard Univ....resident of Setauket.

Eric Fajer...son of Jack Fajer (DEE) and Ruby Fajer (DEE)...grad of Miller Place H.S....will attend Stanford...resident of Miller Place.

Gerhard Foelsche...son of Horst Foelsche (Accel.)...grad of Bellport H.S....will attend Carnegie-Mellon Univ....resident of Bellport.

Dorothea Kistner...daughter of Ottmar Kistner (Phys.)...grad of E.L. Vandermeulen H.S....will attend Dartmouth College...resident of Port Jefferson.


Gerhard Foelsche

Dorothea Kistner

Jennifer Lacks

Suzanne Morris

Jennifer Lacks...daughter of Sanford Lacks (Bio.)...grad of Bellport H.S....will attend Univ. of Penna....resident of Brookhaven.

Suzanne Morris...daughter of Hilbert Morris (Pl. Eng.)...grad of Westhampton Beach H.S....will attend SUNY at Buffalo...resident of Westhampton Beach.

Romuald N. Sluyters...son of Theodorus Sluyters (Accel.)...grad of Bellport H.S.... will attend Tufts Univ....resident of E. Patchogue.

Frederick Studier...son of William Studier (Bio.)...grad of Ward Melville H.S.... will attend Pomona College...resident of Stony Brook.

Romuald Sluyters

Frederick Studier

Student Program Begins Monday

Summer is officially here when the summer students arrive. On Monday, 71 juniors and seniors from colleges and universities throughout the U.S. will take up residence at Brookhaven for 11 weeks of research in the scientific departments. The program is supported by DOE with funds specifically earmarked for this purpose only.

This year, 474 students applied for the research assistantships, a slightly higher number than last year. Of the total contingent, about one-third of the students are women. Thirteen students are assigned to Energy and Environment and ten each to Accelerator, Medical and Physics. Biology has nine, Nuclear Energy six, Chemistry five, Director's Office three, S&EP two, and Applied Math, Instrumentation, National Synchrotron Light Source, one each. This is the 29th year of the program.

Archaeometry: From Gum To Galena

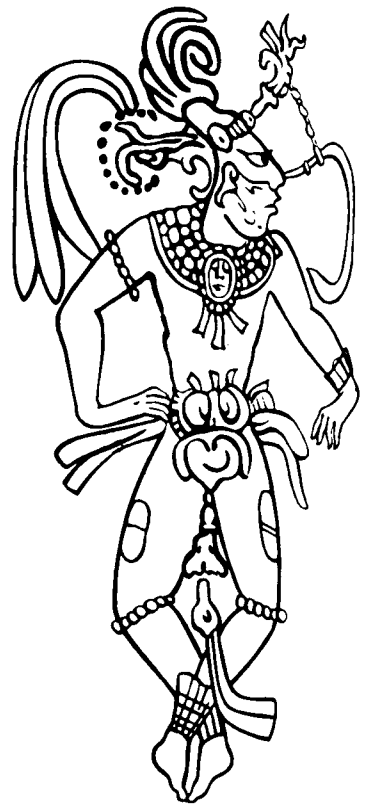
Neolithic man was a gum chewer. But he didn't have a choice between Doublemint or Juicy Fruit. He chewed birchtar.

At a poster session of the 21st International Archaeometry Conference held at BNL May 18-22, a scientist from Germany described finding pieces of a dark mass containing the impression of molars at a neolithic dwelling on the shores of Lake Constance. Thin layer chromatography identified the mass to be birchtar. Birchtar contains small amounts of phenols and their derivatives, which serve as disinfectants, so neolithic man would have had his teeth cleaned every time he "had a chaw." At the same time, he may also have gotten a bit dizzy because birchtar has a physiological effect of stimulated respiration.

This report on neolithic chewing gum was one of more than a hundred papers presented at the Archaeometry Conference, which brought together over 150 specialists to discuss their work in the application of modern scientific techniques to the field of archaeology. The week-long program was a good representation of what's currently being studied in the field.

At one session, work on magnetic prospecting was presented. A group of French scientists have designed and built a double resonance magnetometer system which is useful in prospecting archaeological sites. Of course, when they go magnetic prospecting, they use a totally amagnetic vehicle to carry their equipment.

Another presentation dealt with using lead isotopic ratios to identify the origins of galenas from Indian sites in North America. Galena is a bluish-gray mineral consisting of lead sulfide; it has a metallic luster and usually occurs in cubic shapes. Apparently, prehistoric North American Indians revered crystals of galena, which have been found in the Great Lakes region and in the Mississippi Valley region at sites dating from 3500 B.C. to about 500 B.C.



Lead isotopic analyses indicate that most of the galenas found are of relatively local origin, but some long distance trading did occur.

Still another researcher described analysis of the purple-black surface of a Roman plaque, a surface found to consist of copper oxide with some gold and silver. This type of surface decoration had not been previously recorded on classical metalwork, but is well-known as *Shakudo* from post-medieval Japan 15 centuries later. The Japanese treated such alloys with metal salts and a variety of organic acids, notably acetic, mallic and oxalic from the bitter plum, to give superb finishes including the purple-black *Shakudo*. The Roman process is documented to be carried out with rhubarb (a rich source of organic acids) and salts, similar to the Japanese. The plaque may be the first example of the prized Corinthian bronzes described in detail by the Roman author, Pliny.

Equipment Demo

Xerox will demonstrate its word processing equipment in Room C, Berkner Hall, on June 10, from 11 a.m. to 4 p.m. Anyone interested in the latest technology from Xerox is invited to attend.

Arrivals & Departures

Arrivals

William H. Adams ..... Medical
Michaile Sherie ..... Energy & Env.

Departures

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

William E. Adams, Jr. ..... Accelerator
Robert C. Aldridge ..... Accelerator
Kin Ying Cheung ..... Reactor
Kim M. Colichio ..... Accelerator
Nelson C. Davids ..... Accelerator
Brent G. Ewing ..... Accelerator
George A. Hutson ..... Accelerator
Alfred S. Lewandowski ..... Energy & Env.
Thomas V. Moresco ..... Nuclear Energy
Stephen J. Murtagh ..... Physics
Thomas G. Owens ..... Energy & Env.
Henry Petrule ..... Accelerator
Frank Pulka ..... Accelerator
James H. Sauls ..... Accelerator
Martha N. Simon ..... Biology
Ralph P. Taylor ..... Accelerator
Alan Thorndike ..... Physics
Edward A. Tiagha ..... Accelerator
Nikolais Upenieks ..... Accelerator
Alonzo P. Werner ..... Accelerator
Harold A. Worwetz ..... Accelerator
Leo P. Zaloga ..... Accelerator

At The Bank

Barclays Bank, which has a branch on site, has 5000 offices worldwide and 64 in the New York area. Here are some of the services that the bank offers which employees may not be aware of:

As a worldwide bank, Barclays can help you exchange currencies, e.g., drachma for dollars, or dollars for francs. Commission free travelers cheques are provided in both dollars and pounds. A wire transfer service is available for sending money to, and receiving funds from, overseas.

Barclays has a wide range of trust services, including such matters as wills, estate planning and custodial accounts.

The bank offers special concessionary rates on its Upton branch loans.

Each depositor is insured up to $100,000 by the Federal Deposit Insurance Corporation.

Baroque Concert

Nina Barwell, flute, and Peter Wolf, harpsichord, are presenting two successive programs as part of the BERA-sponsored baroque music festival. Tonight and on Thursday, June 11, their performances will begin at 8:30 p.m. in Berkner Hall. Tickets are $5 for general admission and $3 for students and senior citizens.

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BERNICE PETERSEN, Editor
MONA S. ROWE, Assistant Editor

35 BROOKHAVEN AVE., UPTON, N.Y. 11973
Telephone (516)282-2345

Patents Awarded

Gerald Farber and **Robert Smol,** DEE, and **Ralph T. Yang** and **Leonard Naphtali,** former BNL employees, were issued U.S. Patent #4,250,015 for developing an improved process of converting coal into valuable liquid hydrocarbons. The method eliminates the need for the use of corrosive catalysts, while providing an improved yield of the liquid hydrocarbons in a one-step process.

Meyer Steinberg, DEE, and **Richard Johnson,** a former BNL employee, were issued U.S. Patent #4,251,340 for inventing a method of combining ethylene, sulfur dioxide and carbon monoxide into a terpolymer having good durability and structural properties. The terpolymer, produced by the irradiation of a mixture of ethylene, SO_2 and CO, has particular utility as a low cost, substitute polymer for polyethylene, and also as a means of environmental control by removing SO_2 from fossil fueled power plant stacks and from metallurgical smelting plants.

NYC Train Trip

The Hospitality Committee is planning a group railroad trip to the city on Wednesday, June 17. Departure will be at 7:55 a.m. from the Patchogue LIRR station. Round-trip fare for adults is $3.25, 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,* June 11. 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.

Theater Group

Auditions for the fourth annual BERA Theater Group Vaudeville show will start at 7:30 p.m. at Berkner Hall on Monday, June 15 and in the North Room of the Brookhaven Center on Wednesday, June 24. The show will be presented on Friday & Saturday, July 17 & 18, at the Brookhaven Center. For more information call Liz Russell, Ext. 3940, or Jane Love, 286-1136 after 5 p.m.

The Theater Group's annual election of officers will take place Wednesday, June 10, at 8 p.m. in the Recreation Hall. The slate of nominees are: President - Sandra Lane; Vice-president/Treasurer - Jane Love; Secretary - Joyce Ricciardelli; Advisory Committee - Karl Swyler; House Committee - Joe Skelly; Program Committee - Kurt Fuchel. Nominations will also be accepted from the floor. There will be a special program for the evening and all members are urged to attend.

Astronomy Group

The many telescope and amateur astronomy enthusiasts who answered the notice in the Bulletin are invited to meet on Wednesday, June 10 at 12 noon in Room B, Berkner Hall, to form a new BERA Astronomy Club. We will meet Mark Levine, Director of the Vanderbilt Planetarium, and Susan Ladmer, Assistant Director of the Vanderbilt Museum, to discuss plans for the telescope and the BNL-Vanderbilt collaboration. Bring your lunch.

Summer Rec For Kids

BERA's summer recreation program for children will begin on Monday, July 6, and end on Friday, August 28.

Swimming Classes

Place: BNL Swimming Pool

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

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

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

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

Registration applications may be picked up at the Recreation Office, the BERA Film Service Office (between 10 a.m. and 1:30 p.m.), and the Swimming Pool during open hours. Mail or deliver application with registration fee (checks payable to BERA) to the Recreation Office, Building 185, no later than June 24.

Tennis Program

Place: BNL Courts

Activities: Basic tennis instruction and tournaments

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

Fee: No fee or registration required

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

Friday Pool Specials

Place: BNL Swimming Pool

Activities: Water games and contests

Time: Each Friday — 3:15 to 4:30 p.m.

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

Participation: Children of all Laboratory employees.

Motorcycle Club

Let's play tourist in Connecticut! The Motorcycle Club is organizing a day ride on Saturday, June 13. The plan is to catch the Orient Point ferry to New London, Connecticut, and make a circle trip. This is an ideal ride for small bikes, since the planned route will only total about 150 miles, and the longest distance between stops along the way will be about 16 miles.

For more details, come to the club meeting on Monday, June 8 at 5:15 p.m. in the Recreation Building.

French Club

Once a year, members of *Le Cercle Français de BNL* hold a *"Dîner Gastronomique",* for which each member contributes one of the dishes. Culinary standards are high, and this is usually the most popular event held by the group. This year the dinner will be held in the Recreation Hall on Friday, June 12, at 7:30 p.m. If you are interested in attending, plan to prepare a dish that will suffice for 8-10 people, and notify either Julia Walenta, 928-4926, or Ralph Weston, Ext. 4373. Space limits the number who can attend, so it's a question of "first come, first served." Non-members will be asked for a contribution of $5.

Check Your Blood Pressure

Hypertension (high blood pressure), is an important contributor to premature disability and death in adults. The U.S. Public Health Service estimates that approximately 15% of the white population and 28% of the black population in the United States have high blood pressure. The disease occurs among all segments of the population regardless of wealth, education or geographical location.

Although high blood pressure may affect any adult, it is more prevalent and tends to be more severe in the black population. There is an increased risk of developing hypertension if it tends to run in the family or for women on oral contraceptives. Approximately 90% of people with high blood pressure are classified as having essential hypertension, i.e. there is no apparent cause for the elevated blood pressure.

Hypertension is often called a "silent disease" because it is usually present for many years without the patient experiencing any symptoms. Uncontrolled blood pressure itself may produce headaches, dizziness, or nose bleeds, but this is less common than most people think.

The chronic strain of elevated blood pressure is displayed after many years in "end organs" — those most likely to be adversely influenced by the increased stress on the heart and blood vessels. These organs include the heart, the eyes, kidneys and brain. Examples of common complications of long standing uncontrolled hypertension are heart attack, heart failure, angina pectoris (chest pain due to coronary artery disease), kidney failure, stroke, and loss of vision due to changes in the circulation of the eye. Diabetes, obesity, and cigarette smoking can often accelerate some of these complications.

The only reliable way to find out if you have hypertension is to have your blood pressure checked periodically. The instrument used to measure blood pressure is called a sphygmomanometer. This provides two measures of the force of the blood against the artery wall. The upper measurement indicates the pressure exerted against the vessels when the heart is contracting. The lower measure shows the pressure between heart contractions. Even though blood pressure may vary slightly with age, an upper measure that is consistently over 140 and a lower measure consistently over 90 indicates a reason to be seen by your private physician for a complete workup. In some cases the doctor may wish to do studies which help exclude underlying conditions which could cause hypertension.

The treatment of hypertension is geared to decreasing the blood pressure. This may be achieved by diet (low salt in certain patients, and weight reduction if indicated), medication, or a combination of both. In most cases, early and effective treatment can prevent serious complications.

We will gladly take your blood pressure in the clinic (the best time to come is after 2 p.m. on Tuesdays through Fridays). If it is consistently elevated (3 or more high readings in a row), you will be referred to your private physician. We will then be glad to monitor your blood pressure by taking it on a regular basis, and help you follow any diet or regimen your doctor may have prescribed.

—Caroline Kramer, R.N.
Occupational Medicine Clinic

Rifle & Pistol Club

The pistol winter league was completed on May 26. Otto Jacobi took first place with 278, Nick Houvener came in second with 244, and Ed Elliott placed third with 237.

The rifle winter league is also completed. In competition in the Long Island Industrial League, they won 9 and lost 7. The top four averages were attained by Richard Witkover, 191.0; Warren Lukas, 186.9; Ron Lukas, 182.3; and Al Lukas, 182.2.

The pistol summer league will start on Wednesday nights as soon as the range work is finished. For more information, call Nick Houvener, Ext. 4068, or Otto Jacobi, Ext. 4406.

The trap season will run from June to October on Tuesdays, starting at 5:15 p.m. For more information contact Vincent Lettieri, Ext. 4092, or Otto Jacobi, Ext. 4406.

The next meeting of the Rifle & Pistol Club will be held on Wednesday, June 10 at 5:15 p.m. in the conference room of Bldg. 490. A nominating committee will be formed for election of new officers.

Cafeteria Menu

Week Ending June 12, 1981

Monday, June 8		
Cream of mushroom soup	(cup)	.55
	(bowl)	.65
Western omelet & hash browns		1.55
Salisbury steak & 1 veg.		1.60
Hot Deli - Grilled Reuben		1.60
Tuesday, June 9		
Beef barley soup	(cup)	.55
	(bowl)	.65
Sweet 'n' sour pork over rice		1.60
Chicken pattie parmesan & 1 veg.		1.55
Hot Deli - Baked Virginia ham	(on bread)	1.65
	(on roll)	1.75
Wednesday, June 10		
Mulligatawny soup	(cup)	.55
	(bowl)	.65
Fish & chips		1.60
Knockwurst & sauerkraut		1.60
Hot Deli - Sloppy Joe	(on bread)	1.55
	(on roll)	1.65
Thursday, June 11		
Minestrone soup	(cup)	.55
	(bowl)	.65
Turkey a la king		1.60
Stuffed pepper w/spaghetti		1.55
Hot Deli - 8-foot hero	(per inch)	.75
Friday, June 12		
Fish chowder	(cup)	.60
	(bowl)	.70
Breaded pork chops w/applesauce & 1 veg		1.65
Shrimp Sukiyaki on toasted Chinese noodles		1.65
Hot Deli - Fish fillet hero		1.65

Softball

Scores for Week of May 18:

League I
Ravens 17 — Phoubars 9
Blue Jays 14 — Six Pax 4

League II
Cardinals 8 — Roga 7
Big Sticks 17 — Deegenerates 8
AMD Bombers — Moles 6

League III
The Forties 12 — Nuke Powers 7
Ice Pops 8 — Lights Out 5
Dirty Sox 10 — Binary Bombers 9
Magnuts (won) — Medical (lost)
Electric Company — bye

League IV
E-Z Riders vs. Random Sample — game postponed
TNT 18 — Turkeys 4
Balls & Strikes 15 — Nads 7
Survivors 26 — Thrids 3

League V
No Names 10 — Who's On First 5
Underalls 13 — Source III 6
Molesters 10 — Solar Power 9
Mudville Sluggers 15 — Who Cares 4

Classified Advertisements

Autos & Auto Supplies

75 VW - Bug custom, am/fm radio, new upholstery, 55,000 mi, good cond, good gas mileage. $2,500. 929-4840.

72 VW - Square Back, new tires, brakes, front end, needs engine work. Asking $950. 757-5248.

70 PONTIAC - Catalina, good cond, new tires, am/fm cassette. Must sell. $875. Gail, 732-5919 after 5 p.m.

72 VW - Square Back, a/t, excel cond, many new parts, orig owner. Ron, Ext. 4449 or 751-8403 eves.

69 CHRYSLER - Newport, 4 dr, reg gas, orig owner. 475-4394.

77 YAMAHA - 360cc elec start, lug rack, blue, 7,500 mi, like new. $995. John, Ext. 4185 or 929-8204.

76 TOYOTA - Corolla deluxe, a/t, a/c, new radial tires, good cond. Asking $3,000. 475-6772.

80 CJ-7 JEEP - 14,000 mi, am/fm, rust-proofed, extras. Asking $7,300. David, 288-1232 after 4 p.m.

73 HONDA - CB350, lug rack. $600 or best offer. John, Ext. 3651.

80 TOYOTA - longbed w/camper-cap, wood paneled interior, excel cond. $6,950. 368-7046.

TIRES - (2) brand new, pro-racing, N50x15. $150 both or best offer. 924-0960.

79 TOYOTA - Celica, a/c, p/s, 5 spd, stereo. $5,800. Ext. 7785.

68 KARMIN GHIA - engine very good, body needs work. $450. 744-2552.

67 PONTIAC - Catalina, good running cond, needs some body work. $160. Glaister, Ext. 3354 or 475-3848.

CAR BODY - for 1970 Pinto. Rose, 727-0661 after 3 p.m.

22' AIR STREAM TRAILER - 1965, full rear bath, completely self contained. $2,850. 286-8912 eves.

72 CHEVY - good running cond, high mileage. $495. Jack, Ext. 3040.

76 GRANADA - immac cond, std trans, 24-28 mpg, economical. $2,550. Lou, Ext. 4615.

FRONT SEATS - VW square back or fastback, 1 pair, white. Gary, Ext. 7110 or 589-5490.

79 BUICK - wgn, a/c, p/s, p/b, sealed polyglycoat, stereo. Owner returning to Europe. $4,300. Peter, Ext. 2118.

74 SUPER BEETLE - orange, excel cond, a/t, am/fm radio, snows. Kathy, 281-5605.

AUTOMATIC TRANSMISSION - and rear end for 1970 Plymouth Valiant, $50 ea; welder 200 amp Dayton, $200; 8' pick-up bed 1972 Chevy, light blue. $150. John, TU-4-4136.

MOTORCYCLE WINDSHIELD - B&S shield, ¼" thick, chrome hardware, fits all bikes. $40. R. Hildenbrand, Ext. 3273.

66 BRONCO DRIVETRAIN - w/transfer case; 1976 Vega GT drivetrain, both running, 4 Vette wheels w/TA's. 473-2318 or 744-3968.

78 HONDA - 550K, excel cond, black, sissy bar, 13,500 mi. $1,600. 331-2715.

79 CHEVY - pick up, 10,800 mi, fiberglass cap, custom wheels, 305 cu in. Torbo 400. 924-8208.

CAR STEREO - new am/fm 8 track audiovox stereo. $55. Linda, Ext. 7187.

CAP - fiberglass, white for small Toyota/Datsun pickup truck, like new. Reasonable. Ralph, Ext. 2368 or 928-6654.

79 CHEVY - H.D. pickup, 4 w/d, power angle plow, stereo, extras, excel. $8,000. Ext. 5294.

TIRES - (4) mounted on C-10 Chevy pick up rims, LR70-15, Firestone steel belted radials, 7 ply. $130. Jim, 289-0876.

66 HARLEY - Electra glide, needs top end. $2,500. John, Ext. 3397.

TANDEM AXLE TRAILER - 12'x4' needs box added. $125. 363-6845 after 6 p.m.

71 PINTO - runabout, mechanically good, new tires. $275. Ext. 4188 or 363-5170.

73 PLYMOUTH - Satellite, needs some body work, running cond. $300. Barbara, 473-8060 after 6 p.m.

70 OLDS 88 - conv, needs rear window. $500. Carl Cantera, Ext. 2417.

75 TOYOTA - Corolla, 2 dr, 4 spd, radials, am/fm, reg gas, 30 mpg plus, good cond. $2,000. Mike, 732-5454.

74 NOVA - solid reliable car, a/c, p/s, p/b, 8 cyl, many new parts. $1,200. 929-3248.

71 MERCURY - Marquis Brougham, 2 dr, excel cond. $800. 581-7656.

HARLEY DAVIDSON - dresser accessories, fairing radio pack (O.S.), saddle bags, etc. $275. Dennis, Ext. 3533 or 654-2076.

75 CADILLAC - sedan, vinyl roof, leather interior, radials, am/fm, a/c, p/b, p/s, very good cond. $2,500. 929-4529.

72 DODGE VAN - good cond, a/t, maxi, power. $650. John, Ext. 3292 or Jeff, 286-1348.

TIRE - new Firestone 721 steel belted radial tire, size DR-78-14. Sam, Ext. 3453.

75 FORD F-250 CAMPER - Special Pickup truck w/10½' Hornet Camper slide-on. Self-contained. Many extras. $6,500. Will sell camper separately. 929-4840.

79 HONDA - Prelude, red, 5 spd, am/fm, elec sunroof, excell cond. $6,950. 368-7046.

Boats & Marine Supplies

16' THOMPSON - fiberglass 70 hp and 10 hp outboards, power winch and tilt, VHF, trailer C.B., extras. 821-0386.

16' 1968 LARSON - new Jell coat, full canvas, 135 hp Evinrude, excel cond. 289-1754.

14' SAILBOAT - "Flying Tern", 3 sails, trailer, extras. $900. 286-0259 after 5 p.m.

SMALL BOAT - 4 step boarding ladder, mahogany and chrome, $15; (2) folding fishing chairs, wood w/Lees bronze chrome plated gimbals. $30 ea. Lou, Ext. 4615.

16' TRI-HULL FIBERGLASS - Chris Craft, elec start, 75 hp trailer, gas tanks. $1,300. 744-2552.

16' MARK TWAIN BOAT - fiberglass, 85 hp Mercury eng, aluminum Cox's trailer, many extras. $1,800. Chris, 727-0092 after 7 p.m.

28' SAMURAI SLOOP - double planked, inboard. MJG. Sleeps 4, enclosed head galley, strong cruiser. Louttit, 744-3225.

18' GLASTRON - i/o new Merc outdrive, navy top, battery, trailer ready to go. Walter, 878-2175.

20' 1976 BAYLINER - i/o cubby cabin w/accessories, Cox trailer. $7,000. John, Ext. 3397 or LI1-4792.

Yard Sale

YARD SALE - Sat, June 6, 9 to 5 p.m. at Moriches School Annex, Montauk Hgwy, Moriches. Benefit for Boy Scout Troop 551, Mastic/Shirley.

YARD SALE - must move: furniture, small appl, Sun, June 14, 12 to 5 p.m., 937 South Country, Bellport.

YARD SALE - 2 families, June 6 and 7, 9 a.m. to 5 p.m., 8 Breston Dr W, Shirley, Ext. 3827.

LEAVING THE COUNTRY - color TV, small appl, bikes, games, children's clothing, Sat and Sun, June 6 and 7, Apt 10C Brookhaven Lab. Ext. 3106.

Miscellaneous

POOL FILTER - filter flow sand filter w/½ hp motor, excel cond. $50. Bob, Ext. 4551.

INDOOR/OUTDOOR - water fountain, stand, pump, flowers, stone, perfect cond. $130 or best offer. Diane, 878-1630.

PLAYPEN - folding metal frame, nylon netting, needs pad, $10; child pack, Gerry's baby carrier, alum frame, excel cond, $5; oscilloscope, surplus 1 MHZ Triggered sweep, works well. Alan, Ext. 2928 or 821-0761.

MAPLE SYRUP - from Vermont farm. $20 gal, $12 half. P. Wanderer, Ext. 7687, 744-1112.

DRESSER/CHEST - 5 drawer, good shape. 751-5539.

AURORA RACING CAR SET - hardly used, extra tracks, cars and car case. Paid $60. Asking $35. 744-8063 days.

COMPRESSOR - ¾ hp, 20 gal tank, $150; ⅜" Black and Decker air drill, $25. 369-1464 after 5 p.m.

BICYCLE - Ross girl's 3 spd, 20" racing handlebars, banana seat, excel cond. $40. 698-1560 after 6 p.m.

SCALLOPED BRICKS - (50) curved, 24", $2 ea; wind-up hose reel. $4. 281-7844.

MOWERS - (2) 18" power reel mower, Jacobsen, runs well, $25; 20" rotary power mower, runs well; $20. H. Sauter, Ext. 3783.

KITCHEN CABINET - w/butcher block, $35; 21" B&W TV w/cabinet, $85; cobbler bench, $75. 744-6063.

GIBSON GUITAR - good cond. $125. 878-1688 eves.

POOL - 4x24, filter, vac, ladder, needs liner. $50. U-Haul. 878-8933.

REFRIG - 17 cu ft, usable. Reasonable. 363-7032.

CALCULATOR - Unisonic Printing, $25; (2) pool filters, Hayward EC40, $35 ea; B&W 21" TV, $20. Ron, Ext. 4989 or 289-1003.

TRAYNOR SPEAKERS - in cabinet. Reasonable. Ext. 3688 or 363-7032.

TV - (2) 19" Admiral color, $150; B&W, $50; both excel, solid state. Jag, Ext. 5080 or 924-7025.

POOL FILTER - s/s sand for 12'-15' pool. $20. Frank, Ext. 2022.

GAS WELDING EQUIPMENT - various pieces. Ask for John, TU4-4136.

GERBILS - for adoption: (2) same sex, cute, good pets, no trouble. Lois, Ext. 2921 or 929-4753.

HORSE - Arabian gelding, 15½ hands, gray w/silver mane and tail, good disposition, full registry. $2,000. Chris, 727-0092 after 7 p.m.

BOWLING BAGS - brand new at wholesale prices. $12-$24. 473-2361.

BARBEQUE GRILL - charcoal, kettle type, Sears, w/cover, new cond. $30. Ext. 5274 or 281-2767.

RANGE - 27" GE drop-in, turquoise. $25. Glenn, Ext. 3336 or 472-1419.

AMPLIFIER - guitar amp, Gibson Les Paul, about 20 yrs old, excel. Ext. 7667 or 751-7692.

ANTIQUE SEWING MACHINE - w/mahogany cabinet, works, $50; Hotpoint elec range, turquoise, excel cond, $35. Dory, Ext. 3389.

REFRIG - GE, white, good, $75; queen size Englander bed, mattress, box springs, frame, like new, $100. 744-0262.

COMBO DESK FILE/CABINET - w/folding doors and shelf and power outlet. $90. Ext. 4727.

TV - 21" Admiral console B&W, contemp walnut cabinet, $50; air cond, Welbilt, 5,000 BTU, $50; bar-bell set, $20; TV 25" GE color console, wood cab, needs sound work, picture good. $100. 929-6148.

GOATS - registered Alpine Milkers, neat pets. 727-6475.

POOL LADDER - stainless steel, like new. $50. Jim, 289-0876.

SURFBOARD - 6'10" Swallowtail, very good cond. $70. Pat, Ext. 5385 or 589-2897.

HIGH CHAIR - $9; circular walker, $4; car seat, $6; hand push lawnmower, $10; old accordian, $35. 727-1617.

AIR COND - GE, 5,000 BTU, EER=7.5, used 4 wks; wooden storm windows, $3 ea or $15 all six. 472-1397.

PRE SCHOOL CHILDREN'S TOYS - toy rocking horse, almost new. 751-0508.

TV - 12" B&W. $45. 475-4394.

TYPEWRITER - IBM elec, $125; elec auto ant, $10. Paul, Ext. 4665 or 727-4859.

FREE - wooden storms and screens, (1) 36"x42½" (4) 36"x54½". Ext. 4846.

MATTRESS & BOX SPRING - twin size, good cond. Ext. 3642 or 929-6964.

GYM SET - rope climb, swing, rings, ladder. $25. Ext. 4846.

PILLOW FURNITURE - sofa, 8 ft, $200; chair, 40", $75; Butcher Block table, 36"x60", $190. 744-5161.

HERB PLANTS - parsley, sage, oregano, marjoram, marigolds, dill, summer savory, thyme, others. Can deliver. 924-0092.

SILVER TRUMPET - Olds Ambassador, excel cond. $225; Ambassador trombone, good, $110. Dick, 751-2655.

PROM GOWN - blue, size 9/10, $20; Kirby vacuum, complete w/all attachments, excel cond. $90. 744-2766.

POOL - children's steel wall pool, 10'd x 2'h, new liner & cover. $20. 286-2788 after 5 p.m.

PIANO - Straube studio, 37½" high, v.g. cond, $500. Carroll, Ext. 4396 or 924-5854.

CAMERA - 35mm Exacta Twin TL, 50mm, f 2.8 preset lens, 135mm f 2.8 auto lens, flash, case, strap, good cond. $200. Ext. 4184.

CARPET - never used, wall to wall, excel, w/thermo pad, Salmon-Pink, best offer. 12'x15' and 9'x11' area. Jim, Ext. 3501 or 751-0476.

POOL FILTER - 1/2 HP Sand filter w/backwash valve, in good cond. $50. Bob, Ext. 4551

STOVE - coal & wood burning, excel cond. $400. 581-7656.

RADIO - turntable; amplifier; some work, some do not, good for novice repairman. No charge. Ext. 2885.

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

CAMERA - Leica IIIf w/50mm & 90mm lenses, excel cond. Ext. 7727 or 929-4631.

POOL FILTER - Lomart DE 3/4 HP, s/s tank, new backwash w/instruction manuals. $45. Bill, Ext. 7698 or 732-9102.

VIOLIN - 3/4 size, hand-made, 60 yrs. old, beautiful tone, w/bow, case. $300. 744-3744.

KITCHEN TABLE - beige formica top & 4 chairs, upholstered seats & backs. $40 Ext. 3075 or 924-3581 after 5 p.m.

MARTINI SET - 6 glasses, stirrer, mixer, green w/gold trim. Pete, Ext. 4782 or 289-7218.

ELECTRIC RANGE - self cleaning, 30" Westinghouse, excel cond. Must sell. $75. 924-4323 after 6 p.m.

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

LAKE RONKONKOMA AREA - ranch, 2 bdrms, large kit, d/r, l/r, bath, att. garage, Florida rm, w/stove, full bsmt, alum. siding, 1/2 acre. $36,000. Ext. 2964.

N. SHIRLEY - custom built Colonial, 9 rms, more than 1/acre, garage, bsmt, din. w/fp, plus $10,000 cash over at 9½%, $29,000 mortg. left. 924-0960 anytime.

ROCKY POINT - Energy efficient, 3 bdrm ranch, featuring Surdiac coal stove, extra insulation, cabinet lined kitchen & quality woodwork thru out. Assume 8½ mortg, $337 pays all. $47,900. 744-0843.

SETAUKET - 5 bdrm Colonial, 2/3 acre, a/c, 2½ baths, fin. bsmt, darkroom, all appl., high assumable mortg, sprinklers, eik, den w/fp. $135,000. 751-7771.

MASTIC - 3 bdrm ranch, country kit, fenced 1/3 acre on corner, attached garage, full bsmt, brick/-cedar front, shed, near Forge River Marina. Assumable mortg. $39,000. 281-4371.

SHOREHAM - 2 story, 4 bdrm Clarendon Colonial, 2 baths, l/r w/fp, d/r, dinette, kit. & mud room w/2 stall garage on .45 acre corner lot. Deeded beach rights. 744-2766.

MASTIC BEACH — sprawling ranch on 1/2 acre, treed & fenced lot, l/r. d/r, eik, 3 bdrms, 2 baths, large den w/fp, 2 car garage, 2 zone heat and fully insulated. Assumable 7½% mortg. Many extras. $42,990. 281-1773.

For Rent

VERMONT CHALET - beautifully furn., stone fp, wkly rentals, woodland trails, pond & lake, swimming, boating, fishing, nearby Alpine Slide, Antiques, Music Festivals, etc. 757-5599 after 4 p.m.

NORTH SHIRLEY - 2 single rooms, 5 min. from Lab, $35/wk, no cooking facilities; with $45/week. 924-0960.

SHOREHAM - house in delightful, secluded wooded area w/5 minute walk to priv. beach, available for summer. Terms flexible, depending on rooms needed. 744-6804.

MIDDLE ISLAND - 6 mi. from Lab, 3 bdrms Condo, 5 appliances, central a/c, use of swimming pool, tennis, club house. Franz, Ext. 7103 or 744-3235.

POCONO'S CHALET - in priv. community, lake, tennis, summer recreation. Sleeps 5. $200 per week. 289-2159 after 6 p.m.

BERKSHIRES CHALET - 3 hrs. from NYC; 3 bdrms, 2 baths, fully equipped kit, elect. heat, deck w/spectacular view, near lake, hiking trails, 1/2 hr. from Tanglewood Theater (summer Stock) 929-6946 after 6 p.m.

CENTER MORICHES - 3½ rm apt, priv. ent, refrig, carpet, own zone htg. June 15 occupancy. $350/mo. pays all. 878-0480 after 5 p.m.

Wanted

TIRES - regular, G78-14 or F78-14. Lee, Ext. 7629 or 929-3023.

ANYONE INTERESTED - in class of '56 reunion, Seton Hall H.S. Call Rosemary Sangredolce Wittman at 472-1809.

HOUSEMATE - to share large house in Coram, avail. July 1st. $155/mo. plus share util. 928-8379 eves or Ext. 2521.

BABY CAR SEAT - good cond, reasonable. 581-1993.

GAS BOILER - and gas hot water heater, used or new. 924-0960.

RESOURCES - information swapping, Scout leaders-Trip leaders. Any kind. John, Ext. 4243 or Dennis, Ext. 4273..

OUTBOARD ENGINE - 7/10 HP, long shaft. Joe, Ext. 7961 or 727-2470 eves.

BABYSITTER - on site, children ages 5, 3 and 7 mo. Work-days. Dan, Ext. 3631.

ASSAMESE - speaking Indian. Contact Dennis, Ext. 4259.

DEHUMIDIFIER - in good cond. Kathleen, Ext. 4216.

ENGLISH RIDING BOOTS - childs size #3. Mike C. Ext. 3254 or 473-8762.

SIAMESE KITTEN - seal or chocolate point. T. Morris, 744-5096.

RADIO SHACK MODEL II - Owners/Users to exchange ideas. Jim, Ext. 4476.

ENGLISH TUTOR - to help improve conversational English, for a Greek native who is an engineer w/interests in Science, Sociology, Lit., Arts & Sports. Ext. 2830.

BOAT - 14' or 15'. 298-4089.

JOINTER - Planer 6", reasonably priced, repairable cond. Paul, Ext. 4665 or 727-4859.

HOUSEMATE - to share house in Lake Panamoka, priv. bdrm, lake priv. $225/mo. + Sec. 929-4789 after 5 p.m.

1971 FORD OWNERS MANUAL - Ed. Ext. 2434.

HOUSE TO RENT - 3-4 bdrms for 1 yr. beginning Sept. Visiting Scientist & family. Ext. 3786.

FISH TANK - 10 gal. Need not be leak-proof. Kelly, 744-3069.

REFRIG - in good working order. Ext. 5334 or 928-3653.

HOUSE TO RENT - Brookhaven/Bellport/E. Patchogue area; 3/4 bdrms, needed immediately. Fred, Ext. 3521 or 286-1688.

PEREGO - folding stroller, Deluxe model w/swivel wheels, good cond. Pete, Ext. 4782 or 289-7218.

TENTS - (2) ea. 3-4 person, light weight. Joe, Ext. 4630.

PLAY GROUP - playmate for 4 yr. old boy or babysit for 4 yr. old, Mastic Beach area. 281-1773.

70-71 CHEVE - p/u shortbed, std shift on floor, fleetside, reasonable cond and price. Greg, 727-2861 after 5 p.m.

VENDORS - for church flea market, June 13, Exit 70, LIE, Manorville (Rain Date, June 20), $4/space. 727-1617 or 878-8004.

Lost & Found

LOST - baseball mitt, field #4, Wed. 5/27. Richie or contact the Magnuts. Ext. 7638.

Car Pools

PORT JEFF STATION - start car pool, near Nesconset and Old Town Rd. Rob, Ext. 3449.

SOUND BEACH AREA - existing car pool needs one more member. Ann, Ext. 4959.

PORT JEFF STATION — join existing or form a new one. 8:30 to 5:00. Ron, Ext. 3238.

FROM PATCHOGUE VIA BELLPORT - 9 yr. old car pool, on-time, has vacancy for paying rider. Alyce, Ext. 5203.

MATTITUCK - have car wishing to join car pool. Bill Stars, Ext. 4278 or 298-9648 eves.

BABYLON/W. ISLIP - driver needed for on-time car pool. 8:30 to 5:00. Ext. 3284.

STONY BROOK/STRATHMORE - want to join a car pool. Jag, Ext. 5080/2901.

CORAM/BROOKWOOD APTS. - paying rider looking for transp. daily 8:30 to 5:00. Bill Frank, 732-8216 or Ext. 4428.

W. BABYLON/MUNCIE AVE. - drivers needed for existing car pool. Tom, Ext. 3320.

STONY BROOK UNIV. - summer student needs ride to BNL, leave message at 246-6759 or 246-6251.

QUEENS - 2 additional members needed to complete van pool. Knight, Ext. 5281.

Services

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

HOUSE PAINTING - Interior/exterior, professional, quality materials, insured. Bob, 289-7657 after 6 p.m.

WEDDING PHOTOGRAPHER - experienced, complete coverage. Rick, Ext. 2012 or 467-1090.

SANDBLASTING - chassis trailers, any kind equipment, metals, boxes. Reasonable rates. 744-3968 after 4 p.m.

BABYSITTER - Mother w/2 small children willing to babysit. Lots of TLC. Mary, 399-6128.

DOG OBEDIENCE CLASSES - Start June 9, six (6) weeks. $45. fee. Pet Behaviour Consultants, Shirley. 399-3882.

SIGHT SEEING FLIGHTS - aerial photogr., Long Island, Conn., New York, modern all weather aircraft. 929-6148 day or eves.

TUTOR - High School, intro. college Math & Sciences, reasonable rates. 271-1720 eves.

HOUSE SITTING - free, reliable, caring, any duration. J. Allentuck, Ext. 2412.

ASPHALT PAVING - and sealing. Bob, 475-4383.

DISCOUNT CUSTOM ACCESSORIES - economy, perfomance parts for auto, truck, van. Guaranteed lowest prices. Hans, 281-5563.

FIRESIDE CHIMNEY SWEEPS - fireplaces, wood, coal & oil flues, dustless removal. Insured. Lab discount. Bill, 584-6425.

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

PROFESSIONAL TYPING - Debbie, 727-5475.

AUTO REFINISHING - all areas of body work performed. Reasonable rates. Bob, 744-4047.

HAND CANE - and fiber rush. Reasonable rates. Jim, Ext. 5025 or 821-1704 after 5 p.m.

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