BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Fishing for Solar Neutrinos

Keen fishermen spend hours in lurching boats at sea or casting carefully tied flies over pools near muddy river banks. Successful or not, they come to try their luck again before the next dawn. With all the patience of dedicated fishermen, Gerhart Friedlander, Keith Rowley, Raymond Stoenner, Chemistry Department, and Joseph Weneser, Physics, have been planning their own fishing expedition for some years.

These scientists' "kettle of fish" will be deep inside a mountain in Italy. The catch they'll be after is solar neutrinos — tiny, neutral particles from the core of the sun. This requires a preparation at once vast in scale — because the neutrinos penetrate matter with so little interaction that a large detector is required for an observable effect — yet meticulous in the tiniest detail — because very few events are expected.

To land this elusive catch is the purpose of the European GALLEX Collaboration, an experiment with West German, Italian, French and American participation. GALLEX stands for "gallium experiment," because, in this study, neutrinos will be observed in 30 tons of the element gallium.

The Gallium Experiment

About 15,000 gallons of gallium trichloride solution will be contained in a gigantic, plastic-lined tank inside the Gran Sasso road tunnel in the Italian Abruzzi mountains. The tunnel is deep enough to shield the experiment from cosmic ray interference and contains an underground laboratory, set up when the tunnel was being built. A small number of the neutrinos that pass through the tank will induce a nuclear reaction that will convert a few atoms of gallium-71 to germanium-71 (^{71}Ge), which is radioactive, with a half-life of about 11 days.

In the chemistry procedure, which the BNL team developed and tested at Brookhaven, a small amount of germanium is added to the tank, and germanium tetrachloride is swept out of the gallium trichloride solution by a stream of air. This is chemically purified and converted to germanium hydride. The germanium hydride, containing ^{71}Ge formed in the neutrino reaction, is introduced into a tiny proportional counter. The ^{71}Ge decays, and, through electron capture, the decay rate shows the amount of ^{71}Ge present and thus the number of neutrino-induced reactions.

Neutrino counting will start in 1989, when enough gallium will be available. Germanium will be removed every two to three weeks, and each sample will only contain between five and 15 atoms of the isotope to be measured. So four years is the minimum running time to give statistically valid results.

Solar Neutrino Puzzle

These results may help solve what has come to be known as the "solar neutrino puzzle." What is the history of the puzzle, and how can the gallium experiment solve it?

In 1967, in the heart of the Homestake gold mine in South Dakota, a long-term experiment began. Led by Ray Davis, who has been associated with the University of Pennsylvania since his retirement from BNL's Chemistry Department, the experiment was the first successful attempt to count solar neutrinos. But only about a third of the neutrinos expected by the standard solar model were observed.

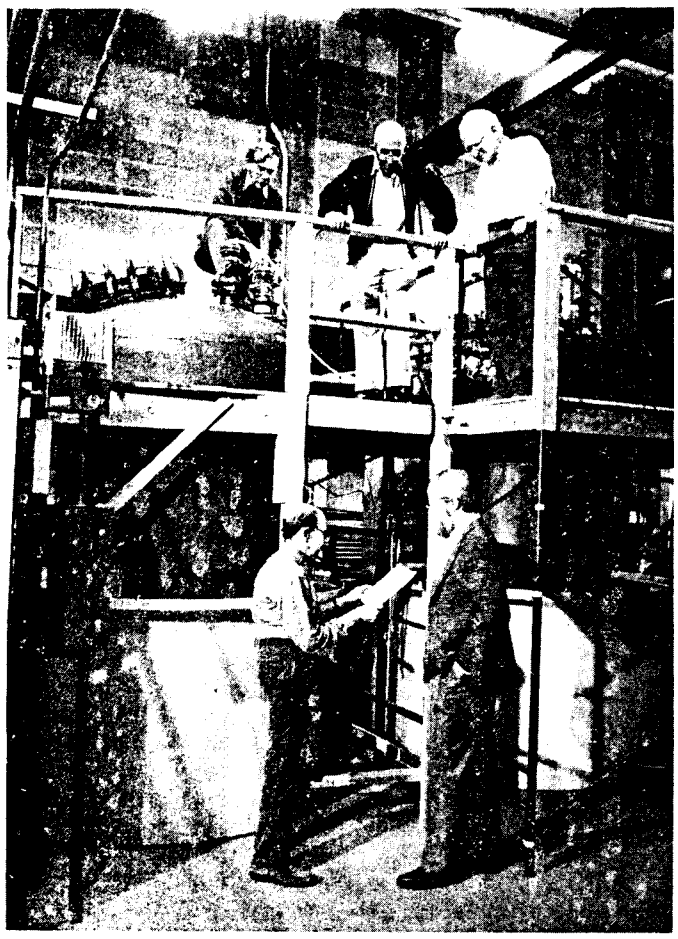
The low results of the Davis experiment could mean either that the missing neutrinos are produced in the sun but do not reach the earth, or that neutrinos are not produced in the predicted intensity.

The first of these explanations would imply a revolutionary concept in particle physics, that neutrinos have unknown properties enabling them to be transformed into other forms. Friedlander said that the other possibility, that the existing theory of the sun's composition and behavior must be revised to account for reduced neutrino production, has had astrophysicists squirming.

"In fact," remembered Friedlander, "Martin Schwarzschild, a renowned astrophysicist at Princeton, used to tell his students in a course on stellar evolution that if Davis's chlorine experiment were correct, the rest of the course was all wrong."

Can the cause of the discrepancy be determined? A key point is that the chlorine experiment was sensitive only to the high energy neutrinos produced in a rare branch of the thermonuclear reaction cycle in the sun, and the intensity of this rare branch is very sensitive to the solar model details. On the other hand, the intensity of the low energy neutrinos from the main energy-producing reaction in the sun is independent of such details and can be fairly well predicted just from the observed luminosity of the sun. Thus, explained Fried-

(Continued on page 2)



Mort Rosen

Standing at the gallium chloride tanks used in pilot studies in the basement of the Chemistry Bldg. are (top, from left) Keith Rowley, Raymond Stoenner, Gerhart Friedlander and (bottom, from left) Joseph Weneser and Anthony Baltz.

News Flash!

The 200-milliampere (mA) current barrier was broken for the first time in the x-ray ring at the National Synchrotron Light Source (NSLS). This occurred on Thursday, January 8, at 8 p.m., during regular operations when Operator Wickham Case was at the controls. Safety Coordinator Steven Kemp was witness to the barrier-breaking feat.

The x-ray ring now is filled regularly to more than 200 mA, at a stored electron energy of 2.52 billion electron volts. The previous high current was 191 mA, and the ring had been operating at an average of 160 mA.

"We had been edging toward the 200 mA barrier of operation beam for about a year," says NSLS Electrical Systems & Operations Section Head Richard Heese. According to Heese, the crucial step taken to achieve this goal was changing a frequency in the radio frequency cavities, thereby eliminating instability in the beam during acceleration that had previously caused it to crash into the x-ray ring walls.

"I would like to commend the NSLS staff for all their hard work on this machine," adds Heese, "and I can say all of us are looking forward to breaking 300 mA."

Says NSLS Department Chairman Michael Knotek, "This is one more important milestone in the continued improvement of the performance and reliability of the Light Source, and it will offer new opportunities to our user community."

BNL Lecture: SDI at Brookhaven

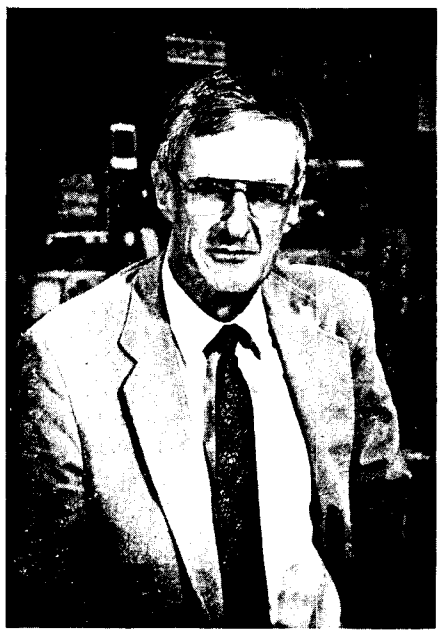
Since President Ronald Reagan proposed the Strategic Defense Initiative (SDI) in 1983, both industry and national laboratories have been working towards converting the idea into reality. While most of the work developing the technology for SDI is being carried out at other laboratories, Brookhaven is addressing basic physics issues, utilizing existing facilities to assess the feasibility of some concepts.

Heading BNL's effort in the Department of Nuclear Energy (DNE) is Pierre Grand. As the speaker for the 231st Brookhaven Lecture, he will discuss this effort in a talk entitled "SDI at Brookhaven: The Neutral Particle Beam Program." The lecture will begin at 4:30 p.m., on Wednesday, January 21, in Berkner Hall.

BNL's SDI-related research program was initiated in January 1984 and became a reality in July 1985, when ground was broken for the Radiation Effects Facility (REF) at the 200-million-electron-volt (MeV) linear accelerator (linac). Primarily, the linac is used as an injector for the Alternating Gradient Synchrotron, but excess particles are produced in this process. For many years, these have been used by two facilities that produce radionuclides for medical users, industry and research. Since the REF facility came on line in May 1986, these surplus particles have also helped researchers determine the radiation response of various materials to high energy particles (200-MeV protons).

In June 1986, a ground-breaking ceremony marked the start of construction for the Neutral Beam Test Facility (NBTF), which will also make use of the Linac's negatively charged hydrogen (H^-) beam in the development and testing of H^- neutralizers and neutral beam sensing and control devices. Together, the REF and NBTF make up the Neutral Particle Beam Program, headed by Grand.

In his talk, Grand will describe these new facilities and related experimental programs and discuss how BNL's work relates to the SDI program. "Ninety percent of the nation's SDI-NPB (neutral particle beam) technological development work is being done by Los Alamos National Laboratory," Grand says. "At BNL, we are addressing basic physics issues to determine the feasibility and potential of the NPB concept."



Mort Rosen

Pierre Grand

Pierre Grand earned his Diploma in Engineering in 1954, at the Federal Polytechnic School of Lausanne, Switzerland. His familiarity with the 200-MeV linac dates back to 1964, when he first came to BNL to participate in its design and construction. From 1964 to 1972, Grand was associated with the Accelerator Department. Returning to the Laboratory after a three-year leave at CERN (1972-1974), he became interested in applying accelerator technology to energy-related issues and joined DNE (formerly the Department of Applied Science).

All those interested in getting together with the lecturer are invited to join a group going to a restaurant off site. Anyone who would like to part of this group should call Tony Romano, Ext. 4024.

Houses for Homesteaders

According to the mortgage broker's rule of thumb, a family can afford a house costing 2½ times its annual income. Therefore, a family of four whose income is $15,000 per year can afford a $37,500 house. However, if that family of four lives on Long Island, where the median single-family home costs $167,000 — the highest median price in the U.S. — they can't afford a house. No decent housing exists at that price.

To provide housing for Suffolk County residents who can't afford houses on their own is the goal of Habitat for Humanity of Suffolk, which was formed in November 1985 and whose president is Ken Batchelor, a senior physicist at the National Synchrotron Light Source (NSLS). This group became affiliated as one of the 135 U.S. and 42 overseas chapters of the nonprofit, Christian organization Habitat for Humanity, in March 1986.

Habitat was founded ten years ago by Millard Fuller, a lawyer and businessman from Americus, Georgia, who believes that by sharing labor, materials, capital and love, the basic need of all people for decent shelter can be met. The organization was brought to national attention by former President Jimmy Carter of Plains, Georgia; he and former First Lady Rosalynn Carter have worked on several Habitat projects, including one in New York City.

The idea for a Suffolk County chapter of Habitat came partly as a result of a peace-and-justice conference in February 1985 at the Mt. Sinai Congregational United Church of Christ, to which Batchelor belongs. Rob DeRocker, director of Habitat for Humanity in New York City, was an exhibitor at this meeting and was invited to address members of the Mt. Sinai church at that time. Batchelor and his fellow Faith Construction Company workers thought it was a good idea to volunteer their labor on a Habitat project in the city — and to form a Habitat chapter on Long Island.

The all-volunteer Faith Construction Company, made up of skilled tradesmen, as well as other do-it-yourselfers like Batchelor, used to work on the church itself. As the congregation now raises enough funds to pay professionals to do the work, Faith Construction instead organizes work parties to perform maintenance, repairs and improvements on homes of the needy within their community. "It is a way to have the fellowship of a work party and do something useful at the same time," explains Batchelor.

Faith Construction is one of the work crews Habitat of Suffolk will call upon after it has secured a piece of property. "We are looking for a house to rehabilitate or property on which to build in Suffolk County," explains Batchelor. "We have petitioned the County Legislature to take title of an abandoned house on property in Gordon Heights. It will cost about $30-40 thousand to build from scratch or to rebuild — and it is a toss-up with that house." Habitat of Suffolk is considering other sites as well.

Habitat can build so inexpensively because it employs volunteer laborers and much of the building material is donated. Tax-deductible contributions are used to finance construction and to provide no-interest mortages for the family of "homesteaders" who will occupy a Habitat house. Once selected as a Habitat homesteader, a family is expected to labor alongside other project volunteers and to put work into another Habitat project.

"Working in Habitat, we enjoy fellowship not only with members of our church, but also with the homesteaders," explains Batchelor. "We establish friendships that will not disappear once the construction is completed."

To be selected as a Habitat homesteader, a family presently must be living in substandard housing. Also, the family must not be able to qualify for a conventional mortgage, but have some income to pay back Habitat's interest-free mortage. "Families do not have to be Christian or religious to be considered by Habitat — the family selection board is primarily made up of Christians who care, but it does not discriminate against or try to convert anyone," states Batchelor.

Though it is a Christian organization, membership in Habitat of Humanity of Suffolk County is open to anyone who wishes to work on a project or on a committee. Lynn Kelly, NSLS, is the secretary of Suffolk Habitat, and her husband Michael Kelly, NSLS, is an active member of the Faith Construction Company. As well, Gaylord Wall, Safety & Environmental Protection Division, is a Habitat of Suffolk board member.

With each home rehabilitated or built in Suffolk County, one will be built overseas as a result. Explains Batchelor, "We tithe for each project, and, as an average house in the third world costs 10% of what our homes do, a home can be built in, for example, Peru, Haiti or Nicaragua for each project we complete.

"We see the need for Habitat growing in the next years as more people become unable to afford housing in Suffolk County," observes Batchelor. "Because our church has responded to other basic human needs, I see Habitat of Suffolk as just a natural extension of our efforts to help people in need." — Marsha Belford

Ken Batchelor (left) with Millard Fuller (right), Habitat of Humanity founder, and former President Jimmy Carter, a Habitat board member, at a semi-annual meeting in Chicago last April.

Michael Kelly working at a Habitat for Humanity project at 742 East Sixth Street in New York City.

BNL's Fabulous Forty

House-raising for those less fortunate is not a new good deed for BNL employees. Twice in 1949, Lab staffers labored together in their spare time to complete houses for unfortunate coworkers and, in the words of The Bulletin Board of September 6, 1949, to demonstrate "the fact that the mile [sic] of human kindness has not vanished from the earth."

Staff members invested over 2,000 hours of free labor to build a new house on Woodycrest Drive, Farmingville, for George Sabine, a Laboratory patrolman whose home had been completely destroyed by fire one night around Christmas 1948.

According to Budd Pollack, a member of the employee committee that organized the house-raising, Sabine had very little insurance on the old house, but collected enough to pay for the lumber for a new one. The committee put out its first call for volunteer house builders in The Bulletin Board of January 5, 1949.

Week by week, the progress of the house-raising was noted in the Lab paper, as were the participation of individual Lab employees and the donations of building materials and services by local businesses. Supervised by George Wagner, construction began the weekend of February 7-8, with the pouring of the foundation, and the three-bedroom ranch was turned over to the Sabines at the end of that March.

Working mostly on the weekends, about 50 staff members made up the crews, including the following who are now retirees: Charles Boulin, John Craig, Harold Euler, Lee Gemmell, Fred Gillespie, Edwin Hagelberg, James Hallock, William Higinbotham, Harvey McChesney, Pollack, Jay Rowland Jr. and Wagner.

Remembers Pollack, "Everybody pitched in — no one questioned the jobs they were assigned, everyone did whatever task needed to be done — even digging the septic system. We were all good sports because we knew we were doing a good deed."

Work parties were again assembled at the end of that August through September to finish the house of Mrs. George Brewer Jr. and her two small daughters. George Brewer had been a BNL electronics engineer, who died of polio before completing the renovation of an old house he had purchased in Babylon. In addition to some of the above-mentioned retirees, those who turned out to work on this house also included Stanley MacCormack and Casimir Nawrocki.

Neutrinos (Cont'd)

lander, an experiment to measure low energy neutrinos seems imperative. That's where gallium comes in — as a low energy neutrino detector.

Getting the Gallium

A gallium solar neutrino experiment was first suggested over 20 years ago by V.A. Kuzmin in the Soviet Union. But it became practical only in the late 1970's, when gallium, previously a laboratory curiosity, began to be used commercially as gallium arsenide in the electronics industry. Then, groups in the Soviet Union and at BNL developed detectors. The BNL team, in collaboration with the Max Planck Institute for Nuclear Physics in Heidelberg, West Germany, developed and tested the gallium chloride system. By 1981, all that remained was to find approximately $15 million to buy the gallium.

This proved more difficult than was originally hoped. Eventually, the German partners formed the European GALLEX Collaboration and obtained funding for an experiment in the Gran Sasso Tunnel. Recently, BNL joined this effort, with primary responsibility for some of the chemical processes and analytical techniques. The team will be led by Richard Hahn from Oak Ridge National Laboratory, who is expected at Brookhaven in February.

Meanwhile, the Soviet team is preparing an experiment in a tunnel in the Caucasus with at least 60 tons of gallium metal. The technique they will use for extracting germanium from the metal was also developed at BNL.

Fishing for Answers

Originally, Friedlander said, the gallium experiment was to give a clearcut answer to the solar neutrino puzzle. A low result of about one-third the solar model prediction, would mean that the low energy neutrinos, like the high energy ones detected in the Davis experiment, are depleted. This would signal some neutrino disappearance or transformation phenomenon. A high result, on the other hand, would put the blame for the Davis experiment deficit on the solar model.

More recently, however, it has been realized that neutrinos could be transformed during transit through the sun, as well as on their journey to earth. A low result of the gallium experiment would still point to some transformation mechanism (either in the sun or on the way to earth). A high result (at least 60% of the standard model prediction), however, would be inconclusive. It would indicate either problems with the solar model or matter-induced neutrino transformations affecting the high energy, but not the low energy, neutrinos.

Said Friedlander, "As a nuclear chemist, I am fascinated by this experiment. Not only because of the important information it will provide, but also because of the almost incredible sensitivity and power of the chemical technique. Think of it: We can really fish a few atoms of one element out of tons of another and measure them quantitatively!"

— Liz Seubert

Mort Rosen

Members of the Department of Applied Science (DAS) who recently observed BNL anniversaries were guests at a reception on December 18, hosted by DAS Chairman Bernard Manowitz. The celebrants include: (seated from left) Richard Sapienza, Lois Arns, Joan Slavinsky, Bob Wieser, Judy Bonaduce; (standing from left) Gunnar Senum, Harry Munkelwitz, Barry Gordon, Bob Jones, Manowitz, Ron Webster, Lola Kopp and Allen Goland. Absent from the picture is Michael Rowe.

Notice

The Laboratory will be closed this year on Monday, January 19, in observance of the birthday of Martin Luther King Jr.

PSI News

Judge Ernest L. Signorelli of the Surrogate's Court of Suffolk County will be the guest speaker at the next monthly meeting of Professional Secretaries International. His talk on "Estate Planning" will be held on Tuesday, January 20, at 6 p.m., in Berkner Hall, Room C.

On-Site Courses

Dowling College

The last day to register for Dowling's on-site courses for the spring semester is Thursday, January 22, from 11:30 a.m. to 2 p.m. in Berkner Hall.

Suffolk County Community College (SCCC)

There is still time to register for the on-site courses offered by SCCC. For more information, call Pat Knisely, Ext. 7631.

ANS Meeting

Herbert Kouts, Chairman of the Department of Nuclear Energy, will speak about "Lessons from the Chernobyl-4 Accident," at the next meeting of the Long Island Section of the American Nuclear Society. The dinner meeting will be held on Wednesday, January 21, at the Bavarian Inn, 422 Smithtown Road, Lake Ronkonkoma. Kouts will speak at 8 p.m., following cocktails at 6 and a buffet dinner at 7. The cost is $14 per person for L.I. Section members and spouses and $16 per person for other attendees. For reservations, call April Donegain, Ext. 4425.

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Limo Discount

In response to a suggestion by Joseph Levesque, Safety & Environmental Protection Division, BNL has arranged that, on a trial basis, Winston Limo will give a 10% discount for the regular door-to-door service to BNL employees on official Laboratory business. To obtain this savings, it will be necessary to submit a discount coupon to the limousine driver. Therefore, effective immediately, the discount coupons will be given to travelers along with official Laboratory business tickets.

WIS Meeting

If you missed their Lab-wide briefing on the 1986 Tax Reform Act, you have another opportunity to hear Frank Federmann, AUI's Chief Internal Auditor, and Barney McAlary, BNL's Fiscal Officer, speak on the new law and its implications for BNL employees. They will address this topic at the next Brookhaven Women in Science after-work meeting on Wednesday, January 21, at 5:15 p.m. in Room B, Berkner Hall. All are invited.

Group Meeting: DEC Local Users

The Digital Equipment Corporation (DEC), Upton Local Users Group will meet on Wednesday, January 21, at 11 a.m., in Room B, Berkner Hall. There will be a presentation of DEC's Code and Module Management Systems (CMS and MMS), followed by a general question-and-answer session.

Equipment Demo

Representatives of Twin Forks Office Products, Riverhead, will demonstrate new typewriters from Panasonic and the latest in Mita copiers, on Thursday, January 22, from 11 a.m. to 2 p.m. in Berkner Hall.

Arrivals & Departures

Arrivals

Roy J. Butler ..... Plant Eng.
James A. Caufield ..... NSLS
Imtiaz K. Madni ..... DNE
Haim Hacham ..... Biology
Joseph A. Paolini ..... Plant Eng.
Krzysztof Polewski ..... Biology

Departures

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

Richard J. Chester ..... Con. & Proc.
Avraham Gover ..... NSLS
Beatrice E. Holle ..... Plant Eng.
Susan H. Shannon ..... Sfgrds. & Sec.
James J. Shields ..... Cent. Shops

BERA News

Theater Group

The next meeting of the BERA Theater Group will be on Wednesday, January 21, at 8 p.m. in the North Room of the Brookhaven Center. The evening will be devoted to readings from one-act plays, which guarantees that everyone, newcomers and experienced alike, will have the opportunity to read a part or two. All are welcome.

Swim Meet

The Swim Club is sponsoring a BNL Swim Meet at the pool on Saturday, January 24, from 11 a.m. to 1 p.m. All adult BERA members are invited to compete. Come set 33.3-yard pool records for your age group in any of the 17 events and beat the BNL pool records last established in 1947. For a schedule of events and entry information, pick up a swim meet notice at the pool or call Marsha Belford, Ext. 5053.

Swim Club

A practice will be held on Thursday, January 22, at 5:15 p.m. at the BNL pool — it will be a good warm up before the BNL Swim Meet on Saturday, January 24. All those who can swim two laps of the pool without stopping using the crawl stroke are invited to attend. For more information, call Marsha Belford, Ext. 5053, or Peter Heotis, Ext. 2304.

Cooking Exchange

Members of the Cooking Exchange will demonstrate Argentinian cookery at a meeting on Wednesday, January 21. Featured on the menu will be meat pastries, onion pie and unusual, delicious desserts.

Meetings are normally held in the Recreation Building on the second and fourth Wednesday of each month, from 12:30 to 2:30 p.m. A small donation of $1.50 entitles those present to a copy of the day's recipes, samples of the prepared dishes and coffee or tea. Babysitting is provided at 50¢ for each child. For more information, call Noemi Katz, Ext. 3073.

Volleyball

Standings — Week of January 5

League I	
Upfagrabs	20-4
Dinkers	19-5
Xrayted	12-12
Phoubars	10-14
Net Results	6-18
Bumpers	5-19
League II	
Nuts & Bolts	17-4
TNT	15-6
Cannonballs	14-7
Fossils	14-7
Chunga's Revenge	8-13
Upton Ups	3-15
Misfits	1-20
League III	
Floaters	15-6
Foul Ups	13-8
Printouts	12-9
Screwballs	11-10
Sourcerers	9-9
Not Yets	7-14
Odd Couples	5-16
Open League	
Phoenix	21-3
Dakota	20-4
Odds & Sods	16-8
Court Jesters	14-10
Rowdy Radicals	10-14
Target	9-15
Duituits	4-20
Out of Control	2-22

BERA Board Appoints Nominating Committee

The BERA Executive Board announces the appointment of nominating committee members for the 1987 BERA Election. The function of the committee is to select a slate of candidates for the annual election, which will take place during the week of March 16 through 20. Members include:

	Ext.
April Donegain	4425
Mickey Haller	7908
Carl Jacobs	2244
Robert Marascia	4672
Joseph Mayeski	2575
William Medeiros	2665
George Oldham	7672
Jean Ramirez	2119
Sharon Smith	3995
Edward Sperry IV	2697

Any employee who wishes to propose a name for nomination may do so by contacting a member of the nominating committee by Wednesday, January 28. Please make certain the person being proposed will agree to accept the nomination if selected by the committee.

Aviation Club

The Aviation Club is hosting an FAA-AOPA seminar on Thursday, January 29, at 7 p.m., in Berkner Hall. Topics such as "See and Avoid" will be discussed. Everyone is welcome to come and learn more about this important issue. Admission is free.

Note to Diners

The Cafeteria will be closed on Saturday, January 17. On that day, snack bar service will be available from 9 a.m. to 2 p.m. at the Brookhaven Center.

The Cafeteria will be open only for snack bar service from 9 a.m. until 2 p.m. on Sunday and Monday, January 18 and 19.

The Center Club will be closed on Sunday, January 18, the day preceding the observance of Martin Luther King Jr.'s birthday. However, it will be open on Monday evening, January 19, at 5 p.m.

The vended food service in Building 912 will be in operation continuously.

Cafeteria Menu

Week of January 19

Monday, January 19
Martin Luther King Jr. Day
Snack Bar Service: 9 a.m.-2 p.m.

Tuesday, January 20

Southern beef vegetable soup	(cup)	.75
	(bowl)	.90
Swiss steak jardinière w/1 veg.		2.60
Quiche Lorraine w/1 veg. (lite-weight)		2.55
Hot deli: Turkey melt		2.50

Wednesday, January 21

Cream of tomato soup	(cup)	.75
	(bowl)	.90
Baked Italian ziti w/garlic bread		2.60
Cantonese pineapple pork over rice		2.70
Tortellini salad plate (lite-weight)		2.35
Hot deli: Italian meatball hero		2.60

Thursday, January 22

Beef barley soup	(cup)	.75
	(bowl)	.90
Chicken breast teriyaki w/1 veg.		2.65
Polish sausage & sauerkraut w/1 veg.		2.75
Hot vegetable plate (lite-weight)		2.25
Hot deli: Corned beef	(bread)	2.45
	(roll)	2.60
	(hero)	2.65

Friday, January 23

New England clam chowder	(cup)	.75
	(bowl)	.90
Broiled fish w/1 veg. (lite-weight)		2.85
Turkey à la king w/biscuit		2.65
Hot deli: Roast beef	(bread)	2.55
	(roll)	2.70
	(hero)	2.75

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 and/or appropriate bargaining unit, 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 Employment Manager, Ext. 2882.

THE VACANCIES LISTED BELOW HAVE BEEN EXEMPTED BY THE DIRECTOR'S OFFICE FROM THE CURRENT FREEZE ON OPEN REQUISITIONS.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees only.

2523. HELPER A - Under general supervision performs a variety of tasks in Central Shops. Requires knowledge in that trade, although not that of a craft person. Duties will include handling minor assignments and assisting craft people in more complex assignments. A valid driver's license is required. Central Shops Division.

2524. ADMINISTRATIVE POSITION - Requires AAS or equivalent experience and a thorough knowledge of Laboratory systems and procedures. Must have experience with MIS data entry/inquiry systems and foresight modeling. Knowledge of word processing, data base and spread sheet packages for the IBM PC is also required. Accelerator Development Department.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2525. ENGINEERING POSITION (2) - Requires BSME or equivalent and a minimum of 5 years' pertinent experience. Requires familiarity with mechanical design, shop fabrication practices, mechanical measurements, and alignment techniques. Experience with vacuum systems, high voltage rf systems and ion beam diagnostic hardware is desirable. Accelerator Development Department.

2526. ENGINEERING POSITION - Requires advanced EE degree and a broad background in power amplifier design, beam coupled feedback systems and high power rf cavity design. Will be responsible for design of AGS Booster rf systems. Accelerator Development Department.

Autos & Auto Supplies

79 TOYOTA COROLLA - wagon, 5 spd., rebuilt carb., good rubber, $1,000 neg. 399-2531 after 6 p.m.

67 CHRYSLER - convert., 383 V8, a/t, p/w, p/b, p/s, new top & seats. Tony, 698-9274.

83 MERCURY LYNX LS - 4 dr., htchbk, a/c, a/t, p/s, p/b, cass. stereo, excel., $3,600. Tony, 269-9510.

80 DATSUN 200SX - htchbk, a/t, black, stereo, sunroof, $1,800. 928-4069, eves.

OLDSMOBILE - Delta 88, diesel, good cond. Dave, Ext. 7921.

82 PLYMOUTH CHAMP - low miles, excel. in & out, must sell. 363-7032.

70 VOLVO - 4 cyl., 2 dr., a/t, p/b, am/fm cass., new exhaust, very good cond., runs well, $900 neg. Paul, 273-6796.

78 COUGAR XR-7 - 351, excel. cond., blue, am/fm cass., a/c, new tires, $2,300. Bert, Ext. 2050.

77 CHEVETTE - 3 dr., 5 spd., new parts, 32 mpg, $500 neg; 73 Datsun, 5 spd., 35 mpg., $400, both run well. Voytek, Ext. 2229 or 3220, eves.

81 ESCORT - htchbk, a/t, a/c, am/fm stereo deck, excel. running cond., $1,800. Vic, Ext. 2173.

84 MAZDA B2000 - SE-5 w/cap, 5 spd., 10k mi., $5,000. 669-3477.

TIRES & RIMS - w/caps, P235/75R15, 6 lug, make offer, 1 set; 77 AMC Gremlin maintenance manual, $6. Ron, Ext. 4702 or 289-1003.

72 PLYMOUTH - full-size station wagon, reliable car, best offer. Ann, Ext. 2022 or 744-8386.

82 DODGE ARIES - wagon, 4 cyl., am/fm, cb, a/c, trailer hitch, $3,500; 81 Chevy, 4 dr., 4 cyl., am/fm, a/c, $1,000, both good cond. 654-1146 after 5 p.m.

76 PONTIAC VENTURA - 4 dr., sedan, a/c, p/s, p/b, a/t, r/h, high mileage, asking $450. Ext. 4532.

78 BUICK REGAL - immaculate body, engine needs some work, best offer. 288-4447.

73 FIREBIRD - 327, body very good cond., $1,000. Ken, 473-7460.

81 BUICK ELECTRA LTD - gray, low miles, excel. cond. Frank, 736-3885.

66 PLYMOUTH FURY II - great for 318 eng. & parts, $100; 66 Volvo, great for parts $75. 589-2338.

82 DATSUN - King Cab pickup, w/cap, excel. cond., $3,200. Joe, Ext. 2575 or 281-2767, eves.

77 CHEVY CAMARO - blue, 8 cyl., a/t, p/s, a/c, am/fm cass., excel. tires, new paint. Melanie, Ext. 2456.

80 200SX - a/c, 5 spd., htchbk, sunroof, 76k mi., am/fm, p/s, p/b, runs well, $2,800 neg. 654-0830.

77 CAMARO - 305 V8, a/t, new batt., brakes, very good cond.; 73 Capri, stand., sunroof, decor group. 744-0725.

79 CUTLASS SUPREME - 8 cyl., a/c, new tires, stereo cass., excel. cond., asking $3,100. 363-6829 or 363-2726

80 DATSUN 510 - htchbk, a/t, needs work. Ext. 4615 or 928-8522.

79 FORD F150 - 4WD, XLT, a/t, a/c, cruise, am/fm, 8', high mi., clean, $3,850. 928-1445, after 6 p.m.

81 CHEVETTE - all-weather radials, am/fm cass., new clutch, brakes, muffler, starter, $1,500. Ext. 5288 or 878-8177.

81 FORD ESCORT - wagon, a/c, am/fm cass., very good cond., runs well, $1,900. Amina, Ext. 5508 or 3098.

83 YAMAHA VIRAGO 750 - black, garaged, $2,000; 80 Honda CX500, lo mi, $1,000. Both mint cond., extras. Charles, Ext. 7749 or 789-1744.

72 CHEVY IMPALA - good cond. in/out, runs well, high mi, orig. owner, asking $500. 665-1264, eves.

79 SUBARU - 4WD, clean in/out, needs small engine work, $400. Ext. 3589.

81 CHEVETTE - a/t, 2 dr., htchbk, excel. cond., am/fm cass., sunroof, new exhaust, waterpump, $1,800. Gary, 758-5592.

75 PEUGEOT WAGON - runs well, some rust, 18-20 mpg, $850. Ed, Ext. 2007 or 751-1474.

83 PLYMOUTH RELIANT - 4 dr., 2.2 liter engine, new tires, brakes, exhaust, very good cond., 30+ mpg. Bob, Ext. 4428 or 467-4222.

70 DODGE - camper/pick-up truck package: truck, dependable, many new parts; camper sleeps 4, gas heat and stove, 286-0064.

82 PONTIAC J2000 - station wagon, 70k mi., 4 spd., excel. cond. 654-2116.

69 MUSTANG MACH I - runs but needs some work, $550. 929-8944.

76 BUICK CENTURY - 6 cyl., p/s, p/b, a/c, hi miles, runs very well, $495. 732-6871 after 6 p.m.

75 MERCURY MONARCH - a/t, p/b, p/s, am/fm, new tires, reliable transp., $475. 878-1731 after 5 p.m.

79 FORD LTD - V8, grey, 63k mi., loaded, cruise, make offer. Park, Ext. 3295.

69 CHEVELLE - p/s, p/b, excel. cond., completely restored; 81 Chevy Monte Carlo, p/s, p/b, a/c, new tires, very good cond., 369-2983 after 6 p.m.

80 DATSUN 200SX - htchbk, a/t, black, stereo, sunroof, $1,750. 928-4069, eves.

82 TOYOTA STARLET - 5 spd., am/fm cass., excel. cond., $2,800; 72 Mercedes Benz, 4 dr., model 250, good cond., needs work, $1,800. Jeff, 286-1348.

69 BUICK SKYLARK - good running cond., 4 new tires, $495 neg; Cap for courier pickup, $50. 878-6637.

78 PONTIAC SUNBIRD - 4 cyl., a/t, p/s, p/b, a/c, clean, good cond., 878-0294 after 6 p.m.

69 MUSTANG - 289 cu. in., 8 cyl., a/t, p/s, in good cond. Ext. 4932 or 4830 or 928-8993.

77 DATSUN B210 - 4 spd., 2 dr., 4 cyl., 60k mi., med. blue, like new cond. in/out, $1,300 neg. 757-3712 or 698-0576.

79 PONTIAC LeMANS - a/t, a/c, am/fm, snow tires, very good running cond., $1,825. Ext. 3780 or 331-4538.

81 CHEVY CHEVETTE - 4 dr., asking $1,100. Ext. 2115 or 242-9386 after 7 p.m.

84 MERCURY MARQUIS - loaded, 52k mi., excel. cond., will sell for blue book wholesale price. Ext. 5400 or 874-3447.

TIRES - F78-14. 744-9677.

Boats & Marine Supples

28' OWENS - 1963, wood, tight hull, engine needs work, forced to sell, $500. Bert, Ext. 2050.

22' SEARAY - 1977, cuddy, 198 Merc i/o, VHF, cb, dual batteries, trim tabs, stove, sink, depth finder, much more, excel. cond., $7,000 firm. 286-1358.

27' CATALINA - 1976/77, clean, 3 sails, inboard, compass, radio, must sell. Bob, Ext. 2144.

Miscellaneous

TICKETS - L.I. Philharmonic, 2 each, avail. Jan. 31, Feb. 28, March 14, April 11, Map 2, performances $15 each. Ext. 4690 or 265-5218.

HUMIDIFIER - Westbend, automatic humidstat, intensity control, 10 gal. capacity. Bob, Ext. 4446 or 654-3989.

SOLID PINE - 48" round table, w/2 leaves and 4 chairs, $100. Ext. 7774.

DINING ROOM SET - Danish modern, china cupboard, buffet, formica top table & leaves, 4 chairs, A-1, $400. 669-4479.

LIFTING BENCH - Preacher curl weight, all welded, like new. Frank, Ext. 3464 or 325-9584 after 6 p.m.

OPAL STONES - first quality, reasonable. 363-7032.

SKIS - Hart/Gremlin 130; Tyrolla bindings & poles, $50; Caber boots, size 4, $25; boy's Fera ski jacket, racing pants, size 10, both $25. Betty, 567-4423.

SINKS - kitchen stainless, double, 23"x33"; bathroom, round yellow, no chips, dents, make offer. Joe, Ext. 2975.

ELECTRIC GENERATOR - 4,000 watts, 120/240 volt, circuit breaker protected, $450. Ext. 2427 or 473-0178, eves.

DISHWASHER - G.E. portable, $50; Sears console humidifier, 7.5 gal. capacity, automatic 2 spd. fan, $60. Bob Wilson, Ext. 4483.

WALLPAPER - 5 double rolls, beige pattern, each roll will do 8'x8' wall, $25. Susan, Ext. 4267.

HUMIDIFIER - ultrasonic, like new, $25. Ext. 4532.

PORTABLE SCANNER - Bearcat, thin scan, 4 channel, h/l band, adapters, $50; 3 8"x5' wall mirrors w/mounts, $25. Doug, Ext. 4237.

SOLDERING GUN - Sears Craftsman, dual heat, electric soldering gun, used once, $20. Mike, Ext. 7941.

ELECTRIC TYPEWRITER - Brothers model no. 3810, very good cond., $65. Ext. 2616 or 751-5868.

TRESTLE TABLE - pine formica top, 2 leaves, 6 chairs. Gary, Ext. 2350 or 567-9617 after 5 p.m.

FRANKLIN STOVE - $75. 744-0725, eves.

TV & VCR - Sharp, 3 spd., wire remote, VHS 105 ch. VCR; 13" multitech color TV, both ½ yr. old, very good cond., together, $240 firm. Ext. 5196.

BUNK BED - crew quarters type w/dresser, all new, dark wood, immaculate, $275. Ron, Ext. 4084 or 878-1060.

SKI BOOTS - cross-country, child's size 6, $25; Ems "runner" man's size 9½, $25. Both used once. 286-3679.

ANDERSEN WINDOWS - (1) 36"x19"; (1) 44"x24" awning-type, $8 ea.; 2 floor waxers, $10 ea; 1 elec. broom, $5. Ron, Ext. 4702 or 289-1003.

COLONIAL DINING ROOM - buffet and hutch, beautiful cond., $300. Howard, 878-8294.

MOVING SALE - d/r set, couch, uphol. chairs, lamps, 2 quartz heaters, chandelier; Scott seed spreader; Toro 21" self-prop. mower. 273-5574.

COAL STOVE - Haas & Soho "Pluto" model 121u, autofeed, thermostat, brand-new in crate, $300. Ext. 2922 or 395-1588.

HEADBOARDS - (2) maple, twin size, $20. Tony Ext. 2050.

BABY ITEMS - playpen, sassy seat, high chair, excel. cond. Ady, Ext. 4531 or 331-3785.

BEDROOM FURNITURE - excel. cond., chest, night table, student desk, chair, maple, $150. Joan, 286-2265 after 7 p.m.

FIREWOOD - split, seasoned oak, 4'x16'x18" pieces, delivered, $105. 732-2849.

KEROSUN HEATER - 9,400 Btu, $30; telephone answering machine, Code-A-Phone, $25. Otto, 472-0339.

CONVERTIBLE SOFA - $30; hope chest, $90; day bed, $30; frames, $5; ski boots, $5; ski bureau, $20; shower door, $5; floor lamp, $2. 475-1254.

BABY ITEMS - all very good. 744-9677.

SNOW PLOW - Meyers for Bronco II, 1 yr. old, power angle, paid $1,600, asking $950 complete. 981-9474.

GENERATOR - Generac 4kW, still in box, worth $900, sell for what I paid, $400. 924-5533, ext. 233

RACCOON SECTION COAT - full-length, size 8, good cond., $180. 475-4792 after 5 p.m.

SLOTTED TRACK - for car racing. Ext. 2543.

STEREO RECEIVER - and cassette player w/2 speakers, $350. John, Ext. 4797.

BATHROOM - vanity, basin, faucet, medicine cabinet, complete set, 40" wide, very good, best offer. Ext. 2830.

CAR SEAT - good cond., $15. Ext. 7505.

CRIB - w/mattress, good cond., 751-4539.

SHEARLING COAT - new, size 40, brown, perfectly tailored, orig. $599, now $200. Ext. 3589.

REEL-TO-REEL - Sony, Realistic cass. player, recorder; Zenith receiver-amp; Garrard turntable, $100. Ext. 4428 or 467-4222.

SKI EQUIPMENT - cross-country, woman's boots size 7, new; 180 cm skis & poles, $40; boots, unisex, size 5½; 170 cm skis & poles, $35. 286-2274.

TV - G.E. 19", picture tube OK, but set needs repair, $35; Sony 13" TV, needs new picture tube, $25. Ext. 2364.

APPLE II+ COMPUTER - loaded w/cards, printer, monitor, software, 80 column, $750; skiis, 2 pair, short, make offer. Jerry, Ext. 2934 or 744-2816.

PIANO - Yamaha console, very good cond., must see, $1,000. neg. 924-6651 or 472-1479.

PUPPY - Jack Russell Terrier, born 12/15, weaned approx. 2/25, male, adorable. 286-0064.

STONEWARE - Sango 40 pc. dinnerware set "Carrousel White," never used, $35; bathtub enclosure, sliding glass door, $20. 286-0384.

PC COMPUTER MONITOR - Radio Shack model VM-2, monochrome, 1 yr. old, excel. cond., orig. $140, asking $90. John, 286-1348.

SKI BOOTS - man's size 8½, used once, orig. $98, asking $45; skateboard, good cond., $25; space heater, $25. S. Spark, Ext. 4111.

ANTIQUE CHINA CABINET - glass front, $350; lawn tractor 8 hp, 34" cutting deck, $100; couch & loveseat $200/both. 751-8240, eves.

JACK POSTS - to raise sagging floors and stop squeaks, $10 each. Ext. 5400 or 874-3447.

Real Estate

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

For Rent

HILTON HEAD, S.C. - 2 bdrm. condo, sleeps 6, many extras, golf, tennis and plenty of sunshine, $300/wk. 585-9149.

FARMINGVILLE - 1 bdrm. apt., kit./living room, full bath, single person, no pets, avail. 2/1, $450/mo inc. all, + 1 mo. security. Pat, 736-3384 after 6 p.m.

SHIRLEY - 7 mi. to Lab., 1 bdrm., eik, l/r, full bath, pvt. yard, deck, appl., w/w, city water, walk to stores & town pool, working single or couple, ref., sec. $525 + gas for stove & hot water. 399-5048.

CENTER MORICHES - waterfront apt., 2 bdrm., eik, l/r, pvt. ent., w/w, cable, a/c, dockspace, avail., dead-end street, all util., $675 neg. 878-8177.

CENTER MORICHES - beachfront, magnificient view of bay, 3 bdrms, large l/r and f/r, ⅓ acre, deck, $850/mo. Ext. 5277 or 549-5802.

SOUND BEACH - spacious studio apt., full bath, close to beach & shopping, great for single person or couple, $450 +. 744-3284, eves.

HOLBROOK - brand-new 3½ rooms, extra storage closets, pvt. ent., quiet resid. neighborhood, walking distance to stores, ready 2/1, $575 inc. util. Ext. 2529 or 585-7989, eves.

QUOGUE/FLANDERS - large 3/4 bdrms, 2½ baths, spacious l/r, d/r, f/r, eik, fp, w/w, deck, 2 car garage, all appl., acre, near ocean & BNL, long or short lease. Ext. 4112.

MIDDLE ISLAND - Artist Lake condo, 1 bdrm., l/r, kit., full bath, a/c, new w/w, dishwasher, redecorated, pool, heat incl., 5 min to Lab., avail. immed., $650. Ext. 3144 or 698-5046, eves.

BROOKHAVEN HAMLET - cottage, from 3/87 to 6/87, charming, pvt. for single or couple, fully-equipped house, no children or pets, very reason. 286-2412.

STONY BROOK - 3 room condo, large l/r, kit., bath and garage. Adult community, $750/mo. Chris, 587-7034.

For Sale

POCONOS - chalet, 3 bdrms., l/r, d/r, f/r, kit., w/woodburning stove, w/w carpet, garage w/elec. door opener, circ. drive, paved roads, pools, lake, clubhouse, tennis, all ent. guarded 24 hrs., $110,000. 286-4652

DAYTONA BEACH, FLA. - time share unit 2nd week of April, RCI exchangeable, sleeps 4-6 people, $6000 neg. Ext. 4098 or 736-4886.

PORT JEFFERSON - 4 bdrm. colonial, 2½ baths, l/r, d/r, eik, pt. finished bsmt., deck. Ext. 4674 or 473-5331.

EAST SETAUKET - split level ranch, l/r, d/r, den w/fp, 2 bdrms w/double master, 1½ bath, w/w carpet, deck & patio, 3V schools, $135,000. 929-3620, eves.

Wanted

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

REFRIGERATOR - coppertone; 9'x12' rug; sofa bed, good cond., reasonable. Walt, Ext. 2907 or 698-0576.

PEOPLE FOR REUNION - U.S.S. Abner, read DD-526, Nov. 1987, New Orleans. Contact A. Gill, 18 Pia Blvd. Smithtown 11787 or 724-4514.

3-MONTH-OLD INFANTS - for Ph.D. study of infant memory involving pleasant play task at infants' home. Maureen Wall, 929-6495.

PRESSURE COOKER - stainless steel. 744-3289.

TOOL BOX - machinist. Oscar, Ext. 3499.

RIDERS - for skiing at Mohawk Mountain on Jan. 19. Dave, Ext. 7921 or 325-1150.

WOOD KITCHEN CABINET - any style, in useable cond. & reasonably priced. Pete, Ext. 7627 or 929-3847.

MATURE PERSON - to drive 8th grader home from school in bad weather, Patchogue area. Terri, Ext. 2484 or 758-6241.

SHOP MANUALS - 1977 Ford Maverick, 1978 AMC, 1972 Chevrolet Van, reasonable prices. 727-3608 after 5 p.m.

TO BORROW - manual for Seagate ST-225 hard disk drive. Bernie, Ext. 4842.

BABYSITTER - M-W-F for 10-month-old girl, pref. on site. JoAnn, Ext. 3406 or 654-5786.

70 FORD MUSTANG - Mach I, motor not important. Dick, Ext. 3499 or 589-9103.

TWO-BEDROOM APARTMENT - South Patchogue area, March rental. Terri, Ext. 2484 or 758-6241.

Classified Ad Policy

Deadline is 4:30 p.m. Friday for publication Friday of the following week.

1. The Brookhaven Bulletin's classified section may be used only by active and retired Laboratory employees.
2. All items for sale or rent must be the advertiser's property.
3. Ads for material acquired for resale in association with a full or part-time business cannot be accepted.
4. Ads for the sale or trade of firearms will not be accepted.
5. Ads not carried because of space restrictions will be held for publication in the next issue.
6. Ads are run only once and must be resubmitted if they are to be repeated. One ad per person per week.
7. **Property for sale and rent cannot be accepted on this form. Special Real Estate Ad Forms are available at the office of the Brookhaven Bulletin, Building 134.**

☐ For Sale: Autos & Auto Supplies ☐ For Sale: Miscellaneous ☐ Lost & Found ☐ Free
☐ For Sale: Boats & Marine Supplies ☐ Car Pools ☐ Wanted ☐ _____

Please print your ad below in 15 words or less using one word per block. Include name and phone number to call.

Note: The following must be completed for your ad to appear.

NAME (Please Print) .....

Employee's Signature ..... Life No. ..... Ext. .....

Send to: Brookhaven Bulletin, Building 134 (Ext. 2345).