BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Another Role for Bar Codes: Monitoring Nuclear Material

$1.99 or $9.19?

A+ or A−?

In this data-dependent age, accuracy is important. Every time characters must be transferred manually, there's a possibility of error. And any time the transfer is accompanied by the pressure of a deadline, that possibility naturally increases.

Often, such errors can have unhappy consequences. That's why bar codes are popping up all over the place. To eliminate transcription errors simply and inexpensively, those parallel, irregularly-spaced bars of varying thicknesses now appear on such varied items as groceries, pints of blood and the inventory items in a large nuclear material processing plant.

One such plant is the Department of Energy's Feed Materials Production Center (FMPC) in Fernald, Ohio. From March 1982 through December 1983, Alan Bieber, scientist with the Technical Support Organization (TSO) in BNL's Department of Nuclear Energy, was involved in a pilot project at FMPC, initiating a bar code-based system for calculating physical inventories as accurately as possible.

Unlike other types of inventories, nuclear materials cannot be measured precisely. Says Bieber, "There are always inherent inaccuracies in scales and in the analytical techniques used to determine uranium concentration." Often, he adds, "This is not all nice, homogenous material. Say we have to measure the uranium content of a 55-gallon drum, filled with old wiping rags and machine turnings, contaminated oil and rubber gloves. There's very little nuclear material in it, but you have to know how much is there. It's hard to measure the entire drum, so how do you get a representative sample of that kind of thing?"

The techniques used to obtain a representative sample of such a drum's uranium content may yield different results at successive physical inventories — even though nothing has changed. If that is so, how much confidence can DOE have in the results of each physical inventory? Explains Bieber, "If you measure something ten times and get a spread of measurements, that gives you a pretty good estimate for range — what we call a confidence limit on inventory difference — an error bar to put around the values you come up with."

DOE is encouraging its facilities to calculate this confidence limit on all inventories. So when TSO was asked to help FMPC demonstrate a system for calculating the statistically-based limit of error on inventory difference, Bieber became involved.

Obviously, the key to all this is to conduct the most accurate physical inventory possible. For this demonstration project, Bieber concentrated on devising a system for calculating inventories in only a small part of FMPC's facilities. Still, he says, "We were required to keep track of thousands of things in inventory and many thousands of transfers. The old inventory system was a real nuisance. Information was written on IBM cards, which were then collected so their data could be keypunched into the computer. It occurred to us that attaching bar code labels to the IBM cards might be the answer to the problems of slow data collection and transcription errors."

From an earlier TSO project he had worked on with Martin Zucker, Bieber already had more than a passing knowledge of the various bar codes and the equipment designed for reading them. Drawing on that knowledge, he devised a system centering on Code 39, a bar code which can read all numbers, letters and punctuation marks.

With Bieber's program, when a portable bar code reader's sensor passes over a label it immediately records the 21 characters identifying the type of substance, its source plant, enrichment, production order number and lot number. The reader, which has an internal clock and calendar, can store up to 60,000 characters of information. It can be hooked directly to the computer to transfer information and complete the physical inventory without transcription errors.

Alex Reben

Alan Bieber demonstrates the use of a bar code reader to keep track of sensitive inventory.

In the same way, Bieber's program was used to identify materials being weighed and processed at FMPC. For example, uranium tetrafluoride, commonly known as green salt, was being converted to uranium metal in the form of ingots weighing about 1,800 pounds. To keep track of the identities of these materials, the green salt was weighed as it came in and the ingots as they went out. During each weighing process the bar code reader was connected to the automatic scale and the material's identity and weight (gross and tare) were automatically recorded, as well as the date and time of the weighing.

In sum, says Bieber, "The whole data collection system works very nicely. In fact, I'm now involved with a followup with FMPC, extending the system to the entire facility, based on what we learned in the exercise."

But Bieber's work with bar codes has not been confined to FMPC. While helping FMPC incorporate bar codes into an inventory system, he was also doing the same thing at BNL. When the Supply & Materiel Division decided to convert to a bar code-based system for sensitive inventory, the blue stickers which had identified each item were replaced by red labels with bar codes. Bieber assisted the Division in developing the procedures that allowed the use of bar code readers to automatically correlate the numbers on red and blue stickers and to do inventory at the same time.

In the midst of all that, Bieber chaired a session on bar codes at last July's annual meeting of the Institute of Nuclear Materials Management. He has also worked closely with engineers from DOE's Savannah River Plant investigating the practicality of using bar codes to more accurately perform such assignments as keeping track of urine samples and identifying materials in glove boxes. With all this bar code business to his credit, no wonder Bieber jokingly refers to himself as "DOE's bar code maven."

—Anita Cohen

Jane Setlow, Senior Geneticist in the Biology Department, is one of three women scientists who will receive an award from the Metropolitan Chapter of the Association for Women in Science on June 6. Setlow will be honored for her contributions to science in biophysics. The other awardees are Dr. Elaine Diacoumakos, Rockefeller University, and Dr. Beatriz Pogo, Mt. Sinai Medical Center. The Metropolitan Chapter initiated the awards in 1978 and makes its selections from women scientists active in the metropolitan area.

Modern Physics 101

On June 2, over forty BNL physicists will have each volunteered one or two Saturday mornings since January to teach modern physics at the Lab to 31 selected Suffolk County senior high school students. Tomorrow, during the 14th and final session of the High School Modern Physics Class, the junior and senior high school students will hear Harvey Wegner, Physics, speak about three research projects at the Lab involving positrons, neutrinos, and protons.

"We volunteered to work with high school kids because they don't get any modern physics until they get to college," explains Wegner. He and Glenn Price, Academic Affairs, developed the course content, and recruited instructors for the classes, which were offered to inform gifted high school students about recent developments in modern physics and to encourage them to consider careers in physics. "Modern physics, and facilities like those at the Lab don't exist in high school," says Wegner. The course was sponsored by the Department of Energy.

"A big effort was made for a relatively small number of students," Wegner adds. "There were more teachers and assistants than students. Though the students had to deal with different people and different teaching styles each week, they were being taught by researchers in the fields they were learning about. Because the kids are so bright, we enjoyed our interactions with them during class breaks and experiments."

One experiment involving the future scientists was conducted at the

(Continued on page 2)

Alex Reben

Ole Hansen (left) describes how accelerated particles come down the beam line.

Words Ahoy!

Admiral Wesley L. McDonald in the Pentagon on Oct. 28 said, "We were not micromanaging Grenada intelligence-wise until about that time frame."

This statement prompted Bruce L. Felkner, director of yearbooks for *Encyclopaedia Britannica,* to translate some statements made by earlier admirals:

John Paul Jones said, "I have not yet begun to fight." Felkner's version: "Combatwise, the time frame is upcoming."

Oliver Hazard Perry said, "We have met the enemy, and they are ours." Felkner's translation: "Area accessed in combat mode; mission finished."

David Farragut said, "Damn the torpedoes. Go (full speed) ahead!" Felkner: "Disregard anticipated structural damage. Continue as programmed."

George Dewey said, "You may fire when you are ready, Gridley." Felkner: "Implementation of aggressive action approved; time frame to be selected by fire control officer."

— reprinted from *Communication Briefings*

Hospitality News

Vegetable gardening will be the topic of the Hospitality Committee's get-together on Tuesday, June 4, at 9:30 a.m. in the Brookhaven Center. The guest speaker, a member of the Suffolk County Cooperative Extension Association, will provide some tips on how to start and maintain a vegetable garden.

Wives of employees, guests and visitors are welcome. Please come and bring the children. Babysitting will be provided free of charge. Coffee, tea and danish will be served.

Arrivals & Departures

Arrivals

Debra S. Gilbert ..... Plant Eng.
Bo-Hai Lin ..... Biology
David L. Woodson ..... Plant Eng.

Departures

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

Paul Colsmann ..... S&ES
Lourdes Diaz ..... S&EP
Howard H. Farrell ..... Accelerator
Salvatore T. Giordano .... Accelerator
Deborah G. Keimig ..... S&EP
Scott D. Keimig ..... S&EP
George Korhut ..... Accelerator
Roman A. Kuczynski ..... Plant Eng.
Irvin A. Meyer ..... Chemistry
Robert A. Mitchell ..... DAS
Frederick J. Silkworth .... Chemistry
Stanley A. Staron ..... Accelerator

Alex Reben

A Modern Physics student calculates a nuclear radius.

Modern Physics (Cont'd)

Tandem Van de Graaff by Craig Thorn and Ole Hansen, Physics. "We were trying to demonstrate elastic scattering — one of the most elementary features of nuclear physics we could think of," says Thorn. "The idea was to do a conceptually simple experiment, but to do it with real equipment."

"We asked them to measure the size of a nuclear radius," explains Hansen. "This was first done by Ernest Rutherford around the turn of the century when he discovered the nucleus. We bombarded a target of lead-208 with a beam of oxygen-16 at 100 MeV, and used a state-of-the art scattering chamber to detect how many projectiles came out at each angle, angle by angle.

"Electric forces usually keep the oxygen nuclei from running into the lead nuclei," continues Hansen, "but occasionally the two nuclei get so close that nuclear forces come into play. Given the angle at which the two nuclei touched, the high school kids could calculate how close the nuclei are to one another, thereby determining a nuclear radius."

Alex Reben

Harvey Wegner (right) prepares the scattering chamber for an experiment.

"They were very comfortable with the mathematics, because they have studied math since junior high school," comments Thorn, "but they were much more doubtful and cautious about what was physically reasonable since they have had only one year of physics."

"We had a lot of fun watching the kids trying to manage the Tandem and its computers," says Hansen, "and learn enough theory to be able to do an experiment, and abstract from the results — all within three hours."

Since no homework, tests, or grades were given, student attendance and questions have been the only gauge of their interest. Both their attendance and their curiosity have kept up. "Everyone worked hard though there were no special demands on them," says Wegner. For their participation, certificates will be awarded to all the students at the last class.

"At the end of the class, we plan to send a questionnaire to the students to find out how they enjoyed the course," says Wegner, "and ask for their suggestions on how to improve it."

"We learned a lot about how to present modern physics to high school students," says Price. "We found that if you present them with a few concise, well-stated concepts with examples or demonstrations rather than a lot of rambling mathematics, they can understand the point much better. It has been a challenge to the instructors to present sophisticated physics without detailed mathematics."

— Marsha Belford

Darkness at Noon

Monitoring the solar eclipse last Wednesday was not a total washout, though the weather was. Peter Takacs and Gene Von Achen, Instrumentation, put "plan B" into action since the clouds and rain obscured their observation of the event using a heliostat. Instead, they aimed a silicon photodiode at the sky to measure how dark the sky became at 12:55 p.m., the time of maximum eclipse.

The diode was connected to a voltmeter which was attached to a chart recorder. "The voltmeter went from 7.5 volts before and after the eclipse to 0.3 volts at maximum eclipse," says Takacs, "which means it was 25 times darker during the eclipse than before or after it." According to Takacs, this agrees with the prediction that Long Islanders would observe 93 to 95% of the sun being covered by the moon.

Takacs says that the next eclipse over this area won't occur until 2017. For those who can't wait and are willing to travel, an eclipse will occur again this year, on November 22, over Australia and New Guinea.

Diners Note

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

Cafeteria Menu

Week Ending June 8

Monday, June 4

Cream of tomato soup	(cup)	.65
	(bowl)	.85
Ham steak Hawaiian & 1 veg.		1.85
London broil w/1 veg. & mushroom gravy		2.20
Hot Deli: Corned beef	(bread)	1.85
	(roll)	2.00

Tuesday, June 5

French onion soup w/croutons	(cup)	.65
	(bowl)	.85
Veal patty Parmesan & 1 veg.		1.95
or w/spaghetti		2.15
Southern fried chicken quarter w/stuffing & cranberry sauce		1.95
Hot Deli: Top round of beef	(bread)	1.95
	(roll)	2.10

Wednesday, June 6

Cream of broccoli soup	(cup)	.65
	(bowl)	.85
Braised Swiss steak jardinere & 1 veg.		2.25
Seafood Newburg on rice		2.00
Hot Deli: BBQ fresh ham	(bread)	1.85
	(roll)	2.00

Thursday, June 7

Vegetable beef soup	(cup)	.65
	(bowl)	.85
Roast turkey w/stuffing		1.90
Special		
Spaghetti w/meat sauce All you can eat		2.20
Hot Deli: Sandwich steak w/peppers & onions on a croissant or pita bread		2.15

Friday, June 8

Manhattan clam chowder	(cup)	.65
	(bowl)	.85
Tuna noodle casserole & 1 veg.		1.85
Old-fashioned beef stew on egg noodles		2.00
Hot Deli: Breaded fish fillet	(bread)	1.85
	(roll)	2.00

Mort Rosen

In the past year, 36 BNL employees volunteered their services as tour guides for the many groups visiting the Lab. To thank them for their contributions, the Lab invited them to lunch last week. From left, the tour guides are: Janet Tempel, Graham Smith, Sue Monteleone, Elaine Rowland, Florence O'Brien, Jackie Mirzadeh, Angela Boccio, Jean Stafford, Peter Boyle, George Taylor, Y.Y. Chu, Evelyn Ritter, Mark Culp, Vincent LoDestro, Thelma Dawson, Arlene Clay, Ron Clipperton, Elaine Zukowski, Gerry Callister, Andy Feldman, Dave Comstock, Peter Kohut, Janet Sillas, Lucien Wielopolski, Vincent Lettieri, Tom Dickinson, Penny Byrne, Richard Seebeck, and Payman Mortazavi.

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Service Awards

The following employees received service awards during the month of May:

Thirty-Five Years

Edward Der Mateosian ..... Physics
Irving L. Feigenbaum ..... Physics
A. Peter Irsa ..... Chemistry
Mary Sowiak ..... Supply & Materiel

Twenty-Five Years

Emil J. Caiazza ..... P&GA
Richard J. Durose ..... Medical
Paul J. Klotz ..... Applied Science
Robert B. Marr ..... Applied Math.
Eugene C. Mohlmann ... Cont. & Proc.
Joseph Murray ..... Plant Engineering

Twenty Years

Worth O. Austin, Jr. .... Safeguards & Emergency Svcs.
Oscar E. Blevins ... Plant Engineering
Victor J. Emery ..... Physics
Elizabeth M. Jellett ..... Medical
William E. Lenz ..... Physics
Theodorus J. Sluyters .... Accelerator

Ten Years

Hsiang-Shou Cheng .. Nuclear Energy
Arlene M. Clay ..... Plant Engineering
William H. Dieffenbach ..... Physics
William C. Fritz ..... Accelerator
John F. Gannon ..... Instrumentation
Frank Garcia ..... Plant Engineering
Chung-Siung Kao ..... Applied Math.
Leslie Lasker ..... Applied Math.
William Sanchez ..... Central Shops

Vanderbilt Viewings

The Vanderbilt Museum, Historic House and Planetarium at 180 Little Neck Rd., Centerport, hosts many events designed to be of interest to the general public. Here are some of the programs on view next week:

June 1 8:30 p.m. "Summer Telescope Clinic Night." If you're thinking of buying a telescope, need adjustment on your own telescope, or want to see what's new in the market, you are invited to this clinic at the Planetarium. No admission charge.

June 2, 9, 16, 23, 30 11 a.m., Sky Theater, "Star Dreams." Young People's Programs series, for children 7 and under, families welcome; $2.

June 2, 9, 16, 23, 30 1 p.m., Sky Theater, "Wonders of the Milky Way." Exploring the Universe series for children 12 and under, families welcome; $2.

June 5 7:30 p.m., Vanderbilt Library, "Special Care for the Vanderbilt Paintings." Background and conservation techniques for the family's priceless collection, with art conservator Rustin Levinson. Admission $5, members $3.

June 8 8:30 p.m., at the Observatory, "A Peek at Saturn" through the Vanderbilt's research-grade telescope. No admission charge.

PC User Meeting

The next meeting of the PC/Workstation Users Group will be held on June 5 at 10:30 a.m. in the AMD Seminar Room, Bldg. 515. Dave Stampf will discuss Public Domain Software.

Chain letters have been circulating on site through the use of the Laboratory mail system. This is an inappropriate use of the Lab's resources and time. If this distribution continues, further investigation as to its source will be conducted.

BERA News

For Discerning Palates

A poll of members of the Cooking Exchange revealed that their current favorite book of recipes is The Silver Palate Cookbook by Julee Rosso and Sheila Lukins, owners of a food shop by the same name on the West Side of New York. So they offered a demonstration of five dishes at their May 9th meeting.

The main course was Chicken Marbella, cooked by Cindy Grier, wife of Boyce Grier, Physics. Grier had marinated the chicken overnight, which, as the authors said, was essential to the moistness of the finished product.

If you missed that particular meeting, here's the recipe:

Chicken Marbella

4 chickens, 2½ pounds each, quartered
1 head of garlic, peeled and finely puréed
¼ cup dried oregano
coarse salt and freshly ground black pepper to taste
½ cup red wine vinegar
½ cup olive oil
1 cup pitted prunes
½ cup pitted Spanish green olives
½ cup capers with a bit of juice
6 bay leaves
1 cup brown sugar
1 cup white wine
¼ cup Italian parsley or fresh coriander (cilantro), finely chopped

1. In a large bowl combine chicken quarters, garlic, oregano, pepper and coarse salt to taste, vinegar, olive oil, prunes, olives, capers and juice, and bay leaves. Cover and let marinate, refrigerated, overnight.
2. Preheat oven to 350°F.
3. Arrange chicken in a single layer in one or two large, shallow baking pans and spoon marinade over it evenly. Sprinkle chicken pieces with brown sugar and pour white wine around them.
4. Bake for 50 minutes to 1 hour, basting frequently with pan juices. Chicken is done when thigh pieces, pricked with a fork at their thickest, yield clear yellow (rather than pink) juice.
5. With a slotted spoon transfer chicken, prunes, olives and capers to a serving platter. Moisten with a few spoonfuls of pan juices and sprinkle generously with parsley or cilantro. Pass remaining pan juices in a sauceboat.
6. To serve Chicken Marbella cold, cool to room temperature in cooking juices before transferring to a serving platter. If chicken has been covered and refrigerated, allow it to return to room temperature before serving. Spoon some of the reserved juice over chicken.

16 pieces, 10 or more portions

—Copyright 1982 Julee Rosso & Sheila Lukins. Reprinted with permission of Workman Publishing, New York.

Table Tennis

Earlier this month, the BNL Table Tennis Club played 18 matches against a team of scientists visiting at BNL and a team of graduate students from SUNY, Stony Brook. They won 17 of the matches. The BNL team was represented by Charles Zein, Kelvin Li, John Lee, David Cox, Hsiang-Shou Cheng and Paul Blacher.

Afro-American Club

A general meeting of the club will be held on Thursday, June 7 at noon, in Room C, Berkner Hall.

Singles Club

The regular monthly meeting is to be held on Tuesday, June 12, at 5:15 p.m. in Room C of Berkner Hall. All singles are welcome. If you have any questions, call Chuck Watson at Ext. 5317.

1983-84 Basketball Champs

League winners were the HOLLYWOOD team: At rear, from left, Robert Kowalski, Lee Walcott, Edward Meier; front, Greg Mack and Dennis Nordstrom. Not present for photo: Booty Woodsen, Les Lawrence and Robert Schuman.

Playoff winners were the COASTERS: Front, from left, Lewis Snead, Edwin Taylor, Robert Doty, At rear, Michael Fulkerson, Mitchell Williams, Larry Smith, Kevin D'Amico. Not present for photo: Bernie Jasper and Butch Orr. **—photos by Stoutenburgh**

Classified Advertisements

Placement Notices

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

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

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

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

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2070. TRAINING AND DEVELOPMENT ADMINISTRATOR - Requires a bachelor's degree plus 5-7 years experience designing, developing and presenting in-house training programs for supervisors, managers and other staff groups in areas such as management skills, performance appraisal, selection interviewing and productivity improvement. Must have excellent overall knowledge of business management principles as well as behavior modeling and small group techniques. Personnel Division.

2071. PATROL OFFICER - Requires AAS degree in criminal justice or equivalent experience performing diverse security duties for a large organization. Excellent communication skills are necessary as well as ability to work shifts. Will participate in comprehensive training program in order to become knowledgeable of site and police procedures. Safeguards and Emergency Services Division.

2072. SCIENTIFIC ASSOCIATE - Requires BS or MS degree in a physical science or equivalent. Will have primary responsibility for implementing, supervising and documenting the National Synchrotron Light Source Safety Operations Program. Specific duties will include working with the Safety and Enivironmental Protection Division to establish an NSLS safety lecture for users. inspecting and approving beam lines for operational status, and monitoring experimental programs for adherence to BNL and NSLS safety procedures. The opportunity will exist for scientific involvement in beam line experimental support. National Synchrotron Light Source Department.

Autos & Auto Supplies

81 BUICK SKYLARK LTD EDITION - V6, auto., p/b, p/s, p/w, a/c, am/fm stereo, 55,000 mi., original owner, must see to appreciate, $5,000. 286-4652 after 7:00 p.m. Mon.-Fri. (all day wkends).

74 CHEVY VAN - good running cond., $1,000. 286-0248 after 6 p.m.

78 THUNDERBIRD, 302-V8, Town Landau, all power, auto, stereo, mags, new radials, brakes, battery, etc., $3,500. Ext. 2492 or 475-8658.

77 PONTIAC FIREBIRD - (Limited edition Skybird) 42K miles, excel. cond., $3,950. 567-8896.

73 BUICK CENTURY - good motor, best offer over $200. 654-1854.

72 MERCURY - a/c, auto., excel. cond., little rust, radio, extra snow tires, $500. Ext. 7697 or 928-8623.

79 FORD PU TRUCK - p/s, p/b, auto., am/fm tape deck, custom cap, 48,000 mi., original owner, $5,500. 588-4577.

68 CHEVY MALIBU - good for racing, best offer, eng. needs work. Ext. 3671 or 736-2131 p.m.

81 HORIZON - 4 dr., a/t; 74 Valvo wagon, a/t, very good cond. Ext. 4360 or 689-9644 after 4:30 p.m.

75 OLDS CUTLASS - p/s, p/b, just inspected, best offer. Ext. 7921 or 298-8145 eves.

72 PLYMOUTH DUSTER - p/s, am/fm, $600 or best offer. Al, Ext. 5545 or 273-9086.

74 D250 ENDURO - upper and lower engines rebuilt, $450 or best offer. Al, Ext. 5545.

79 PONTIAC SUNBIRD - am/fm, standard, 53,000 mi., half vinyl roof, $2,000 firm. Mano, Ext. 2429.

81 HONDA ACCORD LX - excel. cond., 5 spd., am/fm stereo; 56 Mercury Monteray, 312 cu. in. engine, restore, best offer over $2,100. Ext. 2367 or 589-6151.

78 HONDA - 750K, mint cond., many extras, $1,250. 928-5470.

68 PONTIAC FIREBIRD - p/s, am/fm cassette, 350, 8 cyl., new exhaust, 55,000 mi., good tires, reliable, asking $1,200. 331-2215.

68 TROTWOOD TRAVEL TRAILER - Tandem axle, 21 ft., sleeps 6, 8x12 add-a-room, $2,300 or best offer. 363-6845.

71 GMC SUBURBAN - V8, 4 wd, Magnes wheels, jumbo radials, radio, excel. body & mech., extras, $2,500. Ext. 3312.

79 CHEVETTE - good cond., very reliable, $1,600, negotiable. Richard, Ext. 4332 or 3079 after 6 p.m.

73 VW BEETLE - rebuilt engine, am/fm radio, run excel., $1,000. Ext. 7772.

(Continued on page 4)

Autos & Auto Supplies (Cont'd)

74 VW DASHER - station wagon, auto., am/fm cassette, needs trans., $500 neg. 929-8330.

74 PLYMOUTH VALIANT - auto., 6 cyl., p/s, rear defrost, snows, runs, needs work, $200. 736-4687 after 6 p.m.

83 SUZUKI MOTORCYCLE - RM80, used 10 hrs., mint cond., $700. Debra, 543-3681.

EDELBROCK TORKER MANIFOLD - Holley double pumper, accel. dual point for small block Ford, $140. 929-3566.

72 FORD GALAXIE - 4 dr., auto, V8, new starter, exhaust, wires, etc., $525. 929-8153.

71 TRIUMPH TR6 - white, excel. cond., garaged, must be seen, $3,500. 924-3855 after 5 p.m.

74 TOYOTA COROLLA - 2 dr. sedan, 1,600cc engine, deluxe model, white, black vinyl roof, $750. Ext. 2423.

TRAILER - Starcraft pop-up, sleeps 6, loaded, needs cable, $750. 757-1380 after 6 p.m.

79 MGB CONVERTIBLE - new top, am/fm 8-track, orig. owner, asking $3,000. 427-4405 eves or weekends.

74 HORNET - 4 new tires, new muffler, 77,000 mi., runs well, body rusty, $700. Ext. 4504.

74 CHEVY BEL-AIR - 4 dr., V8, runs well, good second car, am/fm cassette. 821-0758 between 6 & 8 p.m.

81 KAWASAKI MOTORCYCLE - 650, 5,000 mi., $900. 757-1380 after 6 p.m.

79 HONDA MOTORCYCLE - CX500, custom, water cooled, shaft drive, excel. cond., $1,100. Chris, 929-6543.

79 OLDS CUTLESS SUPREME - Brougham, loaded, $3,000. Bob, 924-5544 or 361-9784.

77 PONTIAC FIREBIRD - clean, 58,000 mi., p/w, p/b, a/c, am/fm. Matt, Ext. 3464 or 499-0428 after 6 p.m.

74 HORNET - auto., sedan, 55,000 mi., good cond. Kale, Ext. 4224.

78 HONDA MOTORCYCLE - CB-550-K-5SPD, 4 cyl., sacrifice, $875. 475-4394 or 467-8563.

81 SUBARU DL WAGON - new clutch, brakes, stereo cassette, excel. cond., must see, $4,200. 928-6921.

68 PONTIAC TEMPEST - 2 dr., p/s, p/b, a/c, low mi., best offer over $900. 727-7075 eves.

CADDY RIMS - 15", 2/$10.; Caddy hubcap (1), brand new, $5. 929-8105.

72 DODGE SWINGER - 2 dr., auto., p/s, $600; 72 Opel wagon, $300. George, Ext. 4100 or 727-1789.

80 KAWASAKI MOTORCYCLE - 650 LTD, red crash bars, excel. cond, must sell, $1,200. Bob Johnson, 475-2305 or 283-4741 after 6 p.m.

80 SUZUKI MOTORCYCLE - GS550, 4 cyl., sissy bar, 2,700 mi., excel., $1,600. Ext. 4249.

74 PLYMOUTH SCAMP - 2 dr., a/t, p/s, p/b, am/fm, a/c, 97K, $600. Steve, Ext. 3822 or 929-6527.

TIRES - (2), 13" Tiempo all weather, very good, mounted on Vega sport rims, $55. Duke, Ext. 2957.

72 CADILLAC SEDAN DE VILLE - all new parts, $750. Ext. 4026 or 744-8567.

80 TOYOTA CELICA - 5 sp. std., a/c, am/fm, lots of highway miles, $3,800. Ext. 5294.

72 CAPRI - needs much work, best offer. Vicki, Ext. 2902 or 744-8765 after 6 p.m.

69 VW BUG - engine runs great, blown transaxle, many new parts. Mike, 878-8423.

78 DODGE VAN - a/c, 3 spd. on column, 67K mi., $3,000. Helen, Ext. 7791.

74 HORNET AUTO SEDAN - 55,000 mi., good cond. Kale, Ext. 4224.

69 MUSTANG GRANDE - reliable transport, $900. 475-4451 eves.

76 AUDI FOX - 2 dr., 4 spd., new engine and many parts, must sell, best offer, 473-6183 or Ext. 2435.

74 VW BUG - good transportation, rebuilt engine, radio, snow tires on rims, $1,000. Ext. 7311 or 286-0918 eves.

78 CHERVOLET SUBURBAN - 9 passenger, p/s, p/b, am/fm, good cond., $3,600. Ext. 3923 or 689-9797 after 3:00 p.m.

80 CHEVETTE - 4 dr., low mileage. 475-4199.

74 CHEVY PU - 6 passenger, am/fm, p/s, p/b, attached cap, w/sleep-in insert, make offer. Dottie, 744-9016.

74 AUDI FOX - new battery, tires, good running, $450. Rusty, 751-8240.

76 HONDA ACCORD - immac., well maintained, 75,000 mi., $2,500. Rau, Ext. 2037.

80 KAWASAKI 650 LTD - red, crash bars, excel. cond., must sell, $1,200. Bob Johnson, 475-2305 or 283-4741 after 6 p.m.

74 PLYMOUTH DUSTER - 6 cyl., auto., p/s, 74,000 mi., excel. transp., $600. Roy, 286-5809 after 5 p.m.

72 FORD MAVERICK - 6 cyl., $250 or best offer. 661-6078 eves.

80 CHEVY MONZA - 4 spd., runs excel., 30 miles per gal., am/fm stereo, asking $1,850. 744-6049.

SLIDE-IN TRUCK CAMPER - 10-1/2 ft., sleeps 6, ref., heater, hot water, $500. Carl, Ext. 3507 or 286-8794.

70 MAVERICK - fair running cond., $250. Ono, Ext. 4516 or 744-8901 eves.

70 BEETLE - runs very well, rebuilt engine, many new items, snows on rims, $800; GM Delco am/fm stereo radio, excel. cond., $100. Suresh, Ext. 4459 or 751-2095.

71 OLD DELTA 88 - a/c, p/b, p/s, am/fm, new trans., starter, paint, excel. cond., $950. 751-1562.

71 VOLVO 142 - 4 spd., rebuilt engine, new clutch, radials, stereo, clean, dependable, $950. Austin, 363-6985.

MAG WHEELS - (4) with P185R70X13 Eagle NCT's, mounted, $300. Eric, 289-2352 or Ext. 2973 after 5 p.m.

74 MAZDA PU - w/cap, $1,000. 744-9812 after 6 p.m.

Boats & Marine Supplies

15' SEASPRITE - 1982 w/1983 Johnson, 35 hp, 1983 Shoreline EZ Loader, all mint. asking, $3,800. 331-9424.

JOHNSON OUTBOARD - 25 hp, long shaft, $250. 929-4358.

36' PEARSON - 1973, 6 sails, wheel, cruise equipe. Joe, Ext. 7961 or 369-0432 eves.

MARINER ENGINE - 1979, 80 hp, used seasonally, always serviced, SST prop, tank, battery, hose controls, will demonstrate, $2,000. 286-9427 eves.

76 SILVERLINE NANTUCKET - full canvas, 8/2, depthfinder, 18 gal. gas tank, CB antenna, ladder, excel. cond., $4,000. 567-9214.

18-½' STARCRAFT CHIEFTAIN - all alu. cruiser, needs paint, cosmetic work, boat only, vg. cond. Bill, Ext. 3848 or 281-6498.

SUNFISH - good cond., $450. Doris, Ext. 7610 or 878-2762 after 5 p.m.

20' COBIA - 85 hp, Johnson and trailer, many extras, $3,900. 744-5855 after 6 p.m.

MARINE SUPPLIES - 100 lb. mushroom anchor w/chain, $75; 12 ft. alum. rowboat, w/oars, $200; 8 ft. fiberglass dinghy (repaired), $75, can be seen in Northport. Fred, Ext. 2057 or 261-5735.

Miscellaneous

J-3 CUB - 1946, completely restored, 90 hrs. since major, $11,500. 298-4309 after 6 p.m.

MEN'S BICYCLES - (2) 27" and 28", 10 spd., $35 and $15. Ext. 4531 or 331-3785.

LIFE PRESERVER - baby/young child, up to 30 lbs., Sterns jacket type, $5. Kathleen, Ext. 3717.

7AC AERONCA CHAMP - 1946, 500 hrs., S.M.O.H., new windshield, new tailwheel assy., nice airplane. 298-4309 after 6 p.m.

CHILD'S CANOPY BED - painted yellow, mint cond., $50; curtains/spread to match, yellow print, $25. Marilyn, Ext. 2969.

CABBAGE PATCH CLOTHES - orders taken or cash and carry, excellent prices. 286-3623.

DOLLS - huggable 16", $30; Cabbage Patch clothes, boy or girl, $3.50 and up. 737-0246.

LAWN SWEEPER - 25", Sears, very good, $12; lawn seeder/spreader, cyclone type, excel., $10; wheel barrow, contractor type, tray size, 10"D, 27"W, 36"L, very good, $20. Fred, Ext. 4988.

COLOR TV - 25" Admiral, working cond., $25. 924-3565.

DINETTE - w/4 chairs, very good cond., best offer. Ext. 3565 or 924-8594.

ALUMINUM STORMDOOR - 80-½" x 35-3/4", w/screens, windows, frame, $35. 924-3565.

DINING TABLE - w/4 chairs, excel. cond., $100. 928-6930.

COFFEE TABLE - oval, colonial type, new, never used, $75. 589-0643.

VIC-20 COMPUTER - complete system, w/2 plug-in games and lots of programs on data cassettes. Richie, Ext. 2175 or 734-7342.

CHILDRENS OUTDOOR GYM SET - good cond., must pick up. 744-4611 eves.

BICYCLE - 3 spd., Mikado, men's, 26", red, like new. Rogers, Ext. 4222.

ELECTRIC MOTORS - (2) 110 V, 1/4 hp, $15/ea.; (2) 1/20 hp, $10/ea.; 1/2 hp, no wiring, $10. Ext. 4745 or 744-3225.

MOBILE FM STEREO RADIO - Craig Mod. 1901 and two speakers, $60; chess set, hand carved, onyx inlaid, onyx board, $40. Lou, Ext. 4364.

TELESCOPE - Tasco Model 19T, 320 power, hardly used, many extras; racquetball eyeguards, Carrera Viper II, new, $20; amplifier, Guild Model Two, hardly used, very good cond. 472-1922.

BOXSPRING & MATTRESS - for full size bed, $40. Lloyd Davis, Ext. 3952/4803 or 325-0389.

LAWNMOWER - Toro, 21", self-propelled, battery start, like new, $150; shop vacuum, B&D w/all attach., used twice, $20. 475-4787 after 6 p.m.

COOLER - Thermos brand, 35 qt., $10. 744-9677.

SOFA - colonial, tan and brown, excel. cond., $75. Dom, Ext. 3954 or 289-5425.

SANDER BELT - B&D, 3" wide, w/belts and dust bag, $30. Joe, Ext. 4439.

CASSETTE RECORDER - Panasonic, compact, am/fm radio, battery & AC volts 120 & 240, suitable for Europe, $60. 727-3608 after 5 p.m.

BEDROOM SET - "Heritage", walnut, woman's dresser w/mirror, men's dressor, two night tables, full size bed. B. Stars, Ext. 4278 or 298-9648 eves. & wkends.

TV ANTENNA - w/Roto turner, good cond., storm windows w/screens, 4 pair. 325-0447 after 6 p.m.

AM/FM STEREO CAR RADIO - 1985 Olds Delco, digital tuning w/clock, front and rear speakers. Ext. 5079.

GENUINE POPPAGALLO SHOES - open heel, black patent, 3-½ inch heel, size 7-½, never worn, orig. $60, sell for $25. Ext. 7196 or 286-2505.

AIR CONDITIONER - Kenmore, 6,000 BTU, 19" wide w/extenders, very good cond., $95. Doris, 724-4268 after 5 p.m.

SOFA - light brocade, $100; chair, doe color, $80; walnut end tables, $140; walnut record cabinet, $125. 924-6354.

LAWN SWEEPER - excel. cond., large, $10. 878-1755.

ELECTRIC PIANO - Fender Rhodes, 78 stage, excel. cond., $560; Peaucy PA system, $150. Ext. 4758.

LAWN MOWER - Sunbeam electric, $75. 473-7739.

G.E. DRYER - electric cloth dryer, heavy duty, excel. cond., $150. 751-0061.

PICTURE WINDOW - 6', storms & screens, $100. Debra, 563-2847.

COFFEE TABLE - $25; sofa bed w/2 matching chairs, $300, good cond. 586-6963 after 6 p.m.

BEDROOM SET - 7 pieces, $300; high-rise w/chest, $100, all in good cond. 586-6963 after 6 p.m.

SINK TOP - stainless steel, 1 large basin, back splash & faucet, new, $85. 475-0831.

MASTER BEDROOM - triple dresser, chest, night stand, all wood, like new, $400. Debra, 563-2847.

TRUMPET - used six months, excel. cond., asking $200. Ext. 7672 or 727-1667.

LIVING ROOM SET - Mediterranean, sofa, two chairs, coffee table, $225. Louise, 744-5867.

WET SUIT - 2 piece, child's size, 1/4" black neoprene, like new, $35. 473-2473.

CLOTHES DRYER - Frigidaire, 220V, good cond., $75. 821-0758.

RAQUETBALL EYE PROTECTION - Carrera Viper II, new, $20; telescope, Tasco 19T, 320 power, hardly used, $100. 472-1922.

TABLE - w/4 chairs, maple, $75; 5x7 portrait camera, wood frame, $75; 135 mm Telephoto lens, F3.5 Soligor screw mount, $30; wide angle lens, F2.8 screw mount, $30; Miranda SLR camara, 35 mm, w/case, good cond., $75. Ext. 7519 or 821-0758.

LAWNMOWER - Toro 21", self propelled, good cond., $75. Fred, 585-4741 after 6 p.m.

LAWNMOWER - side bagger, good cond., $50. Al, Ext. 2075 or 281-6617 after 5 p.m.

CHECK BASS - size, w/case, good cond., $125. Ext. 3304.

FURNITURE - 2 secretaries; 1 library table, solid wood construction, good cond., 3 items $500. Ext. 2423.

FENDER PRO REVERB AMPLIFIER - 45 watts, (2) 12" speakers, $150. Dave, Ext. 4254.

15' SEASPRITE - 1982 w/1983 Johnson,

VERTICAL BLINDS - miniblinds, wovenwood shades, custom colors and sizes. Jim Griffin, 281-2849.

COUCH - excel. cond., $135. 751-8240.

VIOLIN - made in 1935 by Heinrich Heberlein, Jr., $900. 744-3744.

TRIVIAL PURSUIT GAME - $50 or best offer. 878-4498.

MASTER BEDROOM - triple dresser, chest and night table, $400; 8 ft. picture/window, storms & screens, $100. 563-2847.

HIKING BOOTS - women's size 7-½, vibram sole, leather upper, used only 2 wks., cost, $70, sell for $20. Ext. 7196 or 286-2505.

ROOM AIR CONDITONERS - (2) $40/ea.; 20" dirt bike, $40; fiberglass water skis, $20; two window fans, $10/ea. Ext. 3811.

PROM GOWN - worn once, apricot, size 7/8 with matching picture hat, an be worn as a wedding party dress. 878-2239.

DECORATIVE PLANTERS - mini, spinning wheels, for house plants, 3/$35. Nancy, Ext. 5274 or 281-2767 eves.

BOX SPRINGS - (3), full size, good and clean, $15/ea.; pneumatic spear gun, never used, $45. Ext. 3589.

ELECTRIC SHAVER - Remington, worldwide, rechargeable, cordless brand, new, never used, orig. $75 sell for $35. Suresh, Ext. 4459 or 751-2095.

GOLF CLUBS - 8 irons, 1 wood, old bag, good for beginners or practice, $35. Joe, Ext. 4661.

GOLF CLUBS - mens, 1, 3, 5 woods, 3-9 irons and putter. $60. Ralph, Ext. 7623.

RUG - 9x12, gray w/under pad, 6 mo. old, $100. Ext. 2705 or 286-1062.

Real Estate

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

For Rent

FLORIDA - New Port Richey, for winter rental, 2 baths, 2 bdrms., furnished, bulkheaded, 5 min. to Gulf of Mexico, $600/mo. 751-0468 eves.

MIDDLE ISLAND - 2-3 bdrms., dining rm., living rm., kitchen, on quiet river, fishing, boating, swimming, 5 min. from Lab., security, references. 924-3755.

N. SHIRLEY - large studio apt., furnished, w/kit., private ent., utilities included, 5 min. from Lab, stores, 1 person only, security, $375 pays all. 281-8044.

BELLPORT VILLAGE SO. - vacation weekly, July 1-21, 4 bdrms., furnished house, walk to stores, Great South Bay dock, and Fire Island beach ferry, golf and tennis. 286-5879.

VERMONT HOUSE - reasonable vacation, 3 bdrm., 2 bath, fireplace, fully equipped, woodland trails, alpine slide, golf, summer theater, boating, fishing, etc., family oriented, avail., weekly. 732-6499 after 6 p.m.

MOTOR HOME - vacation weekly, July 1-21, 20 ft., sleeps 4, bathroom, kitchen, a/c, 110 V gen., $300/wk., + 1/mi. over 1,000. 286-5879.

For Sale

SHOREHAM - Shoridge Hills, waterfront house, 5-rooms, low, Bermuda-like, white, large porch overlooking the Sound, quiet residential setting, gardens, trees, shrubs, beach assoc. membership, $160,000. 744-9749 or Box 609, Shoreham.

NESCONSET - extra large 4 bdrm. colonial, beamed panelled den w/full wall fireplace, eat-in country kitchen, 2-½ baths, living room, dining room, lovely neighborhood. 724-9401.

MILLER PALCE - 3 bdrm. ranch, full finished basement, garage, oak floors, fireplace, dining room, living room, $75,900. 821-9126.

BAITING HOLLOW - Fresh Pond Landing, 1.1 acre, walk to beach, great for passive solar house, cleared, $35,000. 929-3248.

Car Pools

E. NORTHPORT/COMMACK - 3 person car pool, looking for 2 additional drivers. Paul, Ext. 4156.

MATTITUCK/CUTCHOGUE - need ride to work, will contribute to gas. Doug, 734-6538.

COMMACK - would like to start a car pool. Bonnie, Ext. 2876.

Wanted

APARTMENT - 1 or 2 bdrms., reasonable price. 567-8492 after 6 p.m.

APARTMENT - married couple w/dog needs 2 bdrm. apt. or house with appliances, starting June. Diane, Ext. 7114.

MOORING - 75-100 lbs., reasonable. Joe, Ext. 7961 or 369-0432 eves.

HOUSEMATE - to share spacious, condo., 2 bdrms., w/w carpeting, washer/dryer, storage, good location, must be mature, responsible female. Please write: Housemate, P.O. Box 367, Ridge, NY 11961.

FRONT WHEELS - (2) tires & rims for bike. Ron, Ext. 7696 or 289-1003.

HOUSE TO SIT - free, responsible and caring, any period, any duration, Aug. 1 until Nov. 1. J. Allentuck, Ext. 2412.

HOUSE TO RENT - couple with one child needs 2-3 bdrm. house, July 1, reasonable, references furnished. 929-3566.

LADIES GOLF CLUBS - reasonable. Elaine, Ext. 4379.

MUSIC PARTNERS - violist seeks chamber music partners Mary, Ext. 3304.

Free

CAT - small, black & white, affectionate, good w/children, needs home immediately. Carol, Ext. 2907 or 698-8510 eves.

KITTENS - ready for adoption now, make your selection. John, Ext. 3292 or 286-1348.

Services (published monthly)

MAGICIAN & CLOWN - balloon sculpture also avail., make your child's party really special, package deals to suit your needs, reasonable rates. Frank, 654-9094 eves/wkends.

CARPET & FLOORING - professionally installed, sales & service, new & old, repairs, restretches, shop at home service. John, 289-8089.

HOME IMPROVEMENTS - roofs, extensions, gutter leaders, aluminum siding, free estimates. Mike, 736-6115.

MACRAME CORD BEADS - rings and other supplies, classes for beginners and advanced. Anette, 744-8581.

HOUSEPAINTING - paper hanging, professional, insured, many BNL references. Bob, 289-7657 after 6 p.m.

LAWN AND YARD CARE - cutting, fertilizing, trimming, edging, clean-up, handyman, very reliable, reasonable. Adam, 289-2939.

FOR RENT - outdoor party tent, 20' x30'. Fred Kuehl, Ext. 7947 or 588-2268.

LAND CLEARING - using excellent rake on JD 450 track loader, $45/hr. with operator. Tom, Ext. 4084 or 878-1060.

TUTORING AND TRANSLATIONS - all sciences plus French, by certified teacher, reasonable rates. Albert, Ext. 3057.

BABY SITTERS - reliable, afternoon, eves. and wkends, on site. Ext. 3126.

ELECTROLYSIS - physician trained and licensed, permanent removal of unwanted hair, free private consultation. 331-4768.

VIDEO TAPING - weddings, recitals, birthdays, etc. Mark, 928-5684 eves.

SOLAR ADDITIONS - sun space information. Tony, Ext. 3198 or 924-5248 after 6 p.m.

INTERIOR DESIGN PROFESSIONAL - can save you time, money, trained Cornell, Parsons. Rochelle Spergel, 757-5599.

ROTOTILLING - new or established gardens. 929-3209 after 5:30 p.m./wkends.

AUTO SHAPING - machine compound, wax, polish, complte detail interior and vinyl cleaning. 744-4047 eves.

VIOLIN LESSONS - all ages, also Suzuki method. Ext. 3091.

FIRESIDE CHIMNEY SWEEPS - fireplaces, wood, coal & oil flue, pre-fab repairs, caps, relining, Lab discounts. 821-9690.

PAINTING - interior, exterior, reasonable rates, BNL references. John, 924-5012 eves.

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