



Artist's conception of proposed National Synchrotron Light Source at Brookhaven.

The Light Fantastic

Brookhaven has proposed to ERDA the building of a national facility dedicated to advanced multidisciplinary research with synchrotron radiation, which would be of major importance in fundamental research for the materials, molecular and life sciences. The facility is also envisioned as a center for experimental and diagnostic investigations related to the nation's energy and environmental concerns.

It is felt that the proposed National Synchrotron Light Source will fill a great need for a facility intended solely for the production and utilization of synchrotron radiation in pure and applied research over the entire range of wavelengths. Already a large number of potential users from universities, other national laboratories and industry have contributed to the overall facility concept.

Six years ago, after many lunch time conversations followed by an interdepartmental study, the design for the Light Source began to evolve. It was evident that an electron storage ring facility designed exclusively for photon generation was the preferred approach. Besides the spectral distribution, the Brookhaven design will yield brightness greater by at least an order of magnitude than that of any existing synchrotron or storage ring.

Synchrotron radiation is the electromagnetic radiation emitted by a rapidly moving charged particle when it moves in a curved path. This facility will consist of two electron storage rings similar to those which are used in high energy physics experiments. These rings will differ, however, in that the electrons which circulate in the rings will be used exclusively to produce electro-magnetic radiation and not for studies of elementary particles. The radiation produced will then be used in conventional experiments. The facilities are thus like giant light bulbs.

The type of radiation emitted depends, among other things, on the electron energy. The larger 2 GeV ring will have provision for the development of about 40 X ray beam ports, and a 700 MeV ring will provide for about 16 ultraviolet beam ports. Tentatively, the site selected for the Source is the area adjacent to the Instrumentation Division.

With synchrotron radiation, many areas of research are opened up for further exploration. For example, it may be feasible to solve the structures of many biological substances using crystals as small as 50 microns across. It would also open the hitherto marginal prospect of deriving significant information from low angle diffraction about radiation-induced voids in reactor vessel materials. On the environmental front, the chemical state and local environment of elements which find their way into pollutant materials can be determined with the use of synchrotron light.

The committee, which has been responsible for all aspects of the design, is currently chaired by Martin Blume, Physics Department, and includes John Blewett, Director's Office, Renate Chasman and Ken Green, Accelerator Department, Chalmers Frazer and Dick Watson, Phys-

ics, Jules Godel and Morris Perlman, Chemistry Department. Blume cites Chasman and Green as the principal designers of the machine.

"The history of synchrotron radiation," Blume says, "goes back to the turn of the century and was first studied in connection with the motion of electrons around the nucleus in an atom. The concept lay fallow until the 1940's when electron synchrotrons were built, and then it was found that the radiation emitted by the electrons made it difficult to accelerate them because the radiated energy had to be replaced."

John Blewett, credited as the experimental discoverer of synchrotron radiation, perceived it during his work at General Electric just after World War II. His discovery led to a rekindling of interest in the theory of synchrotron radiation.

In the 1960's, pioneering experiments in solid state physics were done by people at Cornell and at the National Bureau of Standards. With the advent of electron storage rings, such as SPEAR at Stanford, utilization of these rings for solid state physics research has been under consideration. According to Blume, the first machine dedicated to this purpose was an ultraviolet ring at the University of Wisconsin. Synchrotron light is also presently being utilized at Cornell, the Bureau of Standards, and SPEAR.

The cost of the proposed Light Source is now estimated at \$21,800,000. The project proposal was submitted to ERDA in June and, if approved, plans are that construction would begin in late 1978, with a target completion date of 1981.

Union Contract Ratified

On July 28, the members of the IBEW Local Union 2230 voted in favor of ratifying a 12-month labor agreement between the IBEW and the Laboratory, effective August 1, 1976. The contract provides for a wage increase for employees covered by the agreement of 7% effective Monday, August 2, 1976.

Selected Reading

- Chem. Eng. News 54, July 5, 1976
Willard Libby heads into active retirement. 26-8
- Nature 262, July 15, 1976
Colin Norman reports from Cambridge, Massachusetts, where attempts are being made to restrict recombinant DNA research. 163-5
- N.Y. Times Mag. July 18, 1976
The hunting of the quark. S.L. Glashow. 8-9 +
- Science 193, July 23, 1976
Grant applications: Panel finds new laws enable stealing of ideas. P.M. Boffey. 301-3
- Nuclear power: France forges ahead on ambitious plant despite critics. J. Walsh. 305-6 +

Catch Whistler

Last chance to see the Whistler etchings and lithographs at Berkner Hall. Exhibit departs August 2.

Plant And Human Cells Fused

Modern biologists constantly broaden the genetic identities of life on earth through breeding hybrids. Here at BNL, a research group may have given a new direction to the development of new forms of life by combining plant and animal cells.

Their fusion of a human cell with a tobacco plant cell is the first inter-kingdom fusion between plants and man. C. Weldon Jones, a summer student who is now in graduate school at Harvard, worked with Iris Mastrangelo on the project under Harold Smith, Biology Department, last summer. The research paper appeared as the cover story in the July 30, 1976, issue of *Science* magazine.

Robert Meck, Medical, provided the human cells used in the research project from a standard experimental culture which grows well under various conditions. They are referred to as "HeLa cells," because they were originally taken from the tumor of a cancer patient named Henrietta Lacks.

Plant cells were obtained from a hybrid of *Nicotiana glauca* crossed with *Nicotiana langsdorffii*, two species of tobacco plants. The "amphiploid" - an organism with twice as many chromosomes as usual - of this cross was obtained by adding colchicine, a chemical known to double the number of chromosomes. The amphiploid hybrid grows into a plant with the genetic tendency to spontaneously develop tumors.

The amphiploid hybrid cells are tobacco plant cells and - unlike the human animal cells used in this experiment - have cell walls in addition to cell membranes. Before attempting to fuse these two types, the cell had to be freed from its thick, protective overcoat.

Houng-Zung Liu, Biology, helped make the "protoplasts," which are plant cells lacking the rigid cell wall composed of a complex carbohydrate called "cellulose." He used digestive enzymes to dissolve the wall from around the plant cells and then placed them in a liquid suspension.

"The fusion process was fairly simple," said Jones, who would like to return to the Laboratory after finishing his advanced degree, "just a matter of mixing the two cell preparations together and incubating them at room temperature with polyethylene glycol, a fusing chemical commonly known as 'PEG'."

PEG works like a glue. By altering the electrical charge on the membrane surface, PEG makes it stick to other cells and allows them to fuse together as one discrete body. Since PEG does not recognize what it is fusing, many of the observed fusions are between two HeLa cells or two tobacco hybrid cells. Only 0.2 percent of the observed fusions involve one HeLa and one tobacco cell.

These "tobacco-man hybrid cells" not only survive in the liquid growth medium, but grow back their cell walls. According to the article the HeLa cells' cytoplasm, which is the extra-nuclear substance of the cell, can not be seen within the protoplast. However, careful analysis clearly reveals that the human nucleus remains.

The group was able to show through radioactive labeling that the second nucleus they found in the fused cell was from the HeLa cell. Thymidine in the HeLa cells' nuclear material was replaced with "tritiated thymidine," a class of thymidine in which normal hydrogen is replaced with a radioactive isotope of hydrogen, called tritium. Now it was possible to identify the tobacco plant cells which had fused successfully with HeLa cells, by checking for the presence of a second, radioactive nucleus.

According to the journal article, the fused cell maintained both nuclei for as much as six days when the experiment was terminated. No cell division took place under these conditions.

Smith added that, "More recently, we have allowed the experimental cells to reproduce by cell division for as long as eight days. We are now getting ready to look at it after it has started to grow and form colonies, to see if the human genetic material is still there."

The survival of both sets of genetic material will be the test of whether or not a viable hybrid was formed. Even if the hu-



Cells from the amphiploid tobacco hybrid plant Harold Smith is observing were stripped of their cell walls for use in a new kind of hybrid experiment. Protoplasts from this plant formed the first successful fusion between human tumor cells of the animal kingdom and cells of the plant kingdom.

man nucleus, as a whole, does not survive the division, the fusion cell will still have important genetic applications if any of the human chromosomes remain in the descendants.

"I'm not sure that we will be able to tell if any human genetic material remains in the cell after division," said Smith, "without using more precise techniques. In the first stage it's easy, because the two nuclei look very different under a light microscope. We won't be able to identify a single human chromosome without a more detailed examination."

Since the physical appearance of human chromosomes has been studied carefully, it might be possible to spot the whole set of human chromosomes or a single one after tedious observation. This would indicate that plants and man have some regulatory apparatus of development in common.

The presence of human proteins made by genes on the HeLa cell chromosome would be a sign of human gene activity. This would also signal the presence of some segment of the human genetic material or whole chromosomes.

Smith hopes that the fused cells will retain some whole-chromosome portion of the HeLa cells in the tobacco cell after fu-



Multiple fusion aggregate showing two small dark tobacco nuclei (the "eyes"), a superimposed HeLa cell (one "ear"), and two HeLa nuclei with the cell membrane apparently continuous with the protoplast membrane and no visible intervening membranes (about $\times 4440$).
— photo by William Marin, Jr.

sion. If so, scientists may be able to observe the genetic changes in the tobacco plant caused by the presence of the HeLa cells' chromosomes.

Smith assures there is no cause for concern that anything produced could be harmful to man. Despite the presence of human chromosomes, their expression would still be limited by the plant's genetic regulatory system.

"The requirements for differentiation are directed by the plant nucleus," said Smith. "Whether the animal nucleus will be able to function in that same environment, we don't know."

Though geneticists have been observing the physical characteristics of human chromosomes (Continued on page 2)

I Say, That Was Well Played

Wander over to the playing fields of Brookhaven on Sunday, August 8, at 1 p.m. and watch some Lab people smack a willow bat against a leather ball. Chat with your friends, eat a cucumber sandwich, applaud good plays, and above all, do not indulge in raucous criticism. For the game is cricket, gentlemen.

This sport, which is a mystery to most Americans, is the latest BERA activity. Since its inception only a few months ago, it has already attracted over 60 interested players. Debu Majumdar, a nuclear engineer at DAS who played the game in India, spearheaded the cricket movement here. His wife, Catherine, had originated the idea and some of their friends were enthusiastic. To see what the reaction would be to a cricket club, a few notices were floated in the *Bulletin*, and by Jove, people were interested.

The next crucial step was to get a bat and ball. Susan Montague, a visiting scientist in DAS, took it upon herself to raise the money, \$40 to be exact, and the equipment was subsequently purchased in Montreal. Apparently, cricket equipment is hard to find in the U.S. Anyone going to India now is cornered by Majumdar to pick up some bats and balls. They are cheaper there. The wicket, another essential piece of equipment, was home made.

Colin Durston, an English nuclear engineer in DAS, serves as the game's "theoretician." He is the one called upon to lecture on cricket and he explained the fine points of the game to the BERA Board who subsequently approved it as a BERA activity.

Ed Beardsworth, a physicist, is the organizer. He is the public relations man and keeps everything flowing smoothly.

Briefly, cricket is a game of skill played on a field with bat and ball between two teams of 11 players each. The size of the field ranges from one in Melbourne, Australia at 9/4 acres, to small meadows. What is required is a very smooth ground to play on. Herman Haller, Site Superintendent, arranged to have the pitch rolled (22 yds.



Some members of Brookhaven's new cricket club. Forefront, Debu Majumdar; 2nd row, Joe Mead and Imtiaz Madni; third row, Graheme Williams and Brian Meadows; standing at rear, from left, Ed Beardsworth, Sachi Dhar, Maurice DuBois, Peter Schmidt, Glenn Snape, Susan Montague, Vinod Mubai, Gail Thompson, and Mike Murtagh.

International cricket games go on for five days. At Brookhaven, the teams play about three hours, and, of course, break for tea. In the games here, so far, tea has not yet made an appearance, but there is beer and soda, cheese and crackers, potato chips and pretzels. And some person, with the proper spirit, made cucumber sandwiches for the first big game. It is even possible that one might find watercress sandwiches one of these days.

Majumdar says the teams, called the Brookhaven Eleven and the Empire State, have some good batsmen but they need good bowlers. He would like to see Americans come out for the game. "From their experience in baseball, they can hit hard," he says. "They can also get on the offensive immediately, where we tend to start out more defensively."

He urges everyone to come, either to play or watch, and bring your children. You may see a player bowl a "googly" ball, hear a batsman called out because he's "leg before wicket," or what is heaven to a cricket player, be on hand when someone hits a "century."



Bowler Joe Mead

× 10 ft. between the wickets) and cut the grass, conditions essential in cricket.

Team captains, selected before each game, decide by the toss of a coin whose team will bat the first innings (always plural), or take up position in the field. If the former, the players on that team proceed successively as batsmen and try to make as many runs as possible against the bowling and fielding of the opposing team. If the latter, one man is the bowler and one the wicketkeeper. The rest are dispersed in the field in positions with fascinating names such as silly mid-on, gully, or short square leg. There are two umpires.

Cricketers traditionally wear white. "We are trying," says Majumdar. "If we've got it, we wear it."

Cricket is not only a game, it is a social occasion. It is to be enjoyed in relaxed surroundings with pleasant company. The good plays are praised and the bad ones ignored. Majumdar says, "In cricket, you enjoy a really good play, even when it's by your opponent." Americans will have to learn to control their tongues, because one thing that is never, never done is to boo the umpire. Even if the umpire's decision is obviously wrong, the spectator does no more than raise an eyebrow.



Batsman Mike Murtagh, Wicketkeeper Glen Snape, and Fielder Gail Thompson.

Upon publication of the updated BNL telephone directory, the telephone listing for all emergencies will be 2222.

Tune In!

#418

During the course of the year many Lab employees take business trips and use rental cars for transportation. We are instructed not to take the \$1.00 per day insurance for collision or medical. Total \$2.00 per day. We have not received a reasonable explanation as yet, and we are concerned about the following:

- 1: A Lab employee is involved in an accident where there is both medical and vehicle damage. The Lab employee was negligent. Is this employee responsible as an individual or is Brookhaven Lab obligated to all vehicle occupants and owners?
- 2: The same situation as above except the Lab employee was not negligent.

Answer:

Collision insurance offered by rental car contracts covers the first \$100 of damage to the vehicle only, and the Laboratory has elected to self-insure this risk. The medical coverage is unnecessary because the Laboratory already provides this coverage for employees. Thus, these coverages have nothing to do with third party liability, which is covered under the Laboratory's General Liability Policy with Liberty Mutual Insurance Company. The answers to the specific questions asked are:

If the employee was engaged in the course of his employment (rather than engaged in personal business) when the accident occurred, the Laboratory would be legally responsible to all third parties.

If the employee were not negligent, then the Laboratory, which of course acts through its employees, would not be at fault and no liability would attach to the Laboratory on the basis of negligence.

—N.P. Rathvon

Pool Schedule

The swimming pool summer season will begin on May 1 and extend through August 31, 1976.

Entrance Fees	
Season Passes	
Employee	\$10
Family	\$20
Daily (effective May 1, 1976)	
Employee/Family Member	.75
Guest	\$1.00

Schedule	
Monday through Friday	
11:30 a.m. - 1:30 p.m.	Employees Only
5:00 p.m. - 9:30 p.m.	Employees/Families/Guests
Saturday and Sunday	
1:00 p.m. - 6:00 p.m.	Employees/Families/Guests

Cafeteria Menu Week Ending August 6, 1976

Monday, August 2	
Tomato Bouillon Soup	
Franks & Baked Beans	1.00
Barbecued Fresh Ham & 1 veg.	1.30
Tuesday, August 3	
Cream of Chicken Soup	
Chopped Steak & 1 veg.	1.10
Beef Stew on Rice	1.25
Wednesday, August 4	
Split Pea Soup	
Breast of Lamb & 1 veg.	1.15
Chicken Livers & 1 veg.	1.10
Special	
Make Your Ice Cream Cone	
1 Scoop - 20¢	2 Scoops - 35¢
Thursday, August 5	
Puree of Mongol Soup	
Spanish Omelet & fr. fr.	1.10
Short Ribs of Beef & 1 veg.	1.30
Friday, August 6	
Clam & Celery Soup	
Seafood Cakes & Spaghetti	1.05
Pot Roast & 1 veg.	1.30

Cell Fusion (Continued)

mosomes for a long time, they still do not know most of the biochemical messages found in much of this genetic material. When new biochemical behavior in the fused cells is linked to the presence of human chromosomes, they will have a better idea of what each chromosome is responsible for in the human body.

"There's really no experience in this area," said Smith. "We anticipate that it would take some time and effort to reach this stage. There may even be incompatibilities which make it impossible."

Smith explained that there are natural biological systems which reject foreign genetic material and there are enzymes which can even destroy it. As the tobacco cells divide and differentiate into a plant, much or all of the human genetic material may be lost.

"There is no doubt whatsoever that we can clone full plants from these experimental cells, but we just don't know whether there will be any human-derived genetic material left in them by the time they have differentiated."

—Clifford Cockerham

Retiring Today



Arthur J. Miley Patrick J. Hicks

Arthur J. Miley, a Laboratory employee since May 9, 1966, will be retiring today. He served as a Messenger in Staff Services. Patrick J. Hicks, a Laboratory Custodian from Plant Engineering, will be retiring today. He has been with the Lab since June 4, 1951 - 25 years!

—photos by Rosen

Hospitality News

The Hospitality Committee will hold an evening get-together on Thursday, August 5, from 8 to 10 p.m., at the Recreation Building in the Apartment Area.

The only entertainment planned is an abundance of good conversation. Light refreshments will be served; spouses are welcome. Come and meet your neighbors.

Answers To What Did He Say?

July 23

1. Many are called but few are chosen.
2. Idle hands are the Devil's plaything.
3. Time flies like an arrow.
4. A penny saved is a penny earned.

BROOKHAVEN BULLETIN

Published Weekly for the Employees of Brookhaven National Laboratory

BERNICE PETERSEN, Editor

DOUG HUMPHREY, Photo-Journalist

CAROL PETRAITIS, Copy Preparation

40 Brookhaven Ave. Upton, N.Y. 11973
Telephone 516 345-2345

CARL R. THIEN, Public Relations Officer

In Memoriam

Edward J. Burke, former Security Officer of the Laboratory, died July 24, 1976 in Bayport at age 66. Burke joined the Laboratory in July 1958 and served as Head of the Plant Protection and Security Division from July 1961 until his retirement in 1973. A graduate of West Point and the University of Virginia Law School, Burke retired as a Colonel in the U.S. Army before coming to Brookhaven. He is survived by his wife Marion and eight children.

Letters To The Editor

To the Editor:

I recently returned from a four-week absence to find in an article in the June 25th *Bulletin* that the late Dr. Arnold Sparrow and I had "confirmed the identification" of "a rare breed of orchid" found growing on site as the Ram's-head Lady's-slipper, *Cypripedium arietinum*. Not wishing to cause anyone undue embarrassment, I nevertheless feel compelled to set the record straight, both for the sake of scientific accuracy and to reassure some puzzled readers.

I saw the plants while they were blooming, and identified them at the time simply as lady's-slippers. I was not asked to be more specific, nor was Dr. Sparrow who also saw them. Either of us, however, could readily have identified them as the very familiar *Cypripedium acaule*, the Pink Lady's-slipper or Moccasin Flower.

It is not clear how they came to be identified as Rams-heads, but I must quietly protest the use of my name and Dr. Sparrow's as having confirmed the error. The two species are so dissimilar that it is difficult to understand how they could have been confused.

The Pink Lady's-slipper, like the Ram's-head, is a protected species, although its occurrence is by no means rare in this area. It is abundant in the Cathedral Pines park in Middle Island, for instance, and thrives in many spots on the Lab site. — Anne Nauman

To the Editor:

This is to inform the many friends of George Reuter, retired, of his passing on June 22, 1976, at Fort Lauderdale, Florida.

Sincerely,
Mrs. Etta Reuter

To the Editor:

A note of thanks to all our friends whose sincere expression of sympathy meant so much during our recent period of bereavement. Bless you all.

The Heins Family

Arrivals & Departures

Arrivals

Frank A. Castellano Applied Math.
Adolf E. Emanovsky Accelerator
Chyng-yann Shiue Chemistry

Departures

Thomas D. Barber Accelerator
Francis J. Haughey Safety & Env. Prot.
Thomas M. Ricciardello Staff Services
Manoo B. Ruder Medical

Team Roundup Time For BNL Keglars

The Laboratory bowling leagues are now being formed with present plans for men's and women's leagues in Port Jefferson on Tuesday night, a mixed league in Port Jefferson on Wednesday night, and a mixed league in Shirley on Thursday night.

Entry blanks will be mailed to last year's captains and copies for other interested teams will be available at the BERA Sales & Services Office starting on Monday, August 2.

For further information call Bob Jones, Ext. 3512, or Marge Stoeckel, Ext. 2459.

Very Bright Students



Four exceptionally gifted high school students are spending several weeks at Brookhaven under the auspices of the BOCES II Institute for Gifted and Talented Youth. Each participating school district in the Second Supervisory District of Suffolk County, selects a maximum of 14 students who must have "exceptional abilities, unique potential, and/or exceptional achievements in a specific discipline." The students spend their internships at an institution devoted to the branch of learning they have chosen, in the arts, humanities, or sciences. The students selected to come to Brookhaven as Guest Trainees in science are: from left, Leslie Ellington (Center Moriches H.S.) who is working in Applied Math, Tammy Rosenblum (Longwood H.S.) in DAS, Patricia Meinhold (Longwood H.S.) in Medical, and Barry Auskern (Bellport H.S.) in Safety and Environmental Protection.

Tennis Tournament Results

This year's tournament was a successful one enjoyed by participants and spectators alike. In the men's singles last year's champion, Alan Rosenberg, succumbed to a more steady Barry Auskern, 3-6, 6-4, 6-3, in an extended duel of excellent tennis. Andy Kevey and Barry Auskern teamed in men's doubles to triumph over Tom Koetzle and Shozo Takagi, 5-7, 7-6, 6-3, in a very close match carried over two days.

Shizue ("C") Iwai again is BNL women's champion, defeating Mary Jane Stangby, 6-3, 6-0. "C" teamed with Yako Sanborn to defeat Mary Jane Stangby and Marda Kevey, 7-5, 6-3, in women's doubles. In the mixed doubles there were new champions, Stangby-Kevey, who defeated Iwai-Rosenberg, 6-4, 1-6, 6-4, in another close contest.

Many thanks to all who completed and made the tournament a success. It was good fun and good tennis. To those of us who didn't make it - look forward to next year.

Soccer

John Skalyo

BNL was eliminated from championship contention in the Brookhaven Town Summer League by two losses over the past week. League leader Eastport-Moriches took a hard fought contest 1-0 and Port Jefferson Station won 2-1 in a game that was controlled mostly by BNL. BNL stands 1-4-2 in Win-Loss-Tie and can only make .500 by winning its last three games.

Next week BNL meets Miller Place S.C. on August 2 and Port Jefferson Station on August 4, both games at Miller Place High School.

For Red Hot Lovers Only

Tryouts for the upcoming Theatre Group's production of "Last of the Red Hot Lovers" by Neil Simon will be held on August 3 and 4 at 8 p.m. They will be held at the Stage II theater and scripts may be obtained in advance from Mary Kinsley, Ext. 4474.

Two Bicycle Tours

A BNL tour of the Southampton area is planned for Sunday, August 8. This is an easy 27-mile tour which starts at the Southampton railroad station, circles around Mecox Bay, then north to Sag Harbor, and back along the Little Peconic Bay shore to Southampton. About 20% of this duplicates part of the Riverhead run of July 18. Interesting points are the Berwind Memorial Village Green with the wooden windmill, the Eliz. Morton National Wildlife Refuge and the Long Island Automotive Museum (at \$1.50) depending on interest. Bicycling time is 3 hours. Meet at Berkner Hall at 9 a.m. Some car space may be available, but most people will have to provide their own transportation.

On August 15, the L.I. Bicycle Club is sponsoring the "Princeton Century and Half Century" (100 or 50 miles), starting at 7:30 a.m. in Princeton, N.J. A fee of \$3 or \$4 is charged which pays for arm patches and "sag-wagon." Transportation to Princeton must be provided by the rider.

For additional information on either tour contact Gerry Morgan Ext. 4841, Bldg. 815.

Hunt For Treasure

"Check the map, follow the clues and you will find the treasure." These were the words of encouragement given by counselors Rich Parsons and Mary Grace Lazzaro to the children of the BERA on-site recreation program last Friday, as they participated in the annual Treasure Hunt. Children of all ages gathered at the recreation building to search the land for lost pirate booty. They looked under bushes, behind houses, in the fields and in the woods for clues that led them to strange and lovely places all around the apartment area.

While the children were looking for the loot, they were constantly aware that a large "gorilla" had escaped from a local circus and had captured Debbie Bell, a Youth On Campus worker, who was now in need of their help. You see, only children under twelve years old could subdue him.

All turned out fine, however, as treasures of candy were discovered and the ferocious gorilla (Bob Skeeter of the recreation program) was caught in the thicket by a group of four, five and six year olds. A great time was had by all!

This week's special is the Scavenger Hunt and next week is the annual Halloween Party.

Kick-Board Races

If a loud roar is heard at the swimming pool this Friday don't be alarmed. It happens every Friday afternoon as parents and friends of employees children root and cheer for contestants in the BERA pool specials.

Last Friday's kick-board races were no exception. Children from 5 to 12 years old raced across the pool kicking their feet in order to propel a lightweight kick-board to victory. Cries of "kick, kick, kick" were heard from all corners of the pool. Winners were tired and wet but always happy. All had a wonderful time.

Victors were:

- Over 10
 - 1st - Paul Tanska
 - 2nd - Kristen Holden
 - 3rd - Dianne Kiely
- 7-9 yr. olds
 - 1st - Joe Carew
 - 2nd - Patricia Voelpel
 - 3rd - Joe Martinolich
- 4-6 yr. olds
 - 1st - Megan Holden
 - 2nd - Matthew Stone
 - 3rd - Daryl Elmore

Children's Basketball Clinic A Success

The BERA Recreation Program's children's basketball clinic got off to a bouncing start this week. Over 20 boys and girls of all ages are taking lessons on dribbling, shooting, passing and playing skills from Carl Verdi and Bob Skeeter of the recreation staff.

More participants will be happily accepted for this free clinic which takes place every Tuesday and Thursday at 3 p.m. in the gymnasium. Come and sign up! Further information can be received from Ext. 3147 or at the Recreation Office behind the gym.

Softball

Ed Taylor

League I

Raven 9 (1-0) - Blue Jays 7 (0-1)

The Ravens, behind clutch pitching from Spider Ligon and strong defense by Mike Losquadro and Bob Brown, outlasted a hustling Blue Jays team in extra innings. Spider Ligon also struck out in the game. Leroy James had a homerun for the Ravens.

Old Timers 16 (1-0) - Hawks 5 (0-1)

League II

Six Pax 7 (2-0) - Bubble Boys 5 (1-1)

Steve Jacobs hit a homerun for the losers.

Dirty Sox 16 (1-1) - Metallurgy 10 (0-2)

League III

Medical 11 (1-1) - Sweathogs 10 (0-2)

Medical finally began hitting the ball hard. John Elmore hit a 3-run homer for Medical.

Circuits 8 (2-0) - Phoubars 7 (1-1)

Jeff Gaffney (4 for 4), Frank Haibon and Bill Hardy (both 2 for 2) and Al Mack (2 for 3) led the Circuit attack.

League IV

Streakers 16 (1-0) - Charlie Browns 9 (0-1)

Power Packers 23 (1-0)

Nuke Powers 17 (0-1)

Ken Kenndy and Kirk Sorgi hit homeruns for the Power Packers.

League V

Oh Kays 17 (2-0) - Turkeys 12 (1-1)

The Oh Kays turned in a good team effort as they defeated the Turkeys. Rosemary Mack and Jackie Larrie both struck out in the game.

T.N.T. 16 (1-1) - Balls & Strikes 14 (0-2)

The T.N.T.s finally won their first game of the season. Congratulations!

Odd 15 21 (2-0) - Diamonds 6 (0-2)

Denny Klein had a homerun for the losers.

Classified Advertisements

Placement Notices

Each week the Personnel Office lists personnel placement requisitions, currently being processed. The purpose of these listings is, first, to give notice of all non-scientific staff positions being filled and, second, to give employees an opportunity to request consideration for themselves through the Personnel Office. In filling vacancies, the Laboratory's objective is to give first consideration to present employees, as follows: employees within the immediate group having the vacancy, employees within the department or division, employees within the Laboratory as a whole.

For further information regarding a placement notice, or to request consideration for an available position, contact Supervisor, Personnel Placement & Development, extension 2874 or 2882.

160. SCIENCE ASSOCIATE - Minimum BS degree or equivalent in oceanography and relevant laboratory and field experience in chemical analyses of sea water samples for inorganic, organic and biological constituents. Department of Applied Science.

161. SECRETARY - Temporary position. Excellent typing skills. Two to three years' secretarial experience desirable. Department of Applied Science.

162. LABORERS - Four temporary positions. Application deadline: August 9, 1976. Plant Engineering Div.

163. TECHNICIAN - Seeking two to three years' experience in mechanical technology or equivalent education and a good knowledge of chemistry and radiation safety. Hazardous Waste Management Group. Safety & Environmental Protection Division.

164. MESSENGER - Application deadline: August 11, 1976. Staff Services Division.

165. ELECTRICIAN A - Under minimum supervision lays out, constructs, installs, maintains, repairs and operates (in accordance with the national electrical codes, or as otherwise directed) electrical systems, equipment, controls and related devices.

May be required to perform similar duties on other than maintenance division equipment and facilities.

Application deadline: August 11, 1976. Plant Engineering Division.

166. LABORATORY CUSTODIAN - Application deadline: August 11, 1976. Plant Engineering Division.

167. OFFICE SERVICES ASSISTANT - Temporary position. Technical Information Division.

Autos & Auto Supplies

69 CHEVROLET - Newport green, ps/pb, ac, rebuilt engine & trans, low mi, good cond. Kenneth Spear, 281-2082 after 5.

67 VW - Bug, good engine, bad trans; also '63 good engine & trans plus other parts. All \$200 or best offer. Steve, 653-4632.

TRAILER HITCH - Reese, any reasonable offer. Ext. 2547.

MOTORCYCLE TIRE - Brand new in orig wrapper, Yokohama 300-18 4-ply ratio-trail sport. \$15. 924-3082.

66 FORD - 250, heavy duty sup. 981-4681 between 6 & 8 pm.

63 PONTIAC - Catalina, 3-sp, 389 engine, excel cond. \$300 firm. 281-7159.

72 RUPP - 80 cc trail bike, good cond. \$125. 286-8448 eves.

70 SCOUT - FWD, very clean, good cond, 57,000 mi. 727-1962, 369-2075.

73 MG - Midget, excel cond, am/fm, tonneau covers, recent tune-up, always garaged, burgundy color. \$1900. Lorraine, Ext. 3595, 584-7050.

64 VW BUG BODY - Fenders, doors, seats, etc. Ext. 4676.

69 CADILLAC - Sedan de Ville, as quiet as a top. Ext. 3267, 473-2594.

68 CHEVY - Automatic, ps, ac, am/fm stereo. Asking \$300, will talk. Wells, 878-4214 eves.

64 FORD VAN - \$400. 363-6538.

71 GREMLIN - Excel running cond. Make offer. Ext. 3854, 928-4270.

69 TOYOTA - Corolla Coupe, 4-sp, new custom paint, trans, eng, over 30 mpg, must be seen. \$1400. 929-6852.

70 BSA - 650 cc, motorcycle, good cond. \$600. 727-0995 eves.

73 HONDA - 500 cc, 4 cyl motorcycle, stock, extras, excel cond, new tires, crash bars, sissy bar, luggage rack, elec start. \$1000. Ext. 3319, 751-7140.

66 DATSUN - Pick-up, good running cond, body poor. \$300. 588-5833.

68 FORD - LTD Country Squire wagon, 390 V8, orig owner, excel cond. \$725. R. Young, Ext. 4271.

69 FORD - Mustang, 351-8, air shocks, newly rebuilt engine, new headers & mufflers. \$650. 588-6879 after 6.

74 KAWASAKI - 500 cc motorcycle. \$850 or best offer. 981-8303.

69 SAAB - 4-cyl, 4-sp, good cond. \$500. 924-8011.

68 FORD - Station wagon, excel cond, new engine & other parts. 345-4885 days & weekends.

75 PONTIAC - Astre hatchback sedan, auto trans, disc brakes, 8000 mi. \$2200. 473-1967.

67 CADILLAC - Sedan de Ville, all power, climate control, new tires, shocks, exhaust & others, very good cond. Ext. 3828, 751-7250.

65 FORD - Station wagon, good trans. \$250. Bob, Ext. 4592, 281-8195.

63 VW - 4-sp shift, good body & running cond. Asking \$175. 727-1931.

66 CHEVY VAN - 6 cyl, panelled & carpeted, good running cond. \$800. Larry Arnold, Ext. 2021, 281-2136.

76 DODGE VAN - Auto, 5000 mi, stereo tape & radio, 3 mos old. Paid \$5000, asking \$3500. 727-1931.

73 OPEN ROAD CAMPER - Chevy van C30, toilet, shower, stove, sleeps 6, great cond. \$7000. 929-4439.

RIMS - (3) 16 1/2" stock 8 lug rims w/1 good tire. \$45. Sal, Ext. 2514, 289-5757 eves.

72 VW - Super, am/fm, std shift, rear window defogger, silver blue, 39,000 mi. 343-9443 between 8-9 am.

Boats & Marine Supplies

PROPELLER - 9x9 aluminum for Johnson & Evinrude engines. \$6. Bill Espensen, Ext. 3992.

12' ALUMINUM BOAT - '74 4.5 hp motor, oars, anchor. 744-3764.

13' SLOOP - Fiberglass, 3 sails, trailer, fully equipped. \$1150. Walt, Ext. 4597, 929-4940.

17' O'DAY - Day sailor, '72, excel cond, all fiberglass, custom trailer, 4 hp Evinrude, summer-winter covers, many extras. \$2500. Charlie, Ext. 4526, 221-4894.

15' WOOD BOAT - Elec start 25 hp motor, tilt-bed trailer. \$495. Ext. 4505, 928-2803.

Miscellaneous

SOFA - Early American wing back, 84", long sturdy frame needs reupholstering. Make offer. Ext. 3910, 732-7564.

PAINT PEELER - Elec. Mike, Ext. 4851.

FLOOR TILES - 90 sq ft asbestos. \$10. Mike, Ext. 4851.

DINING ROOM - 9-pc walnut table w/leaf, 4 chairs, china buffet, mirror. \$475. Jack Fontana, Ext. 3040, 744-2821.

LAWN MOWER - Craftsman 22" self-propelled, 3 spd trans, Eager I eng w/grass catcher, \$75. 473-0058 after 5.

FIXTURE - Light, pull-down, w/glass, \$5, w/o glass \$5; plant hangers, \$3. 744-5811.

JEANS - New men's 34-32, brown & blue, \$5; fluorescent drafting table lamp, \$18. 744-5871.

SHIRTS - Men's pullover, blue medium, \$3; spring coat, size 12, \$8. Ext. 3609.

ATTIC EXHAUST FAN - 30" 2-sp, 110V w/34" louver. \$75. 363-6940 after 5.

SPRING COAT - Size 14, \$8; men's shoes, size 9M, brown leather, new, \$14. Ext. 3609.

MEN'S SHIRTS - New, ls brown 15-33; ls white 15-34, ls green 15. \$3 ea. Ext. 3609.

CASTRO CONVERTIBLE - Very good frame & bed, needs covers or reupholstering. Asking \$70. 929-4522.

GO CART - Less motor. \$35. 289-3114.

STORAGE BOX - Black vinyl upholstered center console storage box w/keys for cars w/stick shifts, bucket seats & no storage room, new cond. \$10. Bill Espensen, Ext. 3992.

FLUTE - Artley, good cond. \$80. Bill DeCaro, Ext. 3354, 589-4874 after 6.

BACONER - Hamilton Beach, never used. \$12. Bill Espensen, Ext. 3992.

SALTON HOT TRAY - Used twice. \$8. 744-6288 after 5:30.

TYPEWRITER DESK - Business ofc style, 43"x24", 2-tone enclosure, formica top, new cond. \$35. 286-0295, Ext. 4240.

BICYCLE - Men's Murray 10-sp, excel cond, never used, \$90. Ed Okula, Ext. 3082, 323-2553 after 6:30.

REFRIGERATOR - Gibson, frost free, \$35. Ext. 4513, 473-8196.

NIMROD TENT TRAILER - Like new, 10: wheels, sleeps 6, spare tire, used approx 5 times. \$1100. Don, Ext. 3511.

SIBERIAN HUSKY PUPPIES, AKC championship blood lines, shots incl, 3 females, 2 blk & white, 1 silver. 7 wks old. 924-3919 or 924-4653 after 5.

POOL TABLE - 3 1/2 x 7 x 3/4" slate, excel cond, many extras. \$450. 475-4792 eves.

BABY CLOTHES - Up to 18 mo, excel cond; white crib, raised lambs on front panel, excel cond. \$35; swing on stand. 744-2288.

TYPEWRITER - Smith Corona manual super sterling portable w/case. \$55. 281-7763.

ELEC RANGE - GE, 40" white, 4 burners, 2 ovens w/timers, good cond, 12 yrs old. \$65. 286-0384.

DEEP FAT FRYER - \$5; warming tray, \$3; child's new lederhosen, knee length, size 4-6, \$5; wheelbarrow, heavy-duty construction type, \$25; Scott spreader, \$10. Osgood, Ext. 3978, 286-2561.

YOUTH BED - Wooden, made in Greece, \$20; sewing cabinet, "Martha Washington", stripped, ready to refinish, \$30; Typewriter, old Remington, noiseless, sturdy, excel cond, \$15; wooden typing table, \$8. Osgood, Ext. 3978, 286-2561.

ANTIQUES - Need work, rocking chair, 2 high-back dining chairs, piano bench, occasional tables. Osgood, Ext. 3978, 286-2561.

OSCILLOSCOPE - EICO 460, Heathkit test chassis model EF-2 & all manuals, all brand new. \$125. Paul, Ext. 2023.

WASHING MACHINE - Whirlpool. \$150. 929-8595.

RUG - Woven style, 9'x12', pleasant green. \$12. Ext. 4240, 286-0295.

GOLF CART - \$12. Ext. 4240.

PHYSICIAN'S OFFICE SCALE - 0-300 lbs, accurate to 1/2 lb, height rod, excel cond. \$50. George, Ext. 4285, 588-5228 after 5.

STURGIS BAR STOOLS - (3) Swivel & adjustable height, 360° foot rest, padded back & seat. \$15 ea. George, Ext. 4285.

SURVEYING LEVELS - \$65 & \$100; bent axis theodolite, \$150. Ext. 4058, 286-0436.

HOT WATER HEATER - 30 gal, glass-lined, propane gas, very good cond. \$30. Tony, Ext. 3499.

TICKETS - Wiz, Bubbling Brown Sugar, Guys & Dolls. Oct 16 matinee. Cathy, Ext. 2456, 732-6262.

WATER LOUNGE CHAIR - Sturdy construction, great for relaxing in your pool. \$10. Richard, Ext. 4134.

BAR - Wall unit, plenty of space for books, etc, has legs or may be mounted on wall. Richard, Ext. 4134.

TV - Magnavox, 23" b/w, console, good cond. 924-3236.

KITCHEN CHAIRS - Dark Pine mates type, red vinyl seats, excel cond, like new. \$20 ea. 864-8292.

LAWN EDGER - 1/2 hp, \$10; 30 gal fish tank, \$10; bow w/about 30 lb pull, \$5; cooler, 72 at, \$15. Jerry, 475-5591 before 3. Ext. 3303 after 4.

CHAIRS - (4) high back vinyl swivel for dining room, excel cond. 289-3114.

DINETTE SET - Howell, formica top table, 36"x47", extra leaf & 5 chairs, excel cond. \$75. 475-8658 after 7.

SHOE SKATES - 1 pr roller rink, size 4, black w/carrying case, almost new. \$15. 475-8658 after 7.

COUCH - Ranch style, chair, \$60; 2 matching children's bureaus, \$30; corner desk, \$15; 6-man tent, \$35. 744-4984.

PHOTOGRAPHIC ENLARGER - \$40. 744-4984.

GOLF BAG - Brown & tan, reasonably good cond. \$4. Nancy, Ext. 2497.

AIR CONDITIONERS - Philco, 11.4 amps, 8700 btu, \$125; Westinghouse, 5000 btu, \$100. Jake, Ext. 4532/4019.

END TABLES - Solid maple, step. 2 for \$15. 727-1329.

MINI BIKE - 3 1/2 hp. \$50. 286-3377 after 6.

TRACTOR - 12 hp Case, all hydraulic w/48" mower, 40" tiller, needs some work. \$500. 286-3377 after 6.

TRACTOR - 8 hp Sears w/36" mower. \$250. 286-3377 after 6.

TRACTOR - 12 hp Simplicity w/28" mower, good cond. \$850. 286-3377 after 6.

BICYCLE - Boy's 26", Iverson w/coaster brake, like new. \$45. 581-0932 after 6.

TRAILER - 20' Coachmen w/2 axles, separate bedrm w/twin beds, 2 bunks, shower, sink & flush toilet, stove, refrig, gaucho & many extras. 878-0222.

OIL BURNER - Econojet, Model EJ-1, 0.65-1.5 gal/min capacity, excel cond, 2 yrs old. \$50. Rau, Ext. 3830.

TENNIS RACKETS - Wilson T-2000, 4 3/4", heavy, \$20; Jack Kramer Tournament, brand new, 4 3/4", medium, \$13, must sell. Ray, Ext. 3649.

BABY CARRIAGES - (1) single, \$15; (1) twin, \$20; both very good cond. Ext. 3828, 751-7250.

YARD SALE - Entire contents of house, moving to Montana, everything must go. Sun, Aug 1, 11-4. 19 Country Club Rd, Bellport, 286-8908.

YARD SALE - July 30-31, Aug 1. E. Margin Rd, Ridge, 924-6885.

CAMERA - Kodak Instamatic, \$13; car bed for infant, \$10. Sara, 281-2095.

INSULATION - 90 pieces aluminum faced fiberglass insulation, 48"x23"x6 1/2". Ext. 4539.

STEREO - Record player w/am/fm radio, cabinet, Arvin stereophonic. \$25. Hans, Ext. 3583.

2 TENNIS RACKETS - \$5 ea; writing desk, \$10. Bak, Ext. 3798.

MOCCASINS - Authentic Indian, hand-crafted leather, size 7, worn once. \$14. Denise, 289-4821.

3 GIRL'S BIKES - 20", 24", 26", excel cond, like new. \$10, \$15, \$15, respectively. 589-5788.

Ads left out of this issue because of lack of space need not be re-submitted in order to run in next week's issue

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

PATCHOGUE - Furnished 4-rm apt, no children, business couple preferred, no pets, no brokers, security. 475-1571.

WADING RIVER - New 3 br hi ranch, 3 blocks from water, priv beach, 15 min from Lab, yearly rental, avail Sept 1. \$350/mo. Ext. 3121, 744-5261.

VERMONT - Chalet, sleeps 12, all conveniences, lake swimming, fishing, hiking, located on 500 acres woodland, nearby theatre, Marlboro music, horseback riding, golf, tennis. Rented weekly, monthly, seasonal. 757-5599.

BROOKHAVEN HAMLET - Near the bay, 3 br, finished basement, 2 fireplaces, garage, screened porch, large dining rm, beautifully landscaped. Ext. 3694.

VERMONT - 3 br mobile home on 10 acres, close to golf, tennis, fishing, avail weekly or weekends. Bob, 473-8186 after 6.

PATCHOGUE VILLAGE - Furnished rm in priv home, off-street parking, village conveniences, suitable congenial mature woman. 475-2627 after 6.

APARTMENT - Downstairs, 2 br, lr, bath, patio, references, no pets. \$275/mo incl heat & elec, security. 475-9131.

APARTMENT - Upstairs, 1 br, kit, lr, bath, references, no pets. \$225/mo incl heat & elec, security. 475-9131.

MILLER PLACE - Waterfront, priv beach, 2 br, 1 bath, country kit, den, garage. \$300/mo + util, 1 yr or 9 mo lease from Sept 1. 928-0348.

BELLPORT - Unfurnished, raised ranch, 9 rms, 5 br, 1 1/4 baths, deck garage, large organic garden, \$325/mo. Osgood, Ext. 3978, 286-2561.

MANORVILLE - Pine Hills Country Club, 1 br apt avail immed, 1 mo free rent. 878-4618 after 6.

For Sale

MANORVILLE - 4 br Cape Cod, panelled lr w/fireplace, 2 baths, above-ground pool, cablevision avail, 15 min from Lab, 2 acres. 878-1895 after 6.

PT JEFF STATION - Large 8-rm Colonial, 4 br, eat-in kit, 2 1/2 baths, w/w, screens & storms, pool, dead-end st, 1/2 acre, many extras. Mid 40's. 928-5940.

SHIRLEY - 2 br, near bay, secluded. Owner will sell at cost & assume 2nd mortgage. \$27,500. 281-1546.

SAYVILLE - 2 br Cape, walk to school & shopping, completely furnished. \$26,000 firm. Ext. 3121, 744-5261 after 6.

BLDG PLOT - Approx 1 acre, 100x400, fully wooded, located on quiet & developed country rd, min from Lab, single homes throughout. 924-3236.

FLORIDA - Gulfport, small house for retired persons or vacation, 2 br, utility shed, near marina & beach, some furniture. Ext. 2599, 821-0599.

CLEARWATER BEACH - 100'x150' building plot near Gardiner's Bay, Town of East Hampton, walk to priv beach, marina rights. \$13,500. Ext. 3469, 281-4371 after 6.

BELLPORT - Spacious 5 br, 2 1/2 baths, large country kit, lr, dr, family rm, 2-car garage, sauna, 1 1/2 acres, screened patio, front porch. Low 50's. 286-1091.

BELLPORT - Raised ranch, 5 br, 1 1/4 baths, 9 rms, deck, garage, 100x165 lot, large organic garden. \$40,000. Osgood, Ext. 3978, 286-2561.

PATCHOGUE VILLAGE - 3 br ranch, expansion attic, finished basement, most appliances, country kit, attached garage, exterior maintenance free. \$34,000. Ext. 2290, 475-7694.

CENTEREACH - 3 br ranch, eat-in kit, den, 1-car garage, workrm, 1/4 acre fenced, in-ground sprinklers, appliances, a/c, super clean. Mid 30's. 698-7178.

MASSAPEQUA - 100x100 corner waterfront plot, bulkheaded, dead-end st, all util in street, garage, driveway, cesspool, trees, shrubs. 727-7769.

Wanted

VIOLA - For 11 yr old girl, good cond. 286-0407.

BABYSITTER - 3 days/wk for 10-mo old baby. 286-1440 eves.

LIGHT METER - Small, inexpensive. Margaret Greene, Ext. 4484.

BASEBALL CARD PANELS - From backs of any Hostess Twinkies, Ding Dong or Cup Cake boxes. Send to K. Thompson, Bldg 463 & receive 10¢ per panel in return.

COCA COLA BOTTLE TOP LINERS - Will pay 1¢ apiece for first few hundred. Send to K. Thompson, Bldg 463.

SPEAKERS - For automobile 8-track tape player, also radio cartridge. Fred Kuehl, Ext. 4823.

HOME - For long-haired Dachshund, 4 yrs old, excel w/children, new baby is allergic & must find good home. 751-0383.

HOUSE SITTER/DOG WALKER - Sept 2-24. Ext. 3434.

BABYSITTER - Holtsville area, part time. Ext. 3123, 289-0532 after 6.

BABYSITTER - Lab area during the day for toddler. 924-8835 after 5.

ROWBOAT - Fiberglass, 12', reasonable. 325-0030.

BABY RACCOON - Experienced trainer. Ext. 3541, 399-2027.

TIRE - G 60x15, fair cond or better. Cal, Ext. 4452.

Car Pools