BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Official Word On CBA

At press time it was learned that the Department of Energy has announced that it will accept HEPAP's decision to terminate the CBA project and move on to plans for a superconducting super collider (SSC). This makes official what has been expected for three months.

It is understood that DOE wants BNL to play a large role in research and development for the SSC, and has also included in its 1984 budget support for work on a heavy ion collider at Brookhaven and for improvements at the AGS. Actual budget figures have not yet been transmitted to BNL. As soon as details are available, they will be published in the Bulletin.

New on the Board

A new Chairman of the Board and six new Trustees were elected at the Annual Meeting of the AUI Board of Trustees, held at BNL last Thursday, October 13.

Herman Feshbach, the Cecil & Ida Green Professor of Physics at the Massachusetts Institute of Technology, was elected to a two-year term as Chairman of the Board. He has been a member of the Board of Trustees since June 1974.

Elected to three-year terms as University Trustees were Charles Baltay, Professor of Physics, Columbia University; Robert Barker, Vice President for Research, Cornell University; Barry S. Cooperman, Vice Provost for Research, University of Pennsylvania; Aaron Lemonick, Dean of the Faculty, Princeton University; and Hugh M. Van Horn, Chairman of the Department of Physics & Astronomy, University of Rochester. These men replace outgoing Trustees W. Donald Cooke, Cornell University, former Board Chairman and Trustee since 1974; Harry E. Gove, University of Rochester, Trustee since 1978; Robert W. Jahn, Princeton University, former Board Chairman and Trustee since 1971; Alfred K. Mann, University of Pennsylvania, Trustee since 1970; and Robert R. Wilson, Columbia University, Trustee since 1980.

Gustav-Adolf Voss, a member of the Directorate for the Deutsches Elektronen-Synchrotron (DESY) in Hamburg, West Germany, was elected Trustee-at-Large for a term of three years. He replaces Elizabeth S. Russell of the Jackson Laboratory, Bar Harbor, Maine.

Meeting the Demand for Isotopes

At the end of the 200 MeV Linac, just before the beam enters the AGS, sits the Brookhaven Linac Isotope Producer. BLIP, as it is known, has been producing radioisotopes for on-site research in nuclear medicine since 1972. And for ten years now, since October 16, 1973, radioisotopes made in BLIP have also been shipped off-site, to both medical users and industry.

The radioactive atoms from BLIP are created by using the excess pulsing capability of the Linac not utilized by the AGS. Disks of chemical targets, lowered into a 13,000 gallon water-filled tank, are bombarded by a stream of protons. Exactly what kind of radionuclide is produced depends on the nature of the target and the kind of reaction the collision causes. From BLIP, the isotopes are transferred to the Hot Lab at Bldg. 801. In the hot cells there, they are incorporated into chemical compounds, for medical and research use.

Operating BLIP is a function of the Medical Department's Radionuclide and Radiopharmaceutical Research (R&RR) Division headed by Suresh Srivastava. Within that group, Leonard Mausner is in charge of radionuclide research and production at the BLIP. Another main activity of the R&RR Division is radiopharmaceutical research, involving the development of new and improved radiolabeled compounds with desirable biological properties. Discussing candidate isotopes for BLIP, Mausner said, "Many of the isotopes we make cannot be produced by low energy commercial cyclotrons. Also, with BLIP's higher energies, several targets can be bombarded simultaneously, in a thick stack, leading to reduced cost per isotope."

The isotopes either made in BLIP or developed in the group's program have resulted in very important applications. As Srivastava explained, "Almost 90% of all nuclear medicine procedures use one of the radioisotopes developed in this program." Among those have been thallium-201 and technetium-99m (which Srivastava called "the workhorse of nuclear medicine"). Because the demand for these radioisotopes is so great, the technology has been transferred to industry.

Now under production for commercial distribution at BLIP are six radioisotopes: cadmium-109, iodine-123, iron-52 (the subject of that first BLIP shipment ten years ago), germanium-68, magnesium-28 and xenon-127. "Our major product is still xenon-127, a radioactive gas used in the diagnosis of pulmonary disorders," said Mausner, adding that about six curies a month are shipped, primarily to one industrial customer who repackages it in individual doses for further sales.

Mort Rosen

Standing in front of the hot cell where radioisotopes are processed are Suresh Srivastava (left) and Leonard Mausner. Radioisotopes produced at BLIP are transferred here in lead casks which are connected to the hot cell through trap doors, so the radioactive material can be fed into the hot cell in complete isolation. Operators control processing from outside the hot cell using manipulators, as Srivastava is doing here. Though the operators are very adept at handling equipment this way, using these mechanical middlemen for pouring increases the potential for spills, which are difficult to clean up from the outside. Thus, vacuum and air pressure replace pouring as a means of transferring material in the hot cell from one container to another. To protect researchers and operators from radioactivity, the hot cell's concrete walls are twelve inches thick and its three-layered lead glass windows are eighteen inches thick.

"We're producing and distributing iodine-123 now in modest quantities," Srivastava said. "It's good for diagnostic imaging applications. Many iodinated compounds, including monoclonal antibodies, can be directed to specific sites in the body. A number of them can be used in nuclear medicine for diagnostic as well as therapeutic applications. Two brain-specific agents labeled with iodine-123 may soon receive FDA approval for clinical use. When that happens, there should be a large demand for this isotope."

To try to fill these needs for the medical community, the group is now involved in a program to develop radiolabeled monoclonal antibodies. Further, said Srivastava, "Our future plans call for developing the capabilities to produce multicuries of iodine-123 each week."

In addition to radionuclides for outside users, BLIP provides an even broader range of products for use on-site by the Clinical Nuclear Medicine Division, which works closely with the R&RR Division. "Sometimes people in nuclear medicine recommend a medical need that could be solved by various isotope techniques," Mausner said, "and we attempt to find the right isotope. Other times our chemists may learn how to make an isotope with interesting properties and develop a chemical process to purify it. Then they go to the clinical nuclear medicine community for help with *in vivo* testing and evaluations."

In developing new isotopes, the group's chemists, George Meinken, Saed Mirzadeh, Tom Prach and Rita Straub; hot cell specialist Gerald Shepherd; and BLIP operators Robert Feindt and Henry Schnakenberg all work closely together on various projects.

One of the primary goals of everyone in the R&RR Division is to meet the demands of both Brookhaven and the outside world for hard-to-produce and otherwise unavailable radioisotopes that are medically and industrially useful. "In the past ten years, we've shown that we can satisfy research and clinical medicine needs at the same time," Srivastava said. "Now we hope to upgrade the facility and keep going, perhaps at an accelerated pace, for another ten years."

— Anita Cohen

Captex Crew on Stand By

Since mid-September, a dozen or so BNL employees in the Department of Applied Science have scheduled their lives around a telephone call. Twenty-four hours a day, seven days a week, they wait. When the right call comes through, they spring into action.

Gil Raynor, Bob Brown and Martin Leach take turns manning a control center at BNL. Peter Daum, Cy Fink, Dan Leahy, Ted D'Ottavio, Bob Weiser and Mary Phillips head for airplanes at Brookhaven Airport and Long Island MacArthur Airport. Dan Spandau and Bob Goodrich are on stand by.

Where are they going? It could be anywhere east of Ohio to the Atlantic coast, and north from Pennsylvania to southern Ontario, depending on the weather.

In fact, a lot depends on the weather.

The BNL researchers are part of a six-week experiment to trace the movement of air masses over long distances. No pollution is actually measured. Instead, a tracer gas is used. It was developed by Russell Dietz, also in Applied Science.

The study is preliminary to examining the larger question of how pollution is carried over long distances by wind currents in the atmosphere, resulting in acid rain downwind of the pollution sources.

Called Captex, for cross-Appalachian tracer experiment, the study is directed by scientists from the Air Resources Laboratory of the National Oceanic and Atmospheric Admininstration, BNL, Pacific Northwest Laboratory (PNL), the U.S. Department of Energy's Environmental Measurements Laboratory, the U.S. Environmental Protection Agency, and Canada's Environmental Protection Agency. The United States and Canada have recently signed an agreement to cooperate on research into the movement of pollutants that cause acid rain. (See Bulletin story, August 26, 1983.)

Since September 12, four experiments have been done. Weather permitting, two more will be done before the end of October.

In these experiments, a tracer gas is released, meteorologists predict its path, the planes are sent out, ground sampling machines are switched on, and the plume is sampled in the air and on the ground.

The two release sites are Dayton, Ohio, and Sudbury, Ontario, representative of regions which are major pollution sources. BNL's job is to direct all aircraft sampling operations and to supply and maintain the Brookhaven Atmospheric Tracer Samplers (BATS), carried by the airplanes and used on the ground. BNL

(Continued on page 2)

Re: Clinic Staff

Women doctors used to be a rather rare breed, but statistics show that this is slowly changing. In 1972, for example, 10.1% of all physicians were women; by 1981 the percentage had increased to 13.7.

Not only is this trend good news for women who choose to become doctors, but also for women who must choose doctors. In the past, their choice was limited largely to male physicians and many women felt uncomfortable being examined by a member of the opposite sex.

Today at BNL, the situation is somewhat reversed. Only one of the Clinic's staff physicians is male; the other two doctors — one works full-time, the other half-time — are female. The full-time female physician is Dr. Laura Sbarra who heads the Clinic.

As evidenced by a recent Tune-In, at least one male employee is uncomfortable with this ratio. "...A physical exam is enough of a dehumanizing experience without having it done by a doctor of the opposite sex," wrote the employee, who thought that, for routine physical examinations, a choice of physicians ought to be given.

According to Dr. Sbarra, allowing employees a choice of physicians has been the operating procedure at the Clinic for many years. "If an employee expresses a preference for either a male or female physician when the exam is scheduled," she said, "the request is honored and does not prejudice the physician staff in any way."

The physician staff, Sbarra said, "is chosen on the basis of professional competence, character and demeanor, with gender considered important, but secondary to the other traits. Further, in recruiting for the half-time position, more female physicians are encountered, since fewer male physicians work part-time."

NYC Train Trips

The Hospitality Committee is planning two group railroad trips to the city in the next two weeks.

One is a special on Saturday, October 29, leaving at 8:31 a.m. The fare is $5.00 and must be received no later than Wednesday, October 26. Reservations will be accepted on a first-come, first-served basis.

The second is a regularly scheduled trip on Wednesday, November 2, leaving at 7:55 a.m. The fare is $3.50 and must be received by Thursday, October 27. Refunds will be made only if cancellations are received by the Monday morning preceding the trip.

Children under five years ride free on both trips. All departures are from the Patchogue LIRR station. To reserve a ticket send your fare through the U. S. mail to BNL, P.O. Box 322, Upton, New York 11973. Checks or money orders should be made payable to BNL. Do not send cash. Put the date of the trip, your telephone number and BNL life number on the check. Tickets will be given to you on the train.

Four more Saturday trips are planned this year: November 12 and 26, December 10 and 17.

In Memoriam

Ichiro Fujita, Chemist in the Department of Applied Science, died suddenly on October 15. He was 41 years old. Fujita was born in Japan and received his Ph.D. from the Tokyo Institute of Technology. He came to Brookhaven in December 1976 and worked in experimental and theoretical chemistry, including porphyrin chemistry and molecular spectroscopy.

He is survived by his wife, Etsuko, Associate Chemist in DAS, a son Kentaro, and a daughter Tomoko, who reside in Port Jefferson.

Captex (Cont'd)

rents four planes with crews, PNL operates two, and the Canadians have one. Eighty-five ground samplers have been placed in a 250,000-square-mile area fanning out from the two release sites

For a study like this, perhaps the most inconvenience is borne by the people who work in the field. So far, all four releases have been from Dayton, and the BNL planes have been sent to areas around Binghamton, Syracuse, and Elmira, New York, and around Wilkes Barre, Pennsylvania. The plume can take anywhere from 12 to 36 hours to reach a sampling area. Since timing the plume's arrival is tricky, the planes have to be in position as early as possible.

So as soon as the planes arrive, Peter Daum, who coordinates flight arrangements in the field, establishes communication with the BNL control center to get instructions. The planes could be sent out immediately to sample, or they might have to wait. It all depends on how fast the plume is moving in to the area. In the words of Cy Fink, from the time the researchers first get a phone call to the time they actually go aloft to sample, their job is to "hurry up and wait."

In flight during an experiment, there is no waiting around. For hours, the researchers sit squeezed in between racks of instruments, continuously monitoring the equipment, taking samples and logging in data. One pass through the plume takes about three hours. Then the plane lands to refuel, and up they go again for another three-hour run.

After two passes, the plume has usually gone by, ending the experiment. Then it's time to fly home again. FAA regulations prohibit pilots from flying more than ten hours in a 24-hour period, so depending on how the hours have added up, the entire group might spend the night in the area and fly home the next day.

Back on Long Island, the samples are taken to BNL for later analysis, and the planes and scientific equipment are put into shape for the next experiment.

Gil Raynor, who is overseeing the BNL operation, says the tracer technique is relatively new. When it's perfected, the technique may be applied to tracing the movement of actual pollution or other atmospheric motions.

— Mona S. Rowe

At Syracuse, BNL researchers get ready to board the twin engine Islander for a sampling flight.

Cy Fink sits in a single engine Cessna on its way to Syracuse. On these sampling missions, Fink routinely takes along a camera to keep a record of each trip.

Before take off at Long Island MacArthur Airport, Mary Phillips settles her flight bag in a twin engine Beech Baron.

Weather Watcher

Every morning at eight, Lloyd Kalin takes temperature, rainfall and evaporation readings for the National Weather Service at its weather station in Greenport. He's been doing it for the past eleven out of the 25 years that the village has maintained the weather station, which is across the street from the water and electricity plant.

Kalin starts work at 7:30 a.m. at the plant, so it's no trouble for him. He even enjoys chatting weather with the local folks who stop by to get the latest readings.

Kalin is a cooperative volunteer for the National Weather Service. He is one of about 12,000 volunteers across the country, including Alaska and Hawaii. They take readings seven days a week, always at the same time. Many of the weather stations are at private residences, and a few families have kept up the job generation after generation.

For the present Captex experiment, the BATS ground sampling units have been placed in the care of 85 National Weather Service volunteers. Here on Long Island, Kalin has his sampler on an upstairs balcony of the plant.

Four times in the last five weeks, he has received a phone call from one of the agencies directing the Captex experiment, asking him to turn on the sampler at a certain time.

When the sampler is running, it colllects seven consecutive air samples, for a duration of six hours each. Kalin can hear the machine sucking in air and see it printing numbers on a paper tape.

Since the six-week experimental period began, Kalin has kept up with newspaper stories on the project. It's his first experiment, and he's glad to be part of it.

Stockroom Closing

Building T-90 will be closed for inventory on October 26, 27 and 28. Please make all necessary withdrawals of stock prior to 3 p.m. Tuesday, October 25. This will give Supply and Materiel personnel sufficient time to prepare for the inventory. Emergency requirements should be processed through Michael Guacci, Ext. 2976.

WIS Officers

At the September 16 meeting, the following Women in Science officers were elected for 1983-84: Coordinators - Eva Bozoki (NSLS), Eena-mai Franz (DNE); Treasurer - Nancy Fallon (S&EP); Secretary - Rae Bailey (Medical); Publicity - Angela Boccio (Medical); Program - Martine O'Connor (Medical); Lecture - Louise Hanson (DAS); Liaison - Harriet Fadem (TID).

WIS Speaker

Mildred Cohn, biochemist, will speak on "^{31}P NMR in Enzyme Systems" on Friday, October 28, in the Medical Department's Large Seminar Room at 3:30 p.m. at the invitation of Brookhaven Women in Science. Information about reaction rates, substrate binding sites, and the effects of metals and ions on enzyme processes which are fueled by energy-rich phosphorylated compounds such as ATP, can be obtained by monitoring ^{31}P-labelled substrates with nuclear magnetic resonance spectroscopy.

Cohn was for many years a professor at the University of Pennsylvania where she held an endowed chair, and is presently associated with the Institute for Cancer Research in Philadelphia. She is a member of the National Academy of Sciences and, last summer, was awarded a National Medal of Science for her work on enzyme catalysis.

A luncheon will be held at noon at the Brookhaven Center. Those who wish to attend may reserve a place by calling the cafeteria at Ext. 3541. The price is $7.50.

It Happened In Florence

David Alburger is a physicist and a runner. These two seemingly unrelated facts came together recently in Florence, Italy, where Alburger was attending the International Conference on Nuclear Physics. While he and his wife were walking back to their hotel about 11 p.m. one night, a motorcyclist grabbed Mary Alburger's shoulder bag and sped off.

That's where Alburger's running talent came in. "I made a quick check that Mary was all right and then took off," he said, "realizing that I could never catch a motorcycle, but remembering that her passport was in the bag. Fortunately, I was wearing tennis shoes and I put on what speed I could muster.

"About 150 yards down the road, the thief had dropped the bag and was backing up to retrieve it. But when he saw that I was going to get there first, he departed, leaving the bag lying in the street, completely intact. Fortunately, Mary suffered only minor bruises and a torn dress. I hope that this will be my one and only run to catch a thief."

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One Youth's Solution

The following scientific inquiry was forwarded to Public Relations:

I am 9 years old. I think I have a solution for polution. I think it will also save gas. My invention works like this. First you fill up your car with gas for the first and last time. Then you drive anywhere. The exhaust goes down the exhaust pipe, but then the pipe curves and it goes into a tank and gets mixed up with other things and gets turned back into gas. It goes up a pipe and into the gas tank. The same process is repeated over and over.

The point I am stuck on is what to mix the exhaust with. I would appreciate it very much if you could help me. I have enclosed a diagram of my invention.

— David Ehrlich,
Woodbury, New York

Note: It was with regret that we had to tell David that we didn't know how to make his invention work, but that we hoped he would continue his investigation of such matters.

Freezer Purchases

Though it may sound tempting to buy meat in bulk for freezing, the Cooperative Extension Association of Suffolk County advises consumers to think twice before doing so. The cost of a freezer, plus expenses for electricity and repairs, can add up to 50¢ to the cost of each pound of food you freeze. So unless you use produce from your garden, or other food acquired for free, goods stored in the freezer will generally cost more than food bought fresh.

Cooking Exchange

The Cooking Exchange meeting on October 26 will feature Filo Food. The preparation of Bourekakia me Kreas (Greek meat pie), Bastilla, Brie in Filo, Pineapple cheese Balklava, and other unique recipes for this versatile dough, will be demonstrated.

Meetings are held from 12:30 - 2:30 p.m. in the Recreation Building the second and fourth Wednesdays of the month. They are open to employees and their families. Admission is $1.00 and includes sampling of food prepared and copies of the recipes. Babysitting is provided at 50¢ per child. Dee Polychronakos, club chairman, will answer any questions. Call her at 744-3578.

Memorial Fund

A scholarship fund has been established in the memory of Greg Persson who died as a result of an auto accident on Labor Day weekend. Greg was the son of Ralph Persson, former BNL employee and now at the U.S. Post Office on site. Greg would have been a 10th grader this year at Shoreham-Wading River High School. Contributions may be sent to the Greg Persson Memorial Scholarship Fund, P.O. Box 293, Shoreham, New York, 11786.

CREF Values

October	52.59	November	54.78
December	55.73	January	57.59
February	58.93	March	60.75
April	65.12	May	65.07
June	67.12	July	65.43
August	66.13		

September $67.02

Indoor Tennis

Sign-up for indoor tennis in the gymnasium will begin on Friday, October 21. The gym is available for tennis 5 p.m. - 9:30 p.m. on Tuesdays, and 1 p.m. - 5:30 p.m. on Sundays.

Reservations can be made in person at the BERA Sales Office in the cafeteria between noon and 1 p.m. on Monday, for play the next day, and between noon and 1 p.m. on Friday for play the following Sunday.

Players are reminded that they are limited to one hour of court time each per week for singles, or two hours each per week for doubles.

Arrivals & Departures

Arrivals

James A. Greco ..... Mgt. Info. Sys.

Departures

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

Peter D. Brown ..... DNE

Cafeteria Menu

Week Ending October 28, 1983

Monday, October 24

Cream of chicken soup	(cup)	.65
	(bowl)	.75
Roast turkey w/stuffing & cranberry sauce		1.95
London broil w/mushroom gravy & 1 veg.		2.10
Hot Deli — Baked ham	(bread)	1.85
	(roll)	2.00

Tuesday, October 25

Beef barley w/vegetables	(cup)	.65
	(bowl)	.75

Halloween Special
Steamship round
Fresh broccoli or cauliflower au gratin
Parsley boiled potatoes
or
Baked potato w/sour cream
Holiday cake
$2.85

Wednesday, October 26

Split pea soup	(cup)	.65
	(bowl)	.75
Beef Burgundy on noodles		1.95
Spaghetti & meatballs		1.90
Hot Deli — Grilled Reuben		1.90

Thursday, October 27

Mock turtle soup	(cup)	.70
	(bowl)	.80
Seafood platter		2.15
Turkey chow mein on rice		1.85
Hot Deli — Top round of beef	(bread)	1.95
	(roll)	2.10

Friday, October 28

New England clam chowder	(cup)	.65
	(bowl)	.75
Fillet of sole w/Newburg sauce & 1 veg.		1.85
Tuna noodle casserole & 1 veg.		1.85
Hot Deli — Chicken patty Parmesan	(bread)	1.85
	(roll)	2.00

Guess the weight of our pumpkin and it's yours. Guesses may be made throughout lunch time on Tuesday, October 25.

Concert Tonight

Soprano Beverly Hoch and violinist Daniel Phillips, accompanied by pianist Margo Garrett, will present a joint recital tonight at 8:30 p.m. in Berkner Hall. Tickets will be sold at the door.

Harp: a piano in the nude.

Helicopter: an egg beater with ambition.

Indigestion: the failure of a round stomach to adjust to a square meal.

Inveterate smoker: one who can shave without getting lather on his cigarette.

Junk: something you keep ten years and then throw away two weeks before you need it.

Roger R. Stoutenburgh

You and your two, three or four year old child can find out why this tot finds the Upton Nursey School so much fun. On Sunday, October 23, an Art In/Open House is scheduled from 2—4 p.m. in the Recreation Bldg. Children can take part in cupcake decorating, painting, cutting, pasting, water play and a sing-along, while their parents become acquainted with the school and its programs. Classes for three and four-year olds are held twice a week, from 8:30 to 11:30 a.m., with tuition at $35 a month. A three days per week class will be formed if enough parents are interested. The school's teachers have graduate degrees and are certified in Early Childhood Education. The school is unusual in that, through their classmates, children are exposed to a variety of languages and cultures. Parents are voting members of the school, a non-profit, self-governing corporation. They also rotate as assistants to the teachers. Grandparents and other adults may participate in the classroom too. For more information, call Jane Shero, 286-0925, or Karen Mouzakes, 924-3974; write to the Upton Nursery School, Box 324, Upton, N.Y. 11973; or, better yet, visit the school on October 23.

Camera Club

The Camera Club will meet on Thursday, October 27 (not October 17 as reported last week) at 5:30 p.m. at the Recreation Bldg. Mounting, selecting mats and framing of prints will be featured. Ms. Hoefman of Kay's Art Dimensions will be the guest speaker. All are welcome.

Down at the Farm

Would you like to learn something new and unusual before the month is out? At the Suffolk County Farm & Education Center in Yaphank you can learn how to:

- make soap.
- grow herbs.
- grow the many varieties of orchids that will be on display.
- decorate pumpkins.
- make corn husk dolls.
- be a better home gardener. Fall workshops include Plant Propagation and Preparing Your Shrubs and Trees for Winter.

For dates and times of these programs, and directions to the Farm, call the Farm at 924-4535, Ext. 507.

Winter Tennis And Racquetball

A south shore indoor club has again offered BNL employees a reduced rate for winter tennis and racquetball. This year, the fee is $60 per member. Applications must be submitted through Ed McFadden by October 28. For forms and further information, call McFadden at Ext. 4188, or 363-5170.

Bowling

Red/Green League

High games were bowled by J. Medaris 229, R. Larsen 212, E. Sperry 205, J. Muller 204, R. Jones 203.

Pink League

R. Rosati rolled a 187 and converted the 4/7/10, S. Asselta 189 and converted the 5/10.

Purple League

G. Hassell had a 233, J. Vogel 231, B. Belligan 225 and M. Belligan converted the 6/7/10.

Football

Delayed Reaction 13 - Brookhaven Express 13

Wayne Rambo threw touchdown passes to Lou Evers and Mitch Williams for Delayed Reaction. The Express had a good all-around defensive game, led by Gerry VanDerlaske, Doug Seely and Tony Mendez.

Delayed Reaction 30 - Random Errors 20

Touchdowns by Lou Evers, Walt Reams and Wayne Rambo, plus super catches by Mitch William and Al Borelli enabled Delayed Reaction to outscore their opposition.

Roga 33 - Brookhaven Express 13

Leroy James, Kevin Wyman, Greg Mack, Mike Losquadro and Jim Garrison shared the scoring for Rôga. Larry Smith and John Blydenburgh played superb defense for the winners. Frank Haibon made some big catches for the losers, as he and Joe Fortunato led the scoring.

Volleyball

All people planning on refereeing for the upcoming season (all divisions) must attend the Referees Clinic to be held on Monday, October 24, at 5:30 p.m. in the gym. Any questions, please contact Dennis Weygand, Ext. 3737.

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.

SCIENTIFIC POSITIONS OPEN: The following staff positions are open. Candidates may apply directly to the department representative named, or through the office of Scientific Personnel, Ext. 3338.

STAFF POSITION - Seek candidates with expertise in protein chemistry and/or molecular biology with ability to establish a strong independent research program in their specialties. Contact: M. Elzinga, Biology Department.

STAFF POSITION - Seek protein crystallographer to conduct research in neutron protein crystallography. Contact: B.P. Schoenborn, Biology Department.

LABORATORY RECRUITMENT: Opportunities for present Laboratory employees.

1952. PROGRAMMER/ANALYST - Requires a bachelor's degree in a scientific discipline or equivalent capabilities and extensive experience. Will work in a real-time control and data acquisition environment. Candidates should have experience in FORTRAN or another high level language. Must be able to assemble programming for mini and micro computers and be familiar with real-time multi-tasking and interrupt-driven operating systems. Experience in microprocessor hardware interfacing and device control will be considered an advantage. National Synchrotron Light Source Department.

1953. CHEMISTRY ASSOCIATE - Requires a bachelor's degree in a scientific discipline or equivalent capabilities. Will work in PETT VI (Positron Emission Scanner) environment. Duties will involve the application of standard laboratory techniques. Data processing, filing and accurate record keeping will be required. Will also be involved in equipment maintenance and calibration associated with project. Candidates must be familiar with computer operations and use of consoles. Chemistry Department.

1954. TECHNICAL POSITION - Requires AAS degree in electronic technology or equivalent and at least 3 years' experience with high power rf systems. Thorough knowledge of rf construction and measurement techniques and experience with high voltage supplies necessary. National Synchrotron Light Source Department.

1955. TECHNICAL POSITION - Requires AAS degree in electronic technology or equivalent and at least 3 years' experience with high power dc supplies. Thorough background in construction and diagnostic techniques necessary. Knowledge of microprocessor interfacing desirable. National Synchrotron Light Source Department.

1956. TECHNICAL POSITION - Requires AAS degree in electronic technology or equivalent and at least 3 years' experience in digital systems and controls. Thorough knowledge of microprocessor construction and troubleshooting techniques necessary. National Synchrotron Light Source Department.

Autos & Auto Supplies

VW PARTS - new parts at wholesale prices, call for needs. Augie, Ext. 2419 or 289-4211 eves.

77 FORD GRANADA - 6 cyl., 2 dr., am radio, a/c, p/s, p/b, new brakes, booster, new tires, $1,800 or best offer. Ext. 2671.

73 PLYMOUTH DUSTER - 60,000 orig. mi., a/t, p/s, 225 eng., runs excel., needs some work, $850, negotiable. Ken, Ext. 2350 or 732-7944.

73 PLYMOUTH FURY II - all set for winter, new tires (snows), 80 amp. alternator, 360 engine., $600. Ext. 2021 or 924-3469.

73 FORD VAN - 302 engine, standard. 732-6647.

SLIDE ON CAMPER - for 8' bed pick-up, stove, sink, lights, dinette, cabinets, $500. 928-8709.

SNOW TIRES - (2), G78-14, $35/ea. 878-0470.

77 BUICK SKYHAWK - V6, 4 spd., a/c, p/s, am/fm cassette, new steel radials. 472-4684 after 7 p.m.

78 CADILLAC ELDORADO - 50,000 mi., all options, excel. cond., black w/red leather, make offer. 473-4948 eves.

76 VEGA HATCHBACK - stick, air, am/fm, excel., no rust, good radials, extra tires & rims. Ext. 7676.

69 PLYMOUTH STATION WAGON - $399; (2) Firestone 721 tires, HR78-15, $25/ea. 475-4596.

81 COUGAR XR-7 - w/silver vinyl top, loaded, AOD, must see, asking $7,000 firm. Ellen, Ext. 4486 or 878-0480.

69 FIREBIRD - auto., 6 cyl., 4.1 liter OHC, orig. owner, $800. Tom, Ext. 3086 or 878-8689 eves.

66 NOVA - 6 cyl., auto., 4 dr., 95,000 mi., $500. Mike, Ext. 7527.

TIRES - P-205/75 R15, Good Year radials, $25/pair. Tom, Ext. 4084 or 878-1060.

79 RIVIERA - mint, loaded, every extra for that year. Ext. 7009.

75 DODGE DART - 6 cyl., auto., 2 dr., a/c, am/fm 8-track, $1,200. Higuchi, Ext. 3531.

76 TOYOTA COROLLA - S.W., red, black int., auto., 66,000 mi., $1,995. Ext. 3848 or 472-0553.

73 MAZDA - good cond., 4 spd., rotary engine, $1,500 or best offer. 727-4075 after 5:00 p.m.

70 GMC - 3/4 ton pickup, 4 wheel, a/t, a/c, 10x16.5 tires, very good running, extras, $2,500. Ext. 4058 or 286-0436.

63 FORD GALAXIE 500 - new tires, exhaust system, 289, V-8, manual trans., very good cond. Mike, Ext. 4988.

79 CADILLAC - Sedan DeVille, mint cond., fully loaded, many deluxe extras, $7,700, must see. Ext. 7114 or 736-1837 between 6:00 & 9:00 p.m.

75 HONDA CVCC WAGON - 4 spd., roof rack, am/fm cassette, good mpg, $995. 289-9074 eves.

82 KZ440 MOTORCYCLE - 1,000 mi., like new, $1,450 or best offer. 924-0960.

77 AMC HORNET - a/t, p/b, p/s, a/c, am/fm stereo, $1,300. Jim, Ext. 3761 or Marie, Ext. 3786.

76 HONDA CIVIC CVCC - 2 dr., hatchback, 50K mi. on rebuilt eng., new parts, price negotiable. Debbie, Ext. 3420 or 736-4280 eves.

75 HONDA MOTORCYCLE - CB400F, S. Sport w/windshield, $696; 1978 Honda 550, 4 cyl. & extras, $950. Ext. 4309.

71 BUICK LESABRE - 120,000 mi., runs well, am/fm cassette, a/c, snow tires, $500. Lehmann, Ext. 3631.

75 PLYMOUTH WAGON - Gran Fury, excel. cond., loaded, $2,000. Bob, 751-4935 eves.

71 CUTLASS - a/t, p/s, a/c, 4 dr., high mileage but runs well, good tires, $500. S. Spark, Ext. 4111 or 5206.

70 OLD CUTLASS - poor body, needs muffler, excel. engine & trans, $150. Ext. 3763.

77 BMW - 320i, sunroof, a/c, low mileage, 4 spd., good cond., Blaupunkt am/fm stereo cassette. Ext. 7918.

71 FORD MUSTANG - V-8, auto. trans., $750. Gene, Ext. 4261.

79 DATSUN PICKUP - economical, 4 cyl., 4 spd., rugged, regular gas, am/fm cassette. 878-9331 after 4 p.m.

75 PLYMOUTH VALIANT - auto., p/s, p/b, a/c, 4 dr., new engine. Ext. 4134 or Ext. 4105 leave message.

72 BEETLE - runs well, body sound, $550. Dave, Ext. 4289 or 288-3011 eves.

69 BUICK SPORTSWAGON - runs well, good second car, $500. Dave, Ext. 4289 or 288-3011 eves.

72 VW SQUAREBACK - runs well, many new parts, asking $850. 287-1183 eves.

74 WRECKER - w/1979 Holmes back, F-350, am/fm stereo, runs excel., pkg. deal. 821-9280.

VW MECH. ADVANCE DISTRIBUTOR - $20; plus 2 new rotors, 2 capacitors & set of paints, $5. 744-9832.

75 FORD TORINO - station wagon, good cond., auto., p/s, a/c, p/b, l/r, radio, $1,500. Jim, Ext. 3290.

Boats & Marine Supplies

16' SEA SPRITE - 1968, with 85 HP Mercury motor, complete pkg. 744-5224.

76 MERCURY - outboard, 65 HP, good for parts, new lower unit, has cracked block, $375. Roy, 286-8624.

MARINE ENGINE PARTS - new, used, reconditioned, large inventory, Johnson, Evinrude, OMC, sterndrive. 265-5218 eves.

15-1/2" SUCCES - tri-hull, all flotation, double hull, comes w/65 HP Mercury, and many access., in water, can demonstrate. 399-5316.

HOOK SET LINE - 200, $20; Rathyeon chart flasher recorder, $150. John, Ext. 4312.

15' FIBERGLASS COBIA - 40 HP Evinrude, 1982 trailer, all accessories included, $1,500. Rick, Ext. 2907 or 924-6199.

19' BAYLINER CAPRI - 1982, 125 HP Volvo Penta, I/O, full canvas, trailer. 289-1627 or Ext. 2900 after 5 p.m.

11' SUPER SNARK SAILBOAT - excel. cond., like new, w/sail, rudder, centerboard, $275. Janice, Ext. 3332 or 589-4153.

19' RENKIN BOWRIDER - 120 HP Volvo, I/O, low hours. Ron, Ext. 3887 or 286-0353 after 5:30 p.m.

17' GRUMMAN CANOE - 2 paddles, 2 vests, electric motor included, $400 firm. Lehmann, Ext. 3631.

STRAIGHT LINE DEPTH RECORDER - used for marine surveying, 12V, $65. Ext. 4058 or 286-0436.

Miscellaneous

WASHER - Maytag, apartment size, excel. cond., asking $50. Ext. 2671.

SEWING MACHINE - w/table, like new, J.C. Penney, $100 firm. Ext. 3712 or 475-7733.

TYPEWRITER - Adler J5, excel. cond., recommended by Consumer Reports, $100. David, 286-2265.

CB BASE ANTENNA - w/tripod; test equipment, digital frequency counter, $75; CB service master, $75. 732-6647.

SKI BOOTS - new, Nordica Olympias, men's size 11, $50. John, 928-3775.

BRIDAL HAT - w/long veil, excel. cond., custom made, cost $350, sell for $100. 473-9180 after 4 p.m.

BRIDAL HALF SLIP - size 9, $10; blue velvet lined evening coat, size 12, $25. 751-2149.

BIG TRAK TOY - used only twice, asking $30 w/back dumper. Fran, 399-4822.

DINING ROOM TABLE - plus 5 high back chairs, $100. 472-0029.

BRIGGS & STRATTON GENERATOR - 3600 RPM, 2400 watts, w/trailer, $400. 878-0470.

KODAK REFLEX II CAMERA - excel. cond., $50. Pat Taylor, Ext. 2452.

CHAIN SAW - 16" 2.3 c.i.d., Sears w/Wen sharpener, like new, $120. 744-9832.

SOFA - 2 chairs, pine wood colonial set, $175. Ext. 3084.

PUMPKINS - best from field of 2,000, large, $3/ea. Tom, Ext. 4084 or 878-1060.

LAWN MOWER - Sears, rotary w/grass catcher, $25. Ed, 588-1754.

PIANO - end tables; couch; lamp & misc. household items. Ext. 7009.

TREE CLIMBING DEER STAND - $15; Nordica ski boots, ladies size 6, $20. John, Ext. 4312.

WASHER - Sears, $25; TV antenna, new, $40; portable dishwasher, $80; rear bagging self-propelled lawn mower, $100. 744-9677.

LAWN TRACTOR - 36 in. snow blower, 32 in. mower deck, skid chains, 8 HP Simplicity, $550. 473-1967.

KINDLING WOOD - 100 lb. size bags, $5 per bag. 751-6418.

MET OPERA TICKETS - Boheme (2), orchestra, Row R, $45 ea., Nov. 5; M. Lescaut (4), balcony, $20 ea., Mar. 26. Dave, Ext. 2694 or 941-9022.

COAL STOVE - Hass & Sohn, Model 121-12u, brand new in crate, $350. 929-6013 or 929-4678 eves.

OPERA TICKETS (2), Forza Del Destino, Nov. 1, balcony, $18 ea. Ext. 4024.

UTILITY TABLE - 36"x77", bolted construction, $10; corner cabinet, $10; child's stereo w/speakers, $15, excel. cond. Ann, Ext. 7611.

DINING TABLE - maple, oval, 62x42 spoon foot and center pedestal, plus two leaves and pad, $300. 929-4119.

MOVING SALE - beds, bookcases, teak desk, leather chairs, redwood table, benches. Ext. 4371 or 744-9404.

FRIGIDAIRE FREEZER - upright, 18.7 cu. ft., frost-free, excel. cond., reasonable. 363-6121 after 6 p.m.

MIXING BOWL SET - Pyrex, 1½ pt., 2½ qt., 4 qt., green & white pattern, $8. Susan, Ext. 4267.

BLACK LEATHER JACKET - size 42, like new, $50. E. Edwards, Ext. 4027 or 286-1121.

GOLFBAG CART - folding, good cond., $30; B&W TV's (2), working cond., $5 ea. Victor, Ext. 2395.

KEROSENE HEATER - Sanyo, 13,000 BTU, 2 yrs., used 1 season, $100; fan $5; gardenhose & lawn sprinkler. Rolf, Ext. 5506 or 928-7328.

WOOD BURNING STOVE - 24" box stove w/flue & chimney, never used, $200. Dave, Ext. 4289 or 288-3011 eves.

ANTIQUE BOTTLE COLLECTION - including rare Japanese, medicines, beer, soda, etc., $600; houseplant sale. 589-5126.

COFFEE TABLE - & assorted tables; 3 drawer desk, $25; kitchen table w/chrome legs & 2 chairs, $20. 399-2931.

REFRIGERATOR/FREEZER - F/F, Westinghouse, 22 cu. ft., coppertone, very good cond., $350. 249-8223 eves.

ATARI 2600 - w/paddles, assorted tapes (12) Pac Man, Asteroids, Adventure, Skiing, etc., $190. 878-0516 after 6 p.m.

DEEP WELL PUMP - 1 HP w/42 gal. tank, can be used on shallow well, $100. 924-3476 after 5 p.m.

ALUMINUM GLIDERS - 2 chairs; 1 couch, $80; 2 table lamps, $40; 9 pc. dining room set, antique, $175. Irene, 589-6468.

B&W TV - 12", Sharp, new, $75. Ext. 3136.

LAWN SWEEPER - 26", Parker, $15; radio, am, GM, $10; radio, am, Ford, $10. Ext. 7713 or 727-1423.

TENT - Trail, old but serviceable, make offer. 924-0277.

INSULATED STOVE PIPE - excel. cond., 6" diam., 30" section, $20 ea.; stereo, am/fm turntable combo, like new, $25. Cliff, Ext. 4098 or 736-4886.

WOOD/COAL STOVE - Comforter, removable grate, best offer; professional hair dryers; baby items. 728-8798.

HOTPOINT ELECTRIC STOVE - 30", gold, hood, very good cond., $150. 928-2540 after 4:00 p.m.

COURT STENO MACHINE - good cond., used for steno class, new $275, sell for $50. Sandra, Ext. 4933 or 369-2065.

LOUDSPEAKERS - (2) Fried, 100W, $150 both; child piano, $15; & more. Yves, Ext. 2735.

BOY'S BICYCLE - 23", 3/4 frame, spd. meter, newspaper basket, good cond., $50. Tom, Ext. 3128 or 928-7344.

Yard Sales

SELDEN - 52 Wyanet St., Oct. 22 & 23. 732-8056.

RONKONKOMA - 399 Collington Dr., Oct. 22 & 23, 9-5.

Car Pools

SMITHTOWN/HAUPPAUGE - would like to join or start car pool, 8:30-5. Bob, Ext. 4758.

BELLPORT - need one more driver, 8:30 to 5:00. Chris, Ext. 3744.

BAYPORT AREA - would like to join. Carol, Ext. 3341 or 472-4029 after 6 p.m.

Free

CAT - loving 3 yr. old., spayed, all shots, moving, cannot keep. Harvey, Ext. 5515.

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

ROCKY POINT - 7 mi. to Lab, 2 bdrm. house, quiet neighborhood for single or couple, no pets, $550 plus util. & sec. 473-4948 eves.

FLORIDA - furnished house, for winter season, telephone, linens, washing machine, Spring Hill on W. Coast, $295/mo. Ext. 4530 or 261-2719 after 5 p.m.

3/BDRM. RANCH - 2 full baths, 2 car garage, preferred 3 Village School, close to SUNY, family only, no pets, immediate occupancy, $800/mo. plus utility. Ext. 2611 or 751-4098 after 5:00 p.m.

BELLPORT - studio apt., kitchen, l/r, utilities included, 1 person only, $325. 286-9051.

YAPHANK - 2 bdrm. condo., full basement, garage, all appliances, pool, clubhouse, no pets, $595 plus elec. 924-5409.

LAKE PANAMOKA - 1 bdrm. apt. on the lake, 5 min. from Lab, $490/mo., util. included. Joyce, Ext. 2456 or 929-4268 after 5 p.m.

EAST PATCHOGUE - 1 bdrm., l/r, kitchenette, private entrance, $425/mo. 475-3405.

CORAM - large studio apt. in complex w/clubhouse, swimming pool & tennis courts, $375/mo., includes heat, plus security, avail. Nov. 1. Louise, Ext. 3405.

SHOREHAM - spacious modern ranch house on wooded acre, 4 bdrms., 2 baths, large family room w/fireplace, laundry room, patio, beach rights. 744-6804 or 929-8400.

SHIRLEY - 5 min. to BNL, 2 single rooms, $40 ea., no cooking, preferably women. 924-0960.

HAMPTON BAYS - 1 bdrm. efficiency apt., avail now to May 1, 1984, $200/mo. plus util. & security. 728-2104 eves.

STONY BROOK - 3 bdrm., furnished house for 1 month, Dec. 25, 1983 to Jan. 25 1984, transportation to Lab avail. Jag, Ext. 5080 or 751-1884.

For Sale

SHOREHAM - spacious modern ranch house on wooded acre, 5 bdrms., 3 baths, large family room w/fireplace, laundry room, patio, beach rights. 744-6804 or 751-2860 after 5 p.m.

SHOREHAM - 4 bdrm. cape, 2 baths, 2 car garage, beautiful 3/4 acre partly wooded lot. 744-6812 eves.

RIVERHEAD - mobile home, 12'x60' w/10'x15' extension, w/w carpeting, a/c, major appliances, shed, family park, negotiable. 727-5475.

BROOKHAVEN HAMLET - custom 4 bdrm., split, walk to schools, 9 miles to Lab., on 1.25 acres of privacy, modern and efficient, 2 car garage, city water, asking $125,000. 286-0436 for appointment.

RIDGE - L.V. Condo, 2 bdrms, 2 baths, lge. l/r, enclosed porch, family room, garage, central air, 24 hr. security. 744-1022.

Wanted

HOUSEMATE - to share 3 bdrm. house in So. Shirley, use of washer & dryer incl., male or female. 399-5316 or 399-4122.

LAWNS - for cutting or raking, Moriches/Shirley areas. Tim, Ext. 3496 or 281-7873 eves.

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

WINDOWS - 26x42 double hung or casement, 2 required; marine gear outfitting 18' boat. Bill Sanchez, Ext. 3848 or 281-6498.

TV - small b&w, $20 or less. George Hrabak, Ext. 3536 or 589-0819.

WELL INSULATED DOG HOUSE - suitable for Irish Setter. Ext. 7009.

ROOFER - simple job on porch roof. Janet, Ext. 2345 or 929-8152.

EXPERIENCED YACHTSMAN - seeks opportunity to sail south this fall/winter. Ken, Ext. 7959 or eves. 581-1169.

ROOMMATE - to share large 4 bdrm. house, 5 min. from Lab., low rent. Jack, 924-3669.

SNOWBLOWER - 2 stage, heavy duty, self-propelled, any cond. Ext. 4058 or 286-0436.

KITCHEN CHAIRS - wooden. Ext. 3565.

Ads for Services may be posted at the BERA Sales office.

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