BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

A number of BNL staff members have been to China in recent years to visit scientific institutions and to give technical assistance. Russell Dietz, Sol Pearlstein and James Niederer were in China during the last two months. Here are accounts of some of their experiences.

At the Institute for Atmospheric Physics in Beijing are, from left, Li-Jun, chemist; Chen Tan-Jin, atmospheric physicist; and BNL's Russell Dietz, with the two Brookhaven-built instruments on the table before them.

Sharing Environmental Technology With China

Eight years ago, Russell Dietz published in the scientific literature an article describing a gas chromatograph which could monitor sulfur hexafluoride, a tracer gas. In the spring of last year, Dietz, a chemical engineer in DEE's Division of Environmental Chemistry, was contacted by a scientist at Argonne who relayed a request to him from the People's Republic of China: Could the Chinese buy three of those machines?

Somehow, the Chinese had heard about the instrument, which would aid their research on the transport of air pollution. By the time they made contact with Dietz, however, he had developed a much improved version. So after a bit of letter writing back and forth between the two countries, details worked out by division head Leonard Newman during a visit to China in the summer of 1980, and a visit by a group of Chinese environmental scientists to BNL in January of this year, it was finally decided that BNL would build two new machines for sale to China, and that Dietz would deliver them and show the Chinese how to operate them. Robert Goodrich, chemical associate in Dietz' group, was given responsibility for building the instruments.

Dietz, accompanied by his wife, made the trip this August. He spent two weeks at the Institute for Atmospheric Physics in Beijing, working with scientists in the Boundary Layer Meteorology Laboratory. That laboratory's basic program is to improve general understanding of boundary layer physics. Some effort is also directed toward specific industrial pollution problems.

As Dietz explained, tracer gases are used to document how air pollution is transported and dispersed over long distances. In experiments he conducts periodically in this country, tracers are released to the atmosphere and tracked by such sophisticated machines as those purchased by the Chinese. Sulfur hexafluoride is a commonly used tracer, and the techniques for sampling and analyzing it have been around for a decade.

Dietz was in China for 15 days. He spent the first week explaining how the machine worked. They are quite complex, he said. Air is sucked in and mixed with hydrogen, the oxygen is converted to water, which is removed by a permeation drier, and finally the tracer gas in the remaining nitrogen is measured. He reported that the Chinese scientists had just begun using a simple gas chromatograph for analyzing whole air samples, so they weren't totally unfamiliar with the new technique.

(Continued on page 3)

Living And Working In China

by Sol Pearlstein
National Nuclear Data Center

I have just returned from China where I worked at a Chinese national laboratory for three weeks. The Institute of Atomic Energy (IAE) lies about 40 kilometers (25 miles) southwest of Beijing, China and has about the same number of employees as BNL.

The cultural revolution in China, beginning in 1966, literally shut down institutions of higher education and research while the intellectuals were sent to the country side to be trained by the peasants. It was common for the retrained scientists to be separated from their families for years. Higher institutions of learning were not only neglected but often wantonly destroyed. Eventually, development to meet short-term goals was restarted, but Chinese science is still recovering from its modern dark ages.

In 1975, a Chinese Nuclear Data Center (CNDC) was established at the IAE to service the country's nuclear data needs paralleling the operation of BNL's National Nuclear Data Center established in 1967. Both Centers have a staff of 30 people and are organized along similar lines.

The Laboratory working hours are 8 to 12 and 2 to 6 Monday through Saturday. A noon-time nap is common throughout China, especially in areas where work is hindered by the mid-day heat. The living area for IAE

(Continued on page 2)

Vineyard Comments On Budget Cuts

In a memo to all employees yesterday, Lab Director George Vineyard addressed the impact on BNL of President Reagan's additional 12% cut in non-defense spending for Fiscal Year 1982, and his recommendation that DOE be abolished.

As of this writing, Vineyard indicated that the new budget proposal would have a significant impact on the Laboratory. He said that a further reduction in force is almost certain, but of a nature and magnitude not yet determined. Although DOE program managers have been working on the distribution of the cuts, it is not clear what Brookhaven's allotment will be. "The cuts are not being applied uniformly," noted Vineyard. "Brookhaven has had clear signals of the proposed modifications for some of its programs, ambiguous signals for others, and no signals for the remainder."

BNL will take some steps immediately. The first reduction in force takes place today with the termination of 44 contract technicians assigned to high energy programs. A freeze has been placed on personnel requisitions. A committee, chaired by Joseph Hendrie, Special Assistant to the Director, will review Laboratory expenditures with an eye to preventing waste and placing priorities on new purchases.

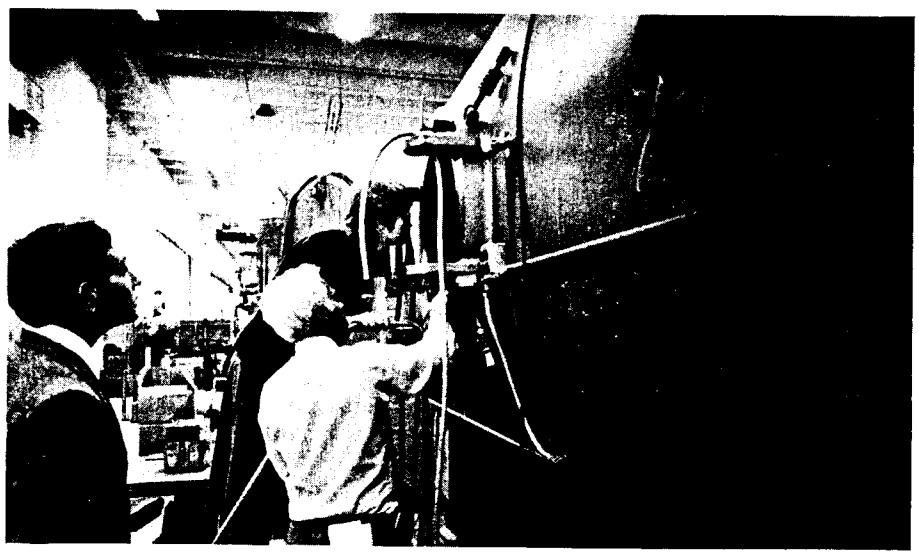
Vineyard noted that Congressional approval is required for the new budget cuts. In support of Brookhaven, L.I. Congressman William Carney, accompanied by Dr. John Marburger, President of SUNY at Stony Brook, and Nobel laureates Samuel Ting and Val Fitch, met with Budget Director David Stockman last week. They apprised him of the situation and argued for the importance of adequate funding for Brookhaven and for the ISABELLE project in particular.

The consequences of the impending budget cuts on the national scientific effort will be taken up at a meeting later this month called by Dr. Frank Press, president of the National Academy of Sciences. Vineyard said he will attend this meeting, along with other laboratory directors, scientific leaders and presidents of major universities.

The dismantling of DOE will also require Congressional action, and reorganization is at least a year away, said Vineyard. He indicated that conversations with Dr. Trivelpiece, Director of DOE's Energy Research, and Dr. Keyworth, the President's Science Advisor, assured him that "essential research programs, such as those at Brookhaven, will continue to be supported, whatever the ultimate organizational structure in the government may be."

Congressional Staff Members Come To BNL

On October 5, Martha Krebs, Staff Director of the House Science and Technology Subcommittee on Energy Development and Applications, spent the day at the Laboratory reviewing our research programs. Krebs was accompanied by Deputy Staff Director Ezra Heitowit and Bill Harvey, professional staff member for Minority members of the subcommittee. This subcommittee will play a part in whatever action Congress takes on President Reagan's new budget cuts and in the formation of future budgets. On the magnet floor in the Physics Building, above, Laboratory Director George Vineyard (center) explained the Palmer magnet, which will be used in ISABELLE, to (right, L-R) Heitowit, Harvey, and Krebs. Also present were Deputy Director Nicholas Samios (far left) and physicist David Rahm. Later (L-R), Associate Director Martin Blume and Physics Department Chairman Arthur Schwarzschild showed Krebs the inner workings of the Tandem Van de Graaff. —photos by Humphrey



Observations On Technology In China

by James Niederer
Applied Math Dept., and ISABELLE Project

In August, I went to Beijing, China, to attend an International Workshop on Distrubuted Computer Control Systems. Cosponsored by the Chinese Association for Automation and the International Federation of Automated Control, the workshop attracted experts in the controls and computer fields and was related to the control system of the ISABELLE project.

The Chinese were marvelous workshop hosts who proved very serious about building professional friendships. The exchange grew more cordial as the banquets became increasingly elegant, climaxing with a superlative one at the Great Hall of the People.

The Chinese Association for Science and Technology arranged tours of universities, institutes, and industrial and historical sites in Beijing, Xian, Suzhow and Shanghai, during and after the workshop. When viewing Chinese technology it is always best to understand first the problem being addressed. The Chinese solution will often be a remarkable collage of parts and ideas, new and old, ingeniously combined, as available. Though it often may not be the way we might do it, it is usually quite good in terms of what the Chinese have to work with.

At Tsinghua University we were first introduced to current Chinese computer teaching and microprocessor laboratory treatments. Universities suffered malicious damage during what is called the "time of the Gang of Four," and recovery of equipment is only now beginning. Among the equipment observed in this university laboratory, were a number of newly arrived Radio Shack terminals, and boards based around the Zilog,

Bronze tortoise in front of the Hall of Supreme Harmony, Beijing.

8-bit microprocessor, the Sharp (Japanese) version; several DEC 11 minicomputers; and a few of the Chinese made 16-bit variety, derived from the Data General Nova. The latter are made from combinations of parts and practices, some of which are antique, and usually have Eastern-bloc made peripherals. Yet, in what we found to be typical fashion, however inelegant, enough of this diverse equipment was ingeniously joined together to serve the purpose at hand. Clearly, the Chinese were making the best of shortages, and parts of this laboratory were fully of 20-years vintage. All facilities were fully used by students — even during vacation.

During a later visit to the Institute for Computing at Shanghai, where four of us gave talks about our work, we engaged in conversations which shed light on some of the down to earth situations faced by the Chinese in their efforts to apply present technology. On the one hand, the Institute's microprocessor people were expected to do projects of direct use. But, on the other hand, most of the regional organizational units were not as enthusiastic about more modern ways. Further, since China is on a cost center basis to inspire better local management of industry and operations, these organizations were reluctant to pay for microprocessor projects at all.

Somewhat more memorable than the inside look at today's technology, the tours brought us to meet Chinese people. Despite language difficulties, discussion was relatively free and included politics, conditions, and the aims of the current government. The tour sponsors were very protective, the interpreters very accommodating, and there was no evidence whatever of restrictions or security influences.

It is also clear that China is now eagerly looking to the West for help with its future. English is being taught extensively, and television and radio both carried lessons for several hours a day.

In most of our exchanges with the Chinese, there was a tendency on the part of our faculty travellers to lecture about what all our Western methods might do for them. Perhaps the translations softened this great wisdom. There is little doubt that the Chinese are quite certain about what they really would like to learn and acquire. Their efforts will be selective adaptations of outside technologyu incorporated into Chinese styles and goals.

At the last banquet in Shanghai, faculty lectures finally yielded to discussions of some of the more impressive things we had been shown in China: the almost unbelievable restoration of the ancient buildings and temples; the remarkable health and vigor of the people; the great abundance of food and crops; the immense housing program; the human code which allows huge numbers of people to live together in crowded conditions with essentially no theft or other crime, while maintaining great civility and individuality; the almost doubling of life expectancy within a generation; perhaps the romantic notion that China's bicycles and horse carts often seemed more effective than the vehicles in our traffic-crowded cities.

We found ourselves continuously reflecting on how these experiences in China might help us live better here in America. For example, the Chinese way of dealing with older people is providing a richer life than what is now occurring in most American cities. Perhaps we outsiders know more about technology, but China has a lot to teach us all about many other things.

Pearlstein In China (Continued)

staff is located about 3 kilometers away. It is a self-contained community with a hospital, school system, day care center, department store, grocery, post office, library, and cafeteria. There is a basketball court and an auditorium (useful for indoor movies and biweekly political discussions). Brick is a commonly used building material and the apartments have a modern sturdy look, although bathing facilities are centrally located outside. Foreign guests are spared this inconvenience in a well-furnished guest house at the end of the main road.

At 5:30 a.m., a group of old people gather behind the guest house to perform Tai Ji Quan ("shadow boxing"), a slow motion exercise from an ancient Chinese discipline where the performers sometimes hold a sword in hand. At 6:30 a.m., rousing music is played loud enough for all to hear. The song, "Five Red Star Flag," is associated with liberation and introduces about a half-hour of "News and Views," also loud enough for all to hear. (I recently saw a letter in the English language *China Daily* from a Chinese worker complaining about the excessive use of loudspeakers. But this was the only blatant interruption into daily life. Posters and slogans seem non-existent.)

Pearlstein buys a Chinese violin.

At 7 a.m., I mounted my bicycle and cycled with a companion to the Laboratory. At the gate, we dismounted and walked past some of the 100 Chinese soldiers guarding the Laboratory and living area, then rode on until we reached the cafeteria. There are 3 dining areas; one for foreign guests, one for older people and Chinese guests, and a general area normally having long lines of people for each food item (not unlike our BNL cafeteria).

The vegetables are cooked just ahead of time and are waiting in the largest woks I have ever seen. After some persistence and by demonstrating my kwai-dz (chopsticks) skill, I convinced my hosts to allow me to eat with the Chinese guests. During my first meal with my colleagues, I noticed that while I was struggling with kwai-dz, they were eating the food with a large spoon. "Easier than kwai-dz," they said. Each worker carries his spoon placed in his own dishes, usually consisting of a rectangular aluminum box and cover, or two nesting enameled bowls. The food, much of which requires food allotment coupons, is served in these dishes which the worker washes and carries away after the meal. (Although food coupons were required in the Chinese cities I visited, they never seemed to be in short supply.) A small, but visible, Muslim population at the Laboratory is served appropriate food from a separate window.

A typical Chinese breakfast is a large fried fritter of wheat dough. This is broken into strips which are held by chopsticks or fingers, and dipped into a cream colored sweetened soy bean chowder. After finishing the dipped fritter, you must show your appreciation audibly by slurping down the rest of the chowder. Lunch is the largest meal of the day. I chose

Main parking lot near the director's office at the Nuclear Data Center.

either a bowl of rice or a sour bread roll with a bean curd center. This is eaten with delicious combinations of vegetables and meat. Soup, if served, always ends the meal. The chef often showed his versatility and knowledge of world dishes by serving me a piece of American apple pie which I shared with my tablemates. Supper is similar but often included a steamed roll and hard-boiled egg which could be added to enrich the evening soup.

Throughout China, water is considered unpotable and is boiled before drinking. Large thermoses containing water for tea can be seen everywhere. In the living area, this is dispensed centrally.

The Chinese observe many traditions. On September 15, the full moon denoted the autumn festival and visitors brought me a bag of fruit and moon cakes, round crusts of dough containing fruit or minced meat filling.

Confidence in the effectiveness of folk medicine is widely held even by many educated Chinese. To dispel any doubt, I was beset with stories about the success of traditional medicine. When entering a hospital, a patient can choose either traditional Chinese or western treatment. Thinking I might have a cold, a scientist gave me a sure cure consisting of ground rhinocerous horns and medicinal herbs in a honey base. Two of these enormous pills are to be taken twice daily.

I could not help but observe the high motivation of many Chinese people. They appeared to connect the transforming of China from a developing to a developed country directly to their own efforts. This communal spirit was impressive.

I was pleased to find that cultural differences did not cause any separation. The Chinese are friendly, informal, and good humored. Many of the scientists could read English, some could speak a little, and a few could speak well. The last group served as interpreters. I was armed with a reading vocabulary of about 100 fairly useless Chinese characters (like dragon) and a small speaking vocabulary. My efforts to communicate in Chinese were well appreciated and led to some good, as well as funny, interactions with my colleagues and helped to make my stay at the IAE an enjoyable and interesting one.

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BERNICE PETERSEN, Editor
MONA S. ROWE, Assistant Editor
ANITA COHEN, Reporter

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

Dietz In China (Cont'd)

The real test for the BNL-built instruments came in the second week when they were used for a small tracer experiment. Sulfur hexafluoride was released from about halfway up a 325 meter meteorological tower, and Dietz, four Chinese scientists and both instruments went off in a truck to track the tracer's movements. He said they followed the tracer for about six kilometers (nearly four miles), and the instruments worked well.

Dietz said this was the first tracer experiment done in China. According to him, environmental programs are in their infancy, but a great deal of work is being done in this direction. The Institute of Atmospheric Physics was formed about seven years ago, and employs about 20 professors and 350 scientists and engineers. In addition to the specific laboratory with which Dietz was working, there are six others that specialize in different areas.

Pollution is a recognized problem in Beijing, said Dietz. Although the coal which is used for power, industrial needs, and home heating and cooking contains only about one percent sulfur, it's so widely used that sheer quantity of consumption creates a significant local problem. Also contributing to the pollution level is dust from a multitude of apartment construction projects now under way in Beijing.

Dietz said there is a conflict between development and environmental protection. If China wants to improve the standard of living there, it must industrialize to a greater extent. Doing this means more pollution, because the country has limited financial resources to initiate substantial environmental controls.

He said the Chinese, however, are sincerely concerned about their environment. In the early 1970's legal and environmental experts drafted a comprehensive environmental law. In 1979, a national law was approved which addresses industrialization and pollution limits.

Besides the Institute where Dietz worked, there are other organizations and laboratories concerned with environmental monitoring and protection. Dietz said a great deal of base line data is being collected and fundamental research being done. At the Institute of Environmental Chemistry, for example, researchers are studying ways to reduce gaseous and particulate emissions from individual home heating and cooking stoves.

When Dietz left China, it was arranged that the two instruments will be returned to BNL in about six months, after more tracer experiments are done. At BNL, the machines will be checked out for any problems reported by the Chinese. By then, Dietz also expects to have perfected some modifications to the machines which will eliminate their sensitivity to such variables as impurities in the atmosphere, temperature and even a bumpy ride in a monitoring truck.

—Mona S. Rowe

Credit Union Still Pending

Fiscal Officer Barney McAlary advises that BNL's application for membership in the Teachers Federal Credit Union is still alive, but moving slowly. The regional office of the National Credit Union Administration in Boston sent our application to its national headquarters in Washington, D.C. In a letter received October 6, the Washington office has requested further information which McAlary is providing. We will keep you advised as to the outcome.

Cricket Club

On Sunday, September 27, the Brookhaven International Cricket Club played its final match of the 1981 season at Oyster Bay against the British Veterans Club. The latter won the toss and batted first, but made slow progress against some steady bowling. A late spurt saw the home team score 106 runs at the end of the allotted 32 overs, with Charn Choudhari taking 3 wickets for 10 runs and Dave Cox 2 for 33.

The Lab batsmen also started off slowly against accurate fast bowling, and after 16 overs had only scored 35 runs. However, in the most exciting finish in the club's history, the Lab team pulled up to within 3 runs of the total needed at the end of their 32 overs. John Millener played a key role in this recovery with a score of 48 not out.

Motorcycle Club

The club patches arrived. You can buy them at the meeting on Monday, October 12, at 5:15 p.m. in the Recreation Building.

Tennis

The Tennis Committee announces that a South Shore tennis and racquetball club is offering a reduced membership fee to BNL employees who register by October 31. For more information, contact Ed McFadden, Ext. 4188.

Cafeteria

Week Ending October 16, 1981

Monday, October 12		
Corn chowder	(cup)	.60
	(bowl)	.70
Broiled chicken liver and 1 veg.		1.60
Sweet and sour pork over rice		1.65
Hot Deli — Pastrami	(on bread)	1.65
	(on roll)	1.75
Tuesday, October 13		
Beef vegetable soup	(cup)	.55
	(bowl)	.65
Seafood Creole on rice		1.60
Roasted turkey and stuffing w/cranberry sauce		1.60
Hot Deli — 8-foot hero	(per inch)	.75
Wednesday, October 14		
Navy bean soup	(cup)	.55
	(bowl)	.65
Beef stew over noodles		1.65
Chicken pattie Parmesan w/spaghetti		1.60
Hot Deli — Monte Cristo		1.70
Thursday, October 15		
Chicken noodle soup	(cup)	.55
	(bowl)	.65
Roasted top round of beef and 1 veg.		1.65
Stuffed cabbage and 1 veg.		1.60
Hot Deli — Roasted turkey breast	(on bread)	1,65
	(on roll)	1.75
Friday, October 16		
Fish chowder	(cup)	.60
	(bowl)	.70
Fish and chips		1.60
Breaded pork chop and 1 veg.		1.65
Hot Deli — Sausage and peppers	(on bread)	1.60
	(on roll)	1.70

NYC Train Trip

The Hospitality Committee is planning a group railroad trip to the city on Wednesday, October 21. Departure will be at 7:55 a.m. from the Patchogue LIRR station. Round-trip fare for adults is $3.50, children under six years ride free.

Reserve a ticket by sending your fare through the U.S. mail to P.O. Box 322, Upton, New York 11973, no later than Thursday, October 15. Make checks payable to "Brookhaven National Laboratory." Your tickets will be given to you on the train. Refunds will be made only if cancellations are received by the Friday preceding the scheduled trip.

Camping Club

The BNL Family Camping Club will meet on Thursday, October 15, at 8 p.m. in the Recreation Building. A movie will be shown and refreshments will be served. All are welcome.

For more club information, call Chuck Watson on Ext. 5317.

Mountain Club

The Mountain Club plans to hike 6 miles in New York City tomorrow — from the Battery to Central Park. We will meet in front of Berkner Hall at 8:30 a.m. on Saturday, October 10. Anyone interested should call Pat Thompson (the new club president) at Ext. 7635 or Anita Swoboda at Ext. 2968.

There will be a club meeting on Tuesday, October 13 at 5:30 p.m. in the North Room of the Center. Annual dues $2, single; $3, family, will be collected at the meeting or can be mailed to A. Swoboda, Bldg. 318.

Bowling

Red & Green League

The Light Source (3126 pins) took the 76'ers 11-0. A. Almasy had a 210, J. Petro 231, J. Bohenek 200. The Pinball Wizards (3074 pins) won 11-0 over the Phoubars. R. Eggert had games of 217/218. The Sparks shut out the Designers 11-0 with J. Cochrane rolling a 212. The Blue Jays (3019 pins) topped the Sandbaggers 8-3. N. Parrinello bowled a 210, R. Meier 202, J. Medaris 210. Isa Team won 8-3 against the Freon Loaders with M. Iarocci rolling a 205.

R/C Airplane Club

On Wednesday, October 14, the Remote Control Model Aircraft Club will have a noontime meeting in Berkner Hall. After the meeting an interesting film "To Fly" will be shown. Everybody is welcome.

Camera Club

The BNL Camera Club will meet on Wednesday, October 14, at 5:30 p.m. in the Recreation Building. Two slide shows will be featured.

"Photographing People" will show you how a few simple techniques can make your picture-taking results more naturally flattering. "Photos Help You When Disaster Strikes" will show you how to make a photo inventory of your valuable possessions.

Fly Tyers Club

The BNL Fly Tyers will meet at Medical, Bldg. 490, at 6 p.m. on Tuesday, October 13. For information call John McCafferty, Ext. 2075, or Dick Stoner, Ext. 3601.

To Save A Tooth

If a tooth should become dislodged, it can be saved, but time is crucial. The following steps should be taken.

- Rinse the tooth carefully to remove dirt, but *do not* scrub. (Scrubbing may further damage the tooth.)
- If possible, replace the tooth in the socket and hold it in place with the tongue. If this is not possible, keep the tooth in the mouth next to the cheek only if the patient is conscious and alert). Otherwise keep the tooth moist by putting it in a cup of water.
- See a dentist *immediately*. The sooner you get to a dentist, the more likely it is that the tooth can be successfully reimplanted.

—Caroline Kramer R.N.
Occupational Health Clinic

Cooking Exchange

The International Cooking Exchange will feature "The Wild, Wild, West" (Western USA Cooking) at its next meeting on Wednesday, October 14.

Meetings are held at the Recreation Building between 12:30 and 2:30 p.m., and are open to employees and their immediate families. There is a $1.00 charge per person and babysitting is provided at a cost of 50¢ for each child.

For more information call Cindy Grier (744-7849) or Ruth Fernow (928-8465).

Cactus Flowering

Do you have a Christmas cactus that you would like to flower for the holidays?

Although there are three types sold, those that flower at Christmas, Easter and Thanksgiving, the culture of the plants is similar. According to the Cooperative Extension Association of Suffolk County, these plants like a well-drained soil (two parts sand, one part soil, and one part peat moss) and a high light intensity. An occasional light application of a complete fertilizer is beneficial.

Bud initiation normally takes place during early fall when days become shorter and temperatures lower.

To obtain flowers, one of the following conditions must be met: 50-55°F night temperatures will cause bud formation regardless of day length after September 1. Otherwise, the plants must have, if indoors, 13 uninterrupted hours of darkness each day for 40 days to set buds.

After buds are well developed, the plants will flower at natural room temperatures.

Arrivals & Departures

Arrivals

Gary F. Benenson ..... Accelerator
Michael A. Caruso ..... Accelerator
Louise A. Chinn ..... Physics
Leonard F. Corette ..... Plant Eng.
Richard L. Freudenberg ..... Physics
Thomas A. Gilbert ... Saf. & Env. Prot.
Bettie J. Hicks ..... Medical
George P. Jahnes ..... Physics
Adam J. Leskowicz, Jr. ... Accelerator
James L. Miskovsky ..... Accelerator
Abdel-Hamid Moudden ..... Physics
Gloria Ramirez ..... Physics
Lazarus G. Ratner ..... Accelerator
Michael H. Schwarz ..... Physics
Pooran Singh ..... Physics
Terje A. Skotheim ..... Energy & Env.
Samia Thomas ..... Physics
Dennis B. Wayne ..... Accelerator
Paul M. Ziminski ..... Accelerator

Departures

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

Margaret A. Crowther ... Engy. & Env.
Colin Durston ..... Nuclear Energy
Joseph F. Fortugno ..... Staff Services
Renee R. Tiernan ..... Contr. & Proc.
Alfred G. Williams ... Saf. & Env. Prot.

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.

The determination of the best-qualified candidate for available positions will be based upon education, experience and other job-related criteria. Such factors will be evaluated and measured against the demonstrable requirements of the available vacancy, as well as the Laboratory's Affirmative Action objectives.

The Laboratory is committed to a policy of Equal Opportunity in its selection and placement of personnel. Its objective is equality of opportunity in employment, training, and promotion without regard to race, color, religion, national origin, sex or handicap.

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, as indicated below. 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.

LABORATORY RECRUITMENT: Opportunities for present Laboratory employees.

1635. RIGGER - Group Leader. Plant Engineering Division.

OPEN RECRUITMENT: Opportunities for present Laboratory employees and outside applicants.

1636. MANAGER, TECHNICAL INFORMATION DIVISION - Requires an M.L.S. degree or equivalent capabilities and significant library management experience. Will be responsible for the supervision of a staff of 20, as well as for budget preparation and control. Training and/or experience in developing, operating and maintaining computer-based scientific information retrieval systems is highly desirable. In addition, an undergraduate degree in a scientific discipline is also highly desirable. Technical Information Division.

Autos & Auto Supplies

69 POLARA - tires like new, running, needs work, will sell parts; $150 whole. George, Ext. 5288.

HIPPO HANDS - by Vetter, used twice, like new, $40; highway/crash bar, fits Honda 750, $15. Mike, Ext. 4360 or 698-5861 after 7:30.

69 PONTIAC - 4 dr, a/t, p/s, p/b, good engine, trans, runs very well. $350. Ext. 7699 or 821-1435.

AUDI - 4 dr, sedan, black, low miles, rebuilt motor, good cond, $700, needs wiring; (1) tire and rim 14" for 5 lug Chevy car, $10. Ext. 3084 or 744-4440.

69 PLYMOUTH VALIANT - small V8, clean int, good transp. $400. Joe, Ext. 7961 or 727-2470 eves.

67 TOYOTA LAND CRUISER - 4 wheeler, new wide track tires, 2 tops, excel cond, must see. $2,100. 744-3509 after 4 p.m.

75 FORD TRUCK - Super Camper F350 and Amerigo completely self contained camper. Dee, Ext. 3675 or 286-8909 after 5:30.

72 AUDI 100LS - 4 dr, 4 spd, a/c, eng and trans reconditioned recently, good mileage. $1,200. 585-4059.

77 FORD LTD 2 - a/c, p/s, p/b. $2,400. 924-5437 after 6 p.m.

78 DATSUN - B210 engine, $450; 76 Datsun B210 trans, 4 spd, $200. Ext. 3644 or 929-8143.

TIRES - (3) 700.14, 2 new, 1 great. $55. Kevin, 281-8031.

73 VW BUS - std 5 spd, good int and ext. $1,795. 732-3350.

SNOW TIRES - (2) Jetson steel belted w/w, mint, P225/75R15. $40 ea. 732-0134.

70 FORD HEADS - valve covers, completely reworked, like new, asking $100; set intake manifold, $35; new Ford 4 barrel carburator, never used, asking $75. Ext. 3319 or 744-9802.

77 YAMAHA MOTORCYCLE - 360cc elec start, 7,500 mi, excel cond. $850, negotiable. John Ext. 4185 or 929-8204 after 6 p.m.

PARTS - for 1972 Opel, 4 new tires. $200. 727-6585.

283 HEADS MILLED - $30; Volks 5.60x15 dynaglass snow tires, $10; 12x36 snow plow, $25. 878-0201.

72 PLYMOUTH DUSTER - 6 cyl, 225 engine, p/s, a/c, very good cond. 399-5407.

69 VW BUG - good cond. Make offer. Bill, Ext. 3848 or Joel, 732-7721.

76 FIREBIRD FORMULA - silver/black, T-tops, a/c, a/t, low mileage, absolute mint cond. $3,800. 421-1402 eves.

RIMS (2) - Ford 15", 5 hole. $10 each, two for $15. Ext. 2952.

75 VOLVO - 244DL, a/c, p/b, p/s, am/fm, orig owner, new exhaust sytem. $3,100. Days 348-2748, eves 289-7933.

HARLEY DAVIDSON SADDLEBAGS - lockable, removable, w/full rail assembly. $100. Ext. 3533 or 654-2076.

80 KAWASAKI KX125 - dirt bike, excel cond. $850. 477-0264 or 477-2269 after 5:30 p.m.

74 AMC HORNET HATCHBACK - 6 cyl, a/t, a/c, p/s, p/b, am/fm radio w/4 speakers. $950. 369-2504.

TIRES (4) - Cyclone II western wheels w/hubs and chrome lugs. 14"x15½", needs cleaning. $100. Ext. 2295 or 391-5238.

SNOW TIRES - A78x13 mounted on Vega rims, good cond. $40. Duke, Ext. 4278.

71 CHRYSLER NEW YORKER - dark green vinyl roof, p/s, p/b, p/w, p/seats, a/c, good cond, chassis and motor manuals. $750. Jim, Ext. 4040 or 289-0876.

72 DODGE DART - Swinger, slant 6 engine, a/t, p/s, p/b, a/c, good mech cond. $850. Ext. 4325 or 4317.

72 PONTIAC CATALINA - p/s, p/b, a/c, am/fm radio, rebuilt trans, excel cond. $800. Damian, 744-5079.

77 DATSUN B210 - hatchback, am/fm stereo cassette, good mpg, excel. $2,850. Jim, Ext. 2957 or 281-4541.

80 CHEVY MONZA - sport coupe, a/t, p/s, p/b, 9,000 mi, showroom cond, warranty. Asking $5,195. Ext. 2926 eves or 744-8063 days.

78/11½ FT. HORNET TRUCK CAMPER - sleeps 8, excel cond. $3,100. 286-9138.

74 HONDA MOTORCYCLE - CB360, 3K mi on rebuilt engine, many extras, excel cond, garaged. $850. Pete, Ext. 4612.

78 MOTORCYCLE GL1000 - Gold Wing Honda, 4,000 mi, like new. $2,600. 473-8783.

75 VEGA - new battery, brakes, timing belt, am/fm radios, no rot. $1,200. Artie, Ext. 2697 or 325-0743.

73 PLYMOUTH FURY - 4 dr, 8 cyl, hydromatic. $200. Fred, 743-1578.

73 LINCOLN - low mileage, new tires, very good cond. $1,600. Richard, 665-6189 after 6 p.m.

TIRES (4) - H78-15 mounted on Dodge rims w/hubcaps, under 300 mi, like new. $100. Ext. 5288.

PARTS - for '69 VW van, engine, trans, lights, etc, front end damaged. Bill, S., Ext. 3848.

72 VOLVO - excel cond. 399-0969

MOTORCYCLE - Honda Hawk 400cc, almost new cond. Asking $1,200. 588-0805 eves.

81 FORD FAIRMONT - 9,000 mi, p/s, p/b, 4 cyl, std, am/fm stereo, excel cond. Asking $5,500. 924-4398 after 6 p.m.

66 CHEVY PICKUP - 283 cu in., 4 spd, p/s, p/b, 8 ft box, good cond. Asking $1,300. 924-4398 after 6 p.m.

Boats & Marine Supplies

24' TYLERCRAFT - Twin Keel fiberglass sloop, 1981 Honda, recent sails, clean solid boat. Ext. 4232 or 286-3602.

23' JOHN ALLMAND - F/G 150 HP Mercury, I/O Cuddy Cabin on trailer, 2 axel. $3,800. Firm. 475-2679.

16' BOAT - Mark Twain fiberglass 80 HP, extras. $1,500. w/trailer $1,800. Chris, 477-1096 mornings.

'66 40 HP JOHNSON - electric start, good for parts. Mike, Ext. 4293.

AQUA CAT - cheap. Paul, Ext. 2476.

WIND SURFING BOARDS - fiberglass, complete $695. Dinos, Ext. 4666 or 477-1783.

16' ALUMINUM BOAT - open fishing boat, 40 HP elec. start Evinrude engine & mfg. trailer to fit. $1,000. 924-6751 eves.

Yard Sale

GROUP YARD SALE - Oct. 9 & 10th, Rain or Shine. 10 to 4 p.m. 359 Washington Ave., N. Patchogue. Collectibles.

GARAGE SALE - Oct. 10 & 11th, 2811 New London Ave., Medford. Sandie, 654-8058.

GARAGE SALE - Oct. 17 & 18th, 9 to 5 p.m., Rain/-Shine, 43 Cherokee Ave., W. Islip. East of Causeway, North of Montauk Highway between 2nd & 3rd Street.

HANDMADE CRAFTS - Oct. 23rd, 5 p.m. to 9 p.m., Oct. 24th from 10 a.m. to 4 p.m. 16 Robinson St., Shoreham. Gerry, 744-9468.

MOVING SALE - Entire contents of house; bedroom, livingroom, bar, Grundig stereo, records, kitchen set, broiler, American Heritage books, console table, more. 929-6932.

Miscellaneous

RUG - wool, large, scroll, Gulistan, 9x12, good cond. L. Kopp, Ext. 2265.

SOFA - gold 8 ft. Prov. Cost $1,500. Sacrifice, $250; Refrig. Sears 17 cu. ft. Frost proof, top freezer, good cond. $150. 281-2186.

BICYCLE - Schwinn Hollywood, great cond, $30; Royce snare drum w/stand, $25. Diane, 281-5767 after 2 p.m.

FIREWOOD - split, seasoned oak 4'x16'x18" $110/delivered. 924-4284 or 924-2881.

SEARS - 40,000 BTU LP Gas fireplace logs, $25; electric floor polisher, scrubbing brushes & buffer brushes. $25. Ext. 4680 or 286-1331.

PEVEY BASSD AMP - piggy back unit, excel cond. $350. Joe, 878-1688.

GERRAND TURNTABLE - good cond. $80. Doug, 472-1437.

SKIDOO SNOWMOBILE -320 AS 1971 335cc, needs some work. $120. 286-1522 eves only.

PLANERT RACING SKATES - size 7½, like new cond, Scabbards. $70. Ext. 4475 or 929-3251 eves.

BABY CARRIAGE - 2 in 1, like new, $36; elec. coffee & popcorn maker; baby swing, Christmas tree. Ext. 4253 or 928-4926.

CB - 23 channel home base w/wire & antenna. $130. Doug, 472-1437.

BELGIAN EFEL - wood stove, excel cond. $400. 928-4306 after 6 p.m.

STEEL DOG CAGE - 18x27x24, like new, $20; 2 water colors, $55. ea; Antique vase. Irene, 589-5126.

TOXICOLOGY BOOK - autographed by renowned toxicologist. $50. 698-8740 after 6 p.m.

TWIN SIZE - mattress, box spring, bed frame, hardly used, $80; Sears children's bicycle seat, $7; tricycle, $20; assorted 8 trk tapes, $2. George, Ext. 4460.

DACHSHUNDS - adorable smooth hair pups, standard size, red cocoa color. Ext. 3599 or 941-4011 eves.

TOASTERS - used, free; new, in carton, $10. Ext. 3449.

CARPETS - 13x10 gold, $40; 9x9 red, $30; 10x14 pink, $60. all excel cond. Richie, Ext. 4254 or 734-7342.

CONN. THEATER ORGAN - like new. Must see. $1,400. 588-6215 after 6 p.m.

LEATHER BOWLING BAG - (1) Diamond G.T.; (1) Columbia 300 Diamond 3 finger ball; (1) size 10 Bowling shoes, $65. 732-3350.

FUEL TANK - 275 gallon, $75; bow, left handed recurve w/arrows & extras. $30. 473-9124.

BEDROOM SET - Queen size, mattress; bookcases; wall shelves; black recliner. 744-4838 after 6 p.m.

OIL BURNER GUN - good cond. $20; Octagon bridge table & 4 matching chairs, excel cond. $75. Bob Doering, Ext. 4474.

INFANT DRESSING TABLE - walnut wicker, excel cond. $20. 588-1239.

CAMERA - Keystone 125X, $10; negotiable; Ross Superior 10 spd 27" girl's bike, needs work, Asking $55. Ron, Ext. 4987.

DEER HUNTERS - slim-Jim treestand w/safety belt, handclimber, seat, etc. Asking $50. S. Stan, Ext. 3284 or 286-1062.

RACQUETS - ladies & men's racquet ball racquets, like new. $20. ea. Ext. 7773.

HORSE - Arabian gelding, great disposition, gray silver mane & tail. Has been shown. Chris, 477-1096 mornings.

FRUITWOOD - dining room table, w/6 cane back chairs, breakfront hutch, glass front. $375. 286-0204.

HYBRID POPLAR TREES - 6' to 8', will grow to shade tree in 2 years. $10. ea. 924-3293.

20 GALLON LONG AQUARIUM - complete w/custom formica stand. $100. 928-8185.

SINKS - (2) American Standard 22x19 fawn beige w/faucets, excel cond. $30. ea. 938-2279.

HOT WATER - Electric baseboard heater thermostat control, no plumbing, safe clean, quiet, new. Portable. 472-1397.

KASTLE - 195cm Skis, $25; Rust/orange carpet w/pads, 12'x14', $45; 27" men's 10 spd bike, Columbia, $100; Head 720 skis, 203 cm, $20; Solomon 202 bindings, $25; Rosemont boots, men's size 12, $15. 929-4886 after 5:30 p.m.

BIKE - men's 5 spd. $25. 727-3608 after 5 p.m.

FUEGO FIREPLACE INSERTS - w/full view glass doors. Patented insulated stove inserts, over 40,000 BTU per hour. Std. Size $689. Tom, Ext. 4084 or 878-1060.

PROPANE GAS TANKS - in good cond. $35. 286-9260 eves.

CENTRAL A/C UNIT - w/air handler, Fedders 2 ton unit. $300. John, Ext. 5279.

SLIDING GLASS PATIO DOORS - 6', 3 yrs. old Best offer. 698-5475.

TV - 25" color console, power tuning v.g. cond. $250. Edward, Ext. 3403 or 751-1826 after 6 p.m.

LOVESEAT - 2 yrs. old, excel cond. $150. Ext. 7744 or 751-6390.

VANITY - 30" white/gold; top marb formica, gold sink, Med. cab white/gold, excel cond. $100. 736-3573 after 5 p.m.

SOLVE LOCAL TRANSPORTATION - 3 spd, 3 wheel, tricycle, w/basket, new cond. Asking $175. Ext. 4058 or 286-0436.

ELECTRIC CLOTHES DRYER - alto saxophone; dishwasher; ½ violin; all in v.g. cond. Don, Ext. 2225.

WOOD STOVE - box stove, 24' deep w/flue & chimney, never used. $250. Dave, Ext. 4289 or 288-3011.

TV - B&W, $10; (2) Bikes, men's & womens, $35. ea; hair dryer, $8; stereo; more. Ext. 3232 or 3403.

BICYCLE - men's 12 spd, 26" wheels, like new. Must sell. $50. Tom, 924-9143.

CHILDREN'S BIKES - girl's 20", $20; girl's 16", $10; TykeBike, $20; Tricycle, $10. Don, Ext. 7611.

HI/FI CABINET - custom built contemporary walnut 30" wide x 30" high x 60" long. 589-4363 after 6 p.m.

STROLLER - Hedstrom, like new, $30; (2) vacuums (Hoover/GE) $25. ea. Sheldon, 698-8104.

COMFORTER - King size, yellow & white design, almost new. $25. Ext. 3801 or 289-5770 after 6 p.m.

PHOTOGRAPHERS - Sekonic Multi-Lumi light meter, excel cond. $65. Ext. 7773.

PUPS - German Short haired points. A.K.C. 281-8916.

DINING ROOM - Danish Modern, 60" table, 12" leaf, 52" hutch w/sliding glass doors & 3 drawers, 2 armchairs, 4 sidechairs. Moving. $275. neg. 665-6959.

Real Estate

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

For Sale

RIDGE/LEISURE VILLAGE - Carlton Model. 2 bdrm, 2 baths, garage w/remote opener, luxury carpet, venetian blinds, end unit, s/s sink, 1 yr. old. Immediate Occupancy. Asking $62,000. Ext. 7761.

MASTIC BEACH - 4 bdrm Cape, eik, d/r, 160x100 prop., low taxes, gas hot water & cooking, electric heat, l/r w/wood burner, walk to stores & bay, existing 8½% Farmers Mortgage. $28,000. 281-0360 after 6 p.m.

FLORIDA WEST COAST - 2 bdrm, 2 baths, year round unfurn. house, w/w carpet, a/c, all appliances, walk to beach, avail. Nov. 1st. $400/mo. 744-9746 eves.

MILLER PLACE - spacious tri-level ranch w/income apt. House: 2 bdrm, dinette-kitchen, l/r & full bath. Apt: lg. kit, lg. l/r w/picture window, 1 bdrm, full bath, 2 car & storage shed, ¾ acre, scenic view, patio's, etc. 744-2536 after 6 p.m.

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

POCONO CAMPSITE - vacation place, own your own site located on 400 acres, lake view site includes W/E/S. Easy terms. 928-0066.

WADING RIVER PROPERTY - No. of 25A, exclusive area, lovely wooded bldg. plot, slight under 2 acres. Owner Asking $22,500. 928-0158.

For Rent

PORT JEFF STATION - efficiency apt. to sublet for Oct. only. Furnishing available. Ext. 3449.

MILLER PLACE - 3 rm apt. w/priv entr, use of garage & storage, walk to stores & beach, very priv. $325/mo. incl. heat & elec. 744-2536 after 6 p.m.

VERMONT - hike, loaf, ski X-country or downhill, fully equipped 3 bdrm, 2 baths, Cape Cod, fp, garage, reasonable. 732-6499 after 6 p.m.

HOLBROOK - large ranch, 3 bdrms, huge master, den, eik, l/r, patio, 2 baths, lots of closets, big yard. Dec. 1st occupancy. $650/mo. + security. 472-4573.

Wanted

CHOW CHOW PUP - male, black preferred w/papers. 286-1522 eves only.

HOUSE - single woman w/dog seeks 1 to 2 bdrm house to rent. Reliable, responsible. Ext. 7597.

SALES REP - for International Co. in spare time earn 10-20 thousand per year. 732-6647.

GAS STOVE - 30", call 924-5437 after 6 p.m.

ANCHOR - Danforth type. Jerry, Ext. 2934.

EXERCISE BIKE - weight set w/bench. Ken, Ext. 3574.

GOOD HOME - for all white young male cat w/1 brown eye & 1 blue eye. Gentle. Ext. 2959 or 751-5226.

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

EXERCISE BICYCLE - in good cond. Reasonable. Ext. 4612 or 289-0687.

BUNK BEDS - mattresses are not necessary. Pat, Ext. 7931 or 929-6003 after 6 p.m.

HOUSE - for visiting scientist & family, starting December. Contact Malcolm Howells, Ext. 3758.

HOME - to share, graduate student is seeking quiet home to share with other quiet industrious people. 3 Village area. 286-8350.

TRUCK - Ford Pickup, 1974-77, small V8, mechanically sound, clean body, reasonable. 928-1209 after 6 p.m.

Car Pools

FOR PATCHOGUE VIA BELLPORT - 9 yr. old car pool, on-time, has vacancy for paying rider. Alyce, Ext. 2901.

COMMACK AREA - 2 drivers from 8:30 to 5:00 p.m., on-time. Call Jim, Ext. 4452 or Don, Ext. 2043.

Lost & Found

LOST - Motorcycle rain suit, bright orange, in pouch, near Bldg. 911 on 9/23/81. Call Dave, Ext. 2386.

Services

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

KAYAK LESSONS - equipment supplied, eves & wkends, 1½ hr. lesson $10. Emphasis on Physical fitness & Wildlife tours. Ernie, Ext. 5383 or 281-7873.

BABYSITTING - experienced mother will sit in my home, have baby equipment. Pt. Jeff Station. Marge, 473-3352.

VAN & DRIVER FOR HIRE - moving, hauling, reasonable rates. Call Mike, 878-9016 mornings.

DOLLS/HANDMADE - order for Xmas, Raggedy Ann, Andy, Grandma, Grandpa, cat, country doll, brother, sister, dancing doll. 878-9102.

RUBBER STAMPS - plastic laminating, pressure sensitive tapes & labels, desk, nameplate badge engraving. 286-3377 after 6 p.m.

CARPETS INSTALLED - repaired, quick dependable service. Free Estimates. Jim, 821-0187 after 5 p.m.

CERAMIC CLASSES - relax & enjoy a satisfying hobby. Shoreham area. 821-0215 after 6 p.m.

HANDMADE ELVES - dolls, trees, baskets, elephants. Order now for Xmas. 289-4325 after 6 p.m.

RESUME PREPARATION - low cost, professional service. Bill Polvent, 744-8999.

FIRESIDE CHIMNEY SWEEPS - meet us Oct. 11, 1981 Riverhead Country Fair. Raffle, prizes, special discounts. Bill, 584-6425.

SMALL APPLIANCE REPAIRS - elec. heaters & motors, typewriters, sew-machines, vacuums. North Patchogue, 654-3900.

SPACKLING/TAPING - Bill, 286-8185 after 5:30 p.m.

FIREWOOD - red oak, split, seasoned, delivered. $130 per cord. 698-0592.

B&G BOAT REPAIRS - all types, 30 yrs. experience. 698-1176 or 289-1516 eves.

CARPENTRY REPAIRS - and modifications, no job too small. 924-4251.

BABYSITTING - male H.S. student, in Bellport area. 286-3742.

SEWING INSTRUCTIONS - Beginner, Intermediate, Advanced. JU5-8461.

EXTERMINATING - termites, etc. Free estimate. 399-0523.

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