



HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

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DR. FURTH FORECASTS PPL'S FUSION FUTURE

What's the outlook for fusion research at PPL?

Laboratory Director Dr. Harold P. Furth predicts that frontline research will be carried out in the TFTR site for many more years -- probably with a little help from our friends at other fusion laboratories in the U.S. and abroad.

Despite cuts in the fusion budget and the first layoff in PPL history (see box on page 3), Dr. Furth believes the laboratory's programs have simply been delayed, not derailed. According to the revised TFTR schedule, for example, tritium will be introduced into the device sometime near the end of 1988. However, TFTR must meet the significant challenge of achieving break-even conditions using deuterium before that time. "Among scientists, breakeven in deuterium would be considered the definitive event. Most of the plasma physics would be just the same whether you use hydrogen, deuterium, or tritium. What changes is the amount of nuclear power you release. If we can reach breakeven in deuterium, no one will doubt that everything will work at least as well in a deuterium-tritium mixture,



Dr. Harold P. Furth

but much more power will be produced."

Dr. Furth has been pleased with the progress of the TFTR project. "We have been doing pretty well on projecting how TFTR is supposed to come along. We had certain ideas about how long it would take us to bring it up to its full magnetic field strength and current. It actually reached the full magnetic field level about three months early, and also achieved full current early. Now the heating power is coming along. At the moment, all signs point to doing some very interesting things on TFTR this winter, and beginning to reach approximate break-even conditions a year later."

"With TFTR, we've already achieved a large number of those things that were required of us by DOE when TFTR was initially funded. For the rest of the items that were specifically enumerated, nobody has any doubt that we can accomplish them. In addition, we think we can do something which was not specifically laid out -- reaching approximate break-even, and maybe a little bit more."

Despite the delay of the tritium break-even experiment, TFTR is still expected to achieve that milestone a year or two before its nearest competitor, the Joint European Torus (JET). "At the moment, we are neck and neck with JET," Dr. Furth noted. "They are ahead on confinement time, but we are ahead on other important parameters like density and temperature. Together, these two machines are the leading edge of the world magnetic fusion effort at the moment. There are also the Japanese, who turned on a big tokamak called JT-60 in April. They took a little longer to build their machine, but they've done a very good job of it, and it's coming along very rapidly. So I would guess that within a year, they will also

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be in this competition. However, they don't have the capability to put in tritium: they are limited to hydrogen/deuterium plasmas."

Looking toward the future, Dr. Furth pointed out that "we have been thinking about what to do next, ever since 1980. At the moment, there is a very active national effort to design the next machine. In keeping with the times, the cost estimate for a next machine keeps going down. The idea would be to run TFTR through 1989 or 1990, then start cranking it down in the early 90s and crank up the new machine."

The economic realities of the day have called for some redirected thinking about future fusion devices. "The situation is clear -- there will not be any very large amount of money for a large fusion machine in the billion or multibillion dollar class, even in 1988," Dr. Furth explained. "So we came down from thinking about a machine that would cost over \$1 billion to one that would cost maybe \$300 million at most."

"It's quite a different style of proposal from what was planned in 1980, when it was expected that a real reactor would be built at a new site. By building a new machine of the same general class as TFTR, using the facilities we already have and the new ideas that have come up in the 10 years since TFTR was designed, we should be able to build a much more capable machine, one that could reach ignition. It's a much tougher scientific goal, but we would hope to achieve it with no more money than was spent

for TFTR operation, simply because we know how to do it a little better now.

"At the moment, no decision has been made to go ahead with such a machine, or to locate it at PPL, but we have started to think seriously about it. We need to study designs for such a device now, so we would be ready to begin building it in 1988 if a construction project is approved. At that rate, if we are fortunate, it might be running by 1992."

"The idea is to utilize the available resources as much as possible and make a science-oriented fusion machine the next step. We would invite people at other tokamak laboratories to join in the design and construction, and also to enjoy the benefits when the machine is running."

That spirit of cooperation is expected to extend into the international arena. "The Versailles Process is aimed at bringing about constructive collaboration in many fields of science," Dr. Furth explained, "and fusion is one that has been singled out. The Process is based on the idea that it's too expensive to operate in a duplicative way. That was why the heads of state were interested in establishing a cooperative arrangement."

A plan offering such joint participation is already in the works. "There is a feeling in the fusion community that collaboration makes a lot of sense. The U.S. has informally suggested an approach which I think has a good chance of being

adopted. The idea is that the United States will build a science ignition machine as quickly as possible. We will consult the Europeans and the Japanese on how it's to be designed, and we will invite them to come work on it when it's ready. Its purpose will be to make sure the physics of ignition is well understood."

"We wouldn't expect the European and Japanese fusion communities to commit financial support to such a project from the outset," Dr. Furth said, "but it seems probable that as we go ahead, if we go ahead, they will be interested in contributing personnel or technical components. In any case, this project would serve as an important first step in our general international understanding of avoiding duplication."

"The Japanese and the Europeans are still planning to do something quite ambitious, something similar to the kinds of projects the United States used to plan. They do not wish to wait for our project to run its course before they start on theirs, which is very reasonable, because they would have to wait until the mid-90s. So it seems likely that the Europeans or the Japanese would start on a much larger tokamak device around the early 1990s. The U.S. fusion community would hope to be invited to participate in their project by making components for them, and by contributing the knowledge we gain from our ignition experiment. That way, people will be doing overlapping steps which are shifted in time and size, rather than everybody

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wanting to do exactly the same thing."

But Dr. Furth also cautioned against too much United States reliance on foreign projects at the expense of our own fusion program. "If you get bargains by not manufacturing your own automobiles and computers, some day the price of cars and computers is going to go up and you're going to be sorry. Similarly, if you don't do your own energy research, then some day when the price of energy goes up, as it inevitably must, you're going to be sorry again. If you lag behind in research as you enter the phase where it pays off, then the people that have been doing it will benefit far more than the people who've just been reading about it, or visiting to hear about it."

TRANSITIONS

The HOTLINE offers its congratulations to the following employees, who recently became proud parents:

Ray Camp of Quality Assurance and his wife, Martha, whose son, Edward Scott, was born on May 7;

Sam Cohen of PLT/TFTR and his wife, Sukey, whose son, Benjamin Franklin, was born on June 15;

Sheryll Poris of Personnel and her husband, Carl, whose son, Matthew, was born on July 7;

Sheryl Waslenko of Neutral Beams and her husband, Fred, of the MG Room, whose son, Jason Eugene, was born July 10.

Shrinking Staff Reflects Fusion Budget Reduction

President Reagan's FY86 budget, now before Congress, calls for \$390 million for magnetic fusion energy -- a significant drop from the \$437 million appropriated this year.

It is this fact that has resulted in the first layoffs in PPL's history, according to laboratory Director Harold P. Furth. The cut would reduce PPL's budget from \$115 million in FY85 to \$100 million next year.

In a recent interview with the Newark Star Ledger, Dr. Furth stated he saw no governmental change of heart reflected in these budget reductions. "I don't think we are seeing any special persecution of fusion. What we are seeing this year is a 10% across the board cut in energy research. The fusion program is getting a proportionate share of that cut. So there is really no one in the Administration or in Congress saying they've suddenly decided after all these years that fusion is a bad idea that shouldn't be supported anymore."

Although budget constraints have forced PPL into the layoffs, Dr. Furth credits prior planning with lessening the extent of the reduction in force. "In the late 1970s and early 1980s, when we had enough money and work for approximately 1800 people, we kept our permanent staff at about 1300 people. This was done precisely because we didn't know whether that

was the start of an ever-growing effort with ever-new machines, or whether, as had happened in the past, the effort would level off. So we stopped far short of increasing our staff levels to where they might have gone."

"That proved to be a good thing," he continued, "because our annual budget is coming down from \$135 million in FY84 to about \$100 million projected for FY86. As a result, PPL is in the process of eliminating 173 positions, mostly through a voluntary separation plan with retirement incentives and normal attrition.

"Unfortunately, to meet our staffing objective, we have had to lay off a little less than 3% of our full-time permanent employees. Compared to what some laboratories have suffered, that's a very limited forced staff reduction."

Dr. Furth pointed out that the layoffs will have little impact on the laboratory's research program. "The reductions being made by the Department of Energy won't be in the area of experimental research. The reductions are coming by putting off extensions of that research, such as postponement of construction of the next major machine, and a two-year postponement of steps in TFTR that would have carried it forward to burning deuterium-tritium in 1986."

Safety Training

The following Health and Safety training courses are scheduled for August:

Fire Extinguisher Training	S. Larson Ext. 3166	August 13 and 27 2-3:30 p.m.
Basic First Aid	S. Larson Ext. 3166	August 19, 21, and 30 9 a.m.-noon OR 1-4 p.m.
Self-Contained Breathing Apparatus	S. Larson Ext. 3166	August 21 9:30-11:30 a.m.
Cardiopulmonary Resuscitation (CPR)	S. Larson Ext. 3166	August 26, 28, and 30 1-3 p.m.

Employees must obtain permission from their immediate supervisor to attend these classes. Supervisors must call the responsible instructor to enroll their employees.



Trash Tips

Trash disposal crews are refusing to dispose of the refuse that periodically overflows a number of laboratory dumpsters.

The 30 cubic foot dumpsters, located throughout C- and D-Sites, are normally emptied three times a week. However, the disposal contractor will not pick up and empty any dumpster containing trash piled higher than the top of the dumpster itself.

Employees should either bag loose papers, or deposit them in the nearest recycling bin. Cardboard boxes should be crushed and placed inside the dumpsters, not piled next to the units. If you expect a job

to generate a large amount of trash, contact Jerry Williams at ext. 3595 to arrange for a dumpster assigned to that specific operation.

For further information, or to obtain trash bags, contact Jerry or the Maintenance Control Center, ext. 3092.



Graffiti Increasing

Graffiti written in rest rooms and elevators has become an increasing problem. The time Janitorial Services must devote to cleaning areas defaced by graffiti reduces the time available to provide regularly scheduled services. So exercise your creativity elsewhere!

FOR SALE -- Vinyl pool cover, 20x40, \$24. Call 426-0372 evenings.

Classes Scheduled

A course on "Surface Pumping Systems," taught by J. Sredniawski and A. Mamoun, will be offered August 21 and 22 from 8:30 to 11:30 a.m. in the Training Center, D411.

"Physics," the continuation of a course offered last year, will begin on September 5 at the Training Center. The 30-hour program, taught by Dr. Ernst deHaas, will focus on mechanical waves and sound; optics; and a variety of electricity and magnetism topics. Algebra II is the only prerequisite for students interested in taking the course.

"Surface Pumping" and "Physics" are only two of a number of courses being offered on-site to laboratory employees. Courses scheduled to begin this fall include "Pellet Injection," taught by G. Schmidt; "Non-Tritium Gas Delivery Systems," taught by

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R. Krawchuk; "The National Electric Code," by R. Kelemen; "Elementary Plasma Behaviour," by H. Conrads; "Torus Vacuum Pump Controls," by R. Krawchuk; "Grounding," by M. Viola; and "Cooling Water and Pump Room," by D. Harnsberger. For information on the dates and times for these classes, call Ernst deHaas at ext. 2290.

OSHA Violations

The following safety reminders are drawn from a list of common OSHA (Occupational Safety and Health Administration) violations:

- One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created at point of operation, by ignoring nip points, by rotating parts, or by flying chips and sparks. Examples of guarding methods are barrier guards, two-hand tripping devices, and electronic safety devices.
- The point of operation of any machine whose operation exposes an employee to injury shall be guarded. The guarding device shall be designed and constructed to prevent the operator from having any part of his body in the danger zone during the operating cycle.
- When the periphery of a fan blade is less than seven feet above the floor or working level, a guard with openings no larger than one-half inch shall be installed on the fan.

- Each circular crosscut table saw shall be guarded by a hood which meets all the OSHA requirements for circular rip saw hoods.



Obscene Call Rules --

If you receive obscene or annoying telephone calls, the Security Department recommends that you follow these rules:

- Try to determine if the caller is male or female. Listen for an accent or a speech impediment. Does the caller's voice seem weak or strong, close or distant? Can you identify any background noises?
- If the call is obscene or suggestive, HANG UP! Don't entice or provoke your caller; your abrupt disconnection may discourage a return call.
- Keep a record of the calls you receive if the caller is persistent. Note especially the time of day, or the day of the week. Your caller may have a specific calling pattern.
- Most importantly, if you receive an obscene or annoying call while at work, contact the Security Department as soon as possible.

For more information about obscene and annoying phone calls, contact Security at ext. 2894.

Patents Awarded

The U.S. Patent and Trademark Office has issued three patents to PPL inventors thus far in FY85. A patent for a "High Voltage RF Feedthrough Bushing" was granted to Glenn Grotz. Randy Knize and Joe Cecchi's "Method of Enhancing Selective Isotope Desorption from Metals" was also granted a patent. The third patent was granted to Steve Jardin and Uffe Christensen for "Stabilizing Windings for Tilting and Shifting Modes." The Department of Energy holds the title to all three inventions.

Applications for patents filed with the U.S. Patent and Trademark Office during FY85 include:

- First Wall for Polarized Fusion Reactors, by H. Greenside, R. Budny, and D. Post
- Rotating Indented Limiter, by S. Cohen, J. Timberlake, and J. Hosea
- Steady-State Inductive Spheromak Operation, by A. Janos, S. Jardin, and M. Yamada
- Coil to Maintain Equilibrium in Stellarators with Large Transform per Period at High Pressure, by A. Reiman and A. Boozer
- Toroidal Midplane Neutral Beam Armor and Limiter for Indented Bean-Shaped Plasmas, by H. Kugel, S. Hand, and H. Ksavian.

FOR SALE -- One lovebird. \$15. If interested, call Ruby Cochran, ext. 2056.

Emergency Planning Helps Circumvent Catastrophes

The dictionary defines an emergency as "an unforeseen combination of circumstances that call for immediate action." The laboratory's Emergency Preparedness Plan has been implemented to combat such crises. The continuing job of foreseeing that PPL can successfully respond to the unforeseen, however, falls to the Emergency Preparedness Plan Review Committee.

Approximately two years ago, the DOE required PPL to establish an Emergency Preparedness Plan, complete with strategies to counterattack any and all emergencies that might occur, in order to continue operation. After the Plan was written, approved, and in place, a "watchdog committee" was deemed necessary to make certain that the reviews and updates called for in the Plan were carried out. The Emergency Planning Committee (EPC) approved the idea, and the Emergency Preparedness Plan Review Committee (EPPRC) was established shortly thereafter.

Lori Trani-Gettelfinger of Security, Mary Ann McBride of Safety, and Molly Tompkins of Telecommunications have served on the Committee since its inception. Kathy Dunn of Information Services joined the group last fall.

One of the Review Committee's first actions was to "boil down" the Plan's 26 supplements into three volumes. Originally, all the information necessary to operate under emergency



Members of the Emergency Preparedness Plan Review Committee include (left to right) Mary Ann McBride, Kathy Dunn, Lori Trani-Gettelfinger, and Molly Tompkins.

situations (such as lists of emergency telephone numbers and contacts for each PPL experiment) was contained in those 26 supplements. However, the wealth of such information quickly transformed the Plan into a very unwieldy document.

The Committee found that the total Plan is reviewed annually, and the majority of it remains unchanged. To reflect the changing state of the lab, however, portions of the supplements must be reviewed more frequently. Some of the supplement sections, such as the one dealing with hazardous materials, must be updated on a regular schedule. Other sections could be updated on an as needed basis.

Committee Chairperson Lori Trani-Gettelfinger recalled

the decision to try to reduce the Plan to its simplest form. "Our job is to help prepare the laboratory for every eventuality, to provide clear-cut procedures for emergency response techniques. Ideally, anyone should be able to pick up the Plan, or any of its three supplements, and be able to institute emergency procedures in less than one minute."

"We started out by evaluating the content of the Plan," she explained, "deleting what was redundant or would take more than a minute to decipher. Next, we broke down the sections of the supplements that were pertinent to the Plan, making sure we created a reference for everything important in responding to an emergency situation. Standard operating procedures

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were deleted and removed to a reference book; any policy-type items were also eliminated from the Plan."

Mary Ann McBride characterized the condensation of the Plan's supplements as an attempt to "make the Plan manageable. It was put together rather quickly, and information had been pulled from a lot of places. We had to go through it, choose the most appropriate information for forming a quick and efficient emergency organization, and eliminate everything extraneous. The simplification has slowed the committee's constant chasing after details, changes, and corrections, but there still seem to be quite a few revisions made to the Plan every few months."

In the past, the Committee has relied on information garnered by others throughout PPL to aid its updating process. When a Building Emergency Supervisor leaves, for example, the department head is expected to relay that information to the Committee so the Plan can be altered accordingly. Now, however, employees filling specific roles in the Plan will have that fact noted in their

computerized Security Department file. Since employees leaving the laboratory payroll must check out through Security, Committee notification and reassignment of the employee's responsibilities within the Plan will occur on a more timely basis.

The committee's primary ongoing duty is to update, assemble, and distribute accu-

rate copies of the Emergency Preparedness Plan. That's not easy, since in addition to changes in laboratory personnel, many buildings on campus undergo both internal and external changes. Each structure has its own evacuation route, and any alterations in those routes must also be reflected in the Plan.

The Committee also helps devise the drills that test PPL's adherence to Plan procedures. The drills, which can simulate a wide range of possible emergencies or disasters, target various groups to see how well they work together during a crisis.

The Committee's focus has changed since the Plan was published. "We're now trying to determine whether it covers every emergency possibility," Lori said. "That's really an ongoing process; as the experiments here change, we're constantly updating our procedures. We're striving to have the most concise document possible, because our future may depend on this Plan. Without continuous updating and feedback, the Plan would become obsolete in a week's time."

"The committee has kept track of the thousands of details the Plan encompasses for the past two and a half years," Emergency Services Unit Director Jack Anderson points out. "I can't say enough about the fine job they do. They're the people that make the Plan work on an operating level."

Helping keep the laboratory safe has sharpened Lori's vision of PPL. "One of the things that I've discovered

while working on the Plan is that you become aware of the complexity of our work here, and of the complex involvement people at all levels and in a variety of jobs have for keeping all of us safe. It's given me a keen sense of awareness of how important people at all levels are. Working with the Plan has been a well-rounded educational experience of learning who the key people to contact are, or how a certain machine is shut down, for example."

Lori attributes the Committee's concern with detail to their interest in protecting PPL. "We want to make sure that every inch of the laboratory is covered. All the committee members see our work as actually being a part of our jobs. We're all interested in doing a good job, because it benefits everyone in the long run. Our advance planning may one day end what might have been a bad situation without any major incidents or injuries."

Molly Tompkins feels, "It takes an awful lot of time to whack the Plan into shape, but it's very important that it gets done. People seem to think of emergency preparedness as more work for them to do that they can't be bothered with. It may take some time for them to become familiar with the Plan, but after spending just a bit of time to review the parts of the Plan that are relevant to your area of responsibility can save a lot of time in a real emergency. For doing a little bit of homework, you can accomplish something really worthwhile."

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"We committee members are responsible for looking for areas of the Plan that need revising," Molly concluded. "That takes keeping your eyes open. But I think our input is really necessary, and that's why I've stayed with it."

Invention Update

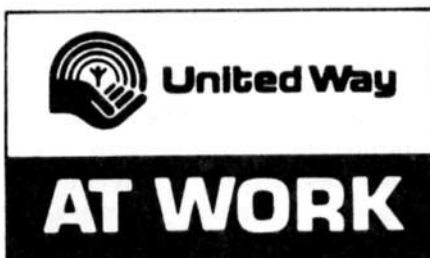
PPL established a Patent Awareness Program designed to recognize creative inventors and to raise the patent-mindedness of laboratory staff in 1981. A Committee on Inventions, consisting of chairman John Johnson, secretary Nancy Jones, and members Frank Bennett, Peter Bonanos, Schweickhard von Goeler, and Richard Rossi, makes cash awards to inventors for their new or novel ideas. Additional monies are awarded if DOE files a patent application on the discoveries.

Invention disclosures filed since April include:

- Polarization Convertors for Circular Waveguide Modes, by J. Doane
- Disruptionless Tokamak, by J.G. Murray
- Fusion Start-Up and Burn Control with Insulated Limiter Plates, by J.G. Murray
- Fusion Reactor Fueling with Cross Current Assist, by J.G. Murray
- Thermonuclear Inverse Magnetic Pumping Power Cycle, by D. Ho and R. Kulsrud
- Nonmagnetic Lubricationless Air Motor, by R.C. Cutler

- Isotope Separation in a Space Environment, by F.W. Perkins
- Hydromagnetic Electrolytic Cell, by R.G. Mills
- Charge-Exchange Plasma Thruster, by S. Yoshikawa
- DC Break for B through Y Band Circular Waveguide Flanges, by R. Cutler

For further information about invention disclosures or the patent process, contact Meg Harmsen at ext. 2659.



There are approximately 96 million volunteers donating their time and energy to one activity or another across the United States. Volunteers can offer their services to a wide variety of deserving groups and organizations.

Due to Federal budget cuts, human services organizations are more in need of volunteer help than ever. In turn, these groups can provide volunteers with the chance to apply old skills and develop new ones; the opportunity to help diverse groups of people; and with exposure to new work environments.

To help make the connection between people who want to help and local agencies that need that assistance, the United Way-Princeton Area Communities suggests that prospective volunteers call

the Princeton Area Council of Community Services. The Council, a United Way agency, has made available a free Volunteer Opportunities directory which lists over 100 local agencies that need volunteers.

Agencies are listed in the directory by name, address, telephone number, appropriate contact person, descriptions of the agencies' services, and a list of the volunteer work available.

The directory, which focuses on human services organizations, is only a partial listing of the many volunteer opportunities available in local communities. Other opportunities can be found through agency boards of directors, church and school groups, various health and service organizations, and local councils, committees, and associations. For specific groups to contact in these categories, volunteers should consult their telephone directory, call the Council, or contact the United Way.

People interested in any organization should get in touch with the executive director or volunteer director to discuss possible volunteer opportunities. Volunteers should be given clear descriptions of their roles and duties, and should know to whom they are responsible. The Council can be called to discuss any matter related to voluntarism.

To get your own copy of the directory, visit the Council's office at 25 Valley Road in Princeton. Copies are also available from any of the libraries in the 13 communities served by the Council

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and the United Way. These communities include Cranbury, East Windsor, Griggstown, Hightstown, Kingston, Montgomery Twp., Plainsboro, Princeton, Rocky Hill, West Windsor, and adjacent areas of Hopewell, Lawrence, and South Brunswick Townships. The Council can be reached at

609-924-5865 or 609-799-6033.

This volunteer matching service is one of more than 130 services made available by member agencies of the United Way-Princeton Area Communities which are funded by financial contributions made to the United Way.

Correction

In the article on the SEER program published in the last issue of the HOTLINE, Ernie Nieschmidt's name was inadvertently misspelled. The HOTLINE regrets the error.

CPR Knowledge Proves Lifesaver

A little knowledge can be a dangerous thing. Just ask Sue Liesch of the CICADA Control Room. Thanks to the training in cardiopulmonary resuscitation (CPR) she received here, she was able to take over from two people who were administering CPR incorrectly to a stricken man. Her competence kept the victim alive until medical help could arrive.

CPR is a lifesaving technique that couples mouth-to-mouth resuscitation with chest compressions. CPR can help revive someone who has had a heart attack, for example, by maintaining oxygen and blood flow throughout the body.

Sue took the CPR course offered monthly by PPL's Emergency Services Unit in November of 1984. "I wanted to learn CPR because you never know when you might need it," she explained, "and having the training couldn't hurt." She successfully completed the course, receiving her Red Cross CPR certification card. "I never thought I'd really have to use it," she recalls.

But she did have to use it this May during a trip to Florida. Sue attended the Sarasota dog



Emergency Services Unit Members Scott Larson (left) and Frank Bozarth practicing cardiopulmonary resuscitation (CPR) with the laboratory's computerized CPR learning system.

tracks on a night that she remembers as "very humid, with very still air. Maybe that had something to do with what happened."

As she left the race track, she noticed a crowd gathered in the parking lot. A man was lying on the ground, and bystanders were searching for people who knew CPR. With a little prompting from her friends, Sue went over to help.

Reaching the fallen man, Sue found two volunteers attempting to do CPR. "Some-

one was attempting to pump his chest, but she wasn't doing it correctly. And the woman who was doing the breathing for him hadn't even straightened his head and neck to make sure air was getting into him."

Checking the victim over, Sue found he wasn't breathing and had no pulse. She began breathing for him while a guard from the race track trained in CPR began doing chest compressions. "After a couple of minutes," she remembered, "his heart started, but it stopped again. He also

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took two or three breaths on his own, and then stopped."

Sue and the guard continued administering CPR to the fallen man for approximately half an hour, until an ambulance arrived to transport the victim to the hospital. Although she isn't sure what the final chapter to the story is, Sue is "sure he was alive when the ambulance took him away. I know I did my part, and did the right thing."

Sue believes that everyone should know CPR. "I never thought I'd have to use my training, but when I needed it, it all came back to me. I didn't have to think about it; I just did what I was taught. It's a really valuable skill, especially if you've got little kids who might choke. And it's also important that you learn how to do it right."

For the dates and times of the next scheduled CPR class, see the Safety Training list on page 4. An interactive computerized CPR teaching system, which allows students to take the course on their own schedule, is also available. For more details, or to arrange to take a CPR course, contact Scott Larson, ext. 3166.

Rental Relocation

As of July 1, Larry's Sunoco at Route 1 and Harrison Street no longer represents the Hertz Corporation's Rent a Car Division.

The new Hertz rental car location is at the Hyatt Regency, 102 Carnegie Center, Princeton. The Hertz rental desk telephone number is 452-9548.



Six Steps to Avoid Cancer

According to the National Cancer Institute, there are specific steps people can take that will help lower their risk of developing cancer. The Institute's major recommendations are:

- Don't smoke, or use tobacco in any form. If you drink alcoholic beverages, do so only in moderation.
- Eat foods high in fiber and low in fat. Include fresh fruits, vegetables, and whole grain cereals in your daily diet.
- Keep yourself safe on the job by using protective devices, such as respirators or protective clothing.
- Avoid unnecessary X-rays.
- Avoid too much sunlight by wearing protective clothing and using sunscreens.
- Take estrogens only as long as absolutely necessary.

FREE TO GOOD HOME -- One lop-eared rabbit. One and a half years old, litter trained. NOT an outdoor rabbit. Litter trays, dishes included. If interested, call Linda Fahner, ext. 2090.



Storm Warnings

Thunderstorms are one of nature's most powerful forces, one that can easily turn deadly when accompanied by lightning. A lightning bolt's power can reach 100 million volts, generating quadruple the heat of the surface of the sun in one second. Each year, more people and animals are killed or injured by lightning than by any other weather phenomenon.

To avoid inadvertently lighting up your life, PPL Fire Chief Jack Anderson offers the following tips:

- If you are indoors during a thunderstorm, stay away from doors, windows, and fireplaces. Those openings create a pathway that might attract lightning. Also avoid radiators, stoves, sinks, pipes, and electrical appliances, which can act as conductors if lightning strikes. Remove the plug and antenna wires from your television set, and don't use electrical appliances or telephones.
- A thunderstorm is no time to take a bath! Even a lightning strike on a household water main could transmit current through the water pipes, causing electrocution.
- If you are caught outdoors, don't stand near the highest object in the area, since it will act as a natural light-

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ning rod. Don't become the highest object, either: crouch or lie flat, and avoid touching any metal objects. If you're at the seashore, get out of the water or off small boats, and into a car or a building.

- Don't use metal objects such as golf clubs or tennis rackets. Golfers, with their cleated shoes, become excellent lightning rods on an open golf course.
- If your skin tingles or your hair stands up, drop to the ground immediately. These are signs lightning may be about to strike you.

Persons struck by lightning carry no electrical charge, and can be handled without fear of shock. Persons "killed" by lightning may be revived by immediate cardiopulmonary resuscitation (CPR).

Death Benefits

Effective January 1, 1985, biweekly staff members enrolled in the Princeton Pension Plan who are married and die while still actively employed are assured that the surviving spouse will receive any payments due from the pension plan. It is no longer necessary for the employee to have been 55 years of age and to have had 10 years of service.

In addition, the Benefits Committee has requested that the Personnel Office assure that University employees are aware of recently enacted Federal legislation (the Retirement Act of 1984) which

mandates that a surviving spouse be guaranteed a portion of a retired employee's pension. This pension guarantee to a spouse can only be overridden by a waiver signed by the spouse. Employees can obtain further information regarding this law by contacting Nancy Feldman in the Office of Personnel Services, Main Campus, ext. 7-5157



Bowlers Needed

It's time for all laboratory bowlers to get back into the gutter by signing up for the Princeton University Mixed League's 1985-86 season. League play begins at Colonial Lanes in Hamilton on September 4 at 6:15 p.m., and continues each Wednesday for 34 weeks.

Both male and female bowlers are needed, as are keglers willing to substitute throughout the League season. A low average is no problem, since teams bowl for fun, not for blood.

For more information, or to sign up, call League president Debra Simmonds at ext. 3139, or secretary Sarah Thomas, ext. 3711.

Bowlers are also needed for The Princeton University Men's League. The group is seeking another team, as well as individual bowlers to join established teams. The League bowls Mondays at 6:30 p.m. at Colonial Lanes. If you're interested, call Dave Maruso or Paul Kilver at ext. 3067.

Volunteers: People People

The following volunteer opportunities were submitted to the HOTLINE by the Princeton Area Council of Community Services, a member agency of the United Way-Princeton Area Communities. For further information on any volunteer position, contact each agency directly.

- The Fresh Air Fund allows a child from New York City to stay with local families for a two-week summer vacation in the "country." Families that can host these children are needed, as are individuals who could chaperone the children on the train ride from New York City to Princeton and back. To transform your home into a summer resort, call the Fund at 201-359-8786.
- The Family Service Agency of Princeton is a counseling center for people with individual, marital, or family psychosocial problems. The Agency also serves as an educational center for personal growth. Volunteers who can write articles about the agency, or establish contacts with community groups and industries, are sorely needed. Regular secretarial help is also being sought, as are individuals who can assist in arranging group activities. To offer your aid, call the Agency at 609-924-2098.

The next listings were provided by the United Way of Somerset Valley. To learn more about any listing, contact each agency directly.

(continued)

- The Management Assistance Program in Westfield needs individuals willing to teach management, technical, and professional skills. Put yourself at the head of the class by calling the Program at 201-233-2888.

- The Mental Health Association in North Plainfield is seeking volunteer companions to mentally handicapped adults in transition. Although they participate in structured programs during the day, these adults need someone to visit them and help them through their adjustment period. To lend a hand, call the Association at 201-754-9078.

The following volunteer posts were supplied by the Voluntary Action Center of Middlesex County. For more details about any position, contact the VAC at 201-249-8910.

- Volunteers are needed to serve as role models and to befriend closed-head injury patients who need help in social rehabilitation. To lend a hand, call the VAC.
- Can you accurately evaluate the quality of a product or repair job? Experts in consumer goods or services are needed to serve as advisors or witnesses in consumer protection cases. Volunteers with extensive knowledge of appliances, auto repairs, home repairs, or the construction industry would be especially welcome. To take the stand, contact the VAC.



Tour Guides



A young man's fancy may turn to love in the spring, but almost 1500 people had thoughts of fusion -- and PPL tours -- instead. April brought not only showers, but a flood of visitors to see the laboratory's experiments. A total of 731 visitors toured PPL in April, escorted on 35 tours by 49 guides. Our sincere thanks to our springtime pathfinders:

APRIL

Jeff Alton
Dale Ashcroft
Hamid Biglari
William Blanchard
Nelson Bowen
Norton Bretz
Robert Budny
Charles Bushnell
Diane Carroll
David Ciotti
Sam Cohen
Fred Dylla
Robert Fleming
Robert Forester
James French
Jeff Gettelfinger
Robert Goldston
James Kamperschroer
David Kaufman
Mark Kijek
Naren Kokatnur
Paul LaMarche
Ed Lawson
Douglas Loesser
Lorand Meray
Donald Monticello
Jack Mount
Mary Ann McBride
Ernest Nieschmidt
David O'Neill
William Osborne
Erik Perry
Gregory Rewoldt
John Robinson
Stan Schweitzer
Al von Halle
Howard Zuvers

MAY

Stefano Bernabei
William Blanchard
Kees Bol
Fred Boody
Nelson Bowen
John Bradish

Graham Brown
Diane Carroll
Alfred Cavallo
David Ciotti
Steve Cowley
Fred Dylla
James French
Donald Grove
Paul LaMarche
Robert Mills
Jack Mount
Ernest Nieschmidt
Michael Pereira
Alan Ramsey
John Robinson
Earle Sheaffer
Mark Smith
Masaaki Yamada
Ken Young

JUNE

Dale Ashcroft
Kees Bol
John Bradish
Norton Bretz
Charles Bushnell
David Ciotti
Anthony DeMeo
Frank Dreher
Robert Fleming
Robert Forster
Donald Grove
Jack Joyce
Naren Kokatnur
Paul LaMarche
Ed Lawson
Lorand Meray
Robert Mills
Alan Ramsey
Gregory Rewoldt
Earle Sheaffer
Edwin Tolnas
Irving Zatz
Howard Zuvers