

— 40th Anniversary Special Issue —

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PPPL's 40th Anniversary *Past Accomplishments, Future Goals*

"The Princeton Plasma Physics Laboratory has a destiny, and our 40th Anniversary gives us the opportunity to look at what's been accomplished so far. It's a wonderful time for celebrating together and looking into the future as well," says PPPL Director Ron Davidson. "I encourage all employees and their families to attend as many of the activities as possible."

Activities to mark the 40th Anniversary range from the fun of Family and Community Day on Saturday, October 26, to the symposium on PPPL's role in fusion research and fusion's potential contribution to the world's energy mix. The symposium is on Thursday and Friday, October 31 and November 1. This issue of **HOTLINE** lists these activities.

"For the symposium, we're looking forward to welcoming many people who have helped to make the Laboratory what it is today and to highlighting the results of 40 years of dedicated work to make fusion a reality," notes Deputy Director Dale Meade.

Rush Holt, Assistant Director of the PPPL Office for External Affairs, says, "I am pleased with how well the arrangements have fallen into place and appreciate the efforts of so many Lab employees."

From logistics to displays and demonstrations, from food and souvenirs to science activities, many people are working hard to create a celebration to remember. Come on out and enjoy!

Astronomer Sagan to Speak



Carl Sagan

During the 40th Anniversary Banquet on October 31, Dr. Carl Sagan will speak, focusing his remarks on fusion-related issues and the contributions of Lyman Spitzer, founder of PPPL. Spitzer had directed him towards astrophysics when he was in high school. If his track record for knowing how to fascinate a broad audience on a scientific subject holds true, then Sagan's talk will be both entertaining and fascinating.

Carl Sagan's ability to encourage the scientific interest of people



Banquet Highlights Celebration

"We've planned a very special banquet to highlight our 40th Anniversary, and planning is moving along at a breathtaking pace," says Banquet Chairman Geoff Gettelfinger. "We're looking forward to a delightful evening and an interesting talk by Carl Sagan."

The banquet will be Thursday, October 31, with cocktails at 7 p.m. and dinner beginning at 8 p.m. It will be held in the very attractive Marriott Ballroom, in the Forrestal Village across Route 1 from PPPL. Ticket sales have been extended until Friday, October 25. Tickets are \$25 and are on sale in the LOB Lobby daily between 11:30 a.m. and 1:00 p.m.

Continued on Page 3

Spotlight on Family/Community Day

Come one, come all! Bring your friends and neighbors out to a fascinating, delicious, fabulous celebration! On the 40th Anniversary Family/Community Day, children and adults alike will love the tours, double-decker bus and trackless trolley rides, hands-on science activities, shows, and exhibits! Not to mention delicious food and Anniversary souvenirs. Here's the plan. You provide the action.

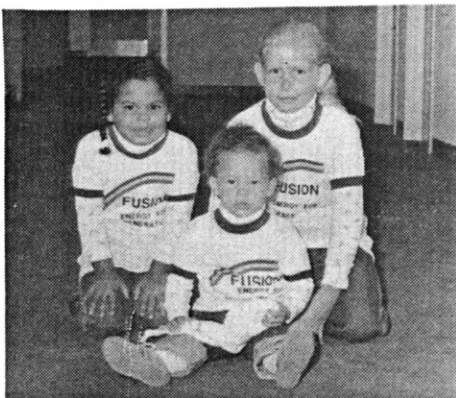
Hurry, hurry, hurry for...

Food

- ☆ Hotdogs and cider for lunch, served 11:00 A.M. until 2:00 P.M.
- ☆ Apples, chips, pretzels, coffee, cider, even a popcorn machine, for your all day enjoyment.

Souvenirs

- ☆ Helium balloons, mugs, and squeeze bottles with 40th Anniversary logos.
- ☆ PPPL Historical Highlights brochure, PPPL Overview booklet, and other literature.



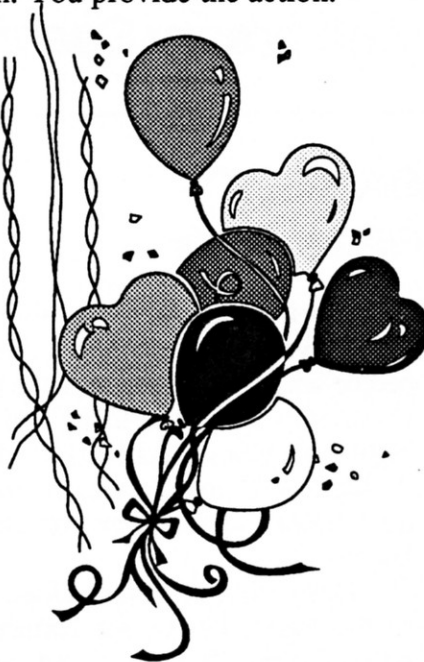
During Family Community Day of October, 1982, these kids proudly showed off their PPPL rainbow T-shirts. Will they be with us this October as young teens?

Video

- ☆ PPPL Overview Video with introduction by Ron Davidson.

Science Shows

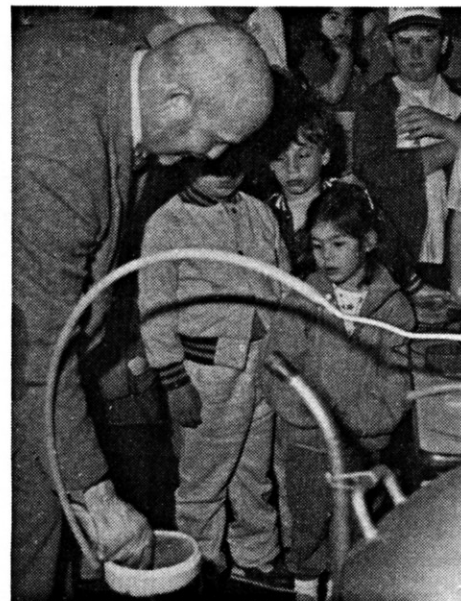
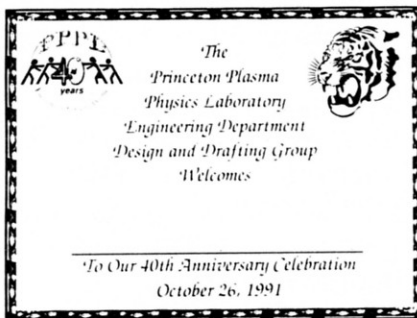
- ☆ **Wizard of Science**—11:00 A.M., 12:30 P.M., 2:00 P.M., and 3:30 P.M. in the M.B. Gottlieb Auditorium. Science show for kids of all ages.



- ☆ **Dr. Zero** is PPPL's own George Martin with deep-freeze cryogenics—one morning and three afternoon shows in the cafeteria. See how a frozen flower breaks like glass.

Demonstrations

- ☆ **The Plasma Discharge Chamber**—Witness with your own eyes the beautiful color of a plasma glow discharge!
- ☆ **CADD** (Computer-Aided Design and Drafting) and Print Plotter—Get your personal PPPL certificate and do hands-on drawing by computer.



Dr. Zero, Master of Cryogenics, (alias George Martin) put on quite a show at 1987's Family/Community Day. He's back again this year, so don't miss him.

- ☆ **CAMEO** (Computer Aided Management of Emergency Operations)—Design your own emergency plan.
- ☆ **Computer Displays**—Walk yourself through simple, interesting computer programs.

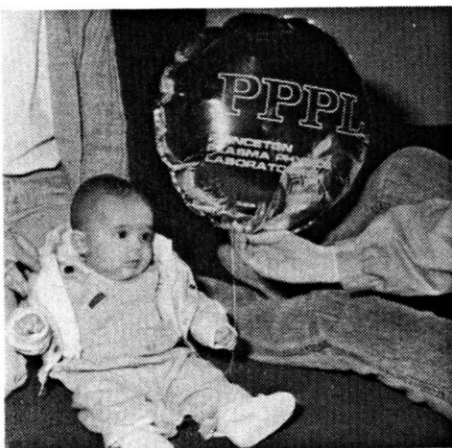
Science Activities

- ☆ **Ping Pong Rocket**—See what happens when water separates into hydrogen and oxygen. Watch that ping pong ball fly.
- ☆ **Fluid Hydrodynamics**—A demonstration of turbulence. Watch wave motion as it moves into a turbulent mode.
- ☆ **Electromagnetic Induction**—See how electricity moves. Watch induced current light up a bulb.

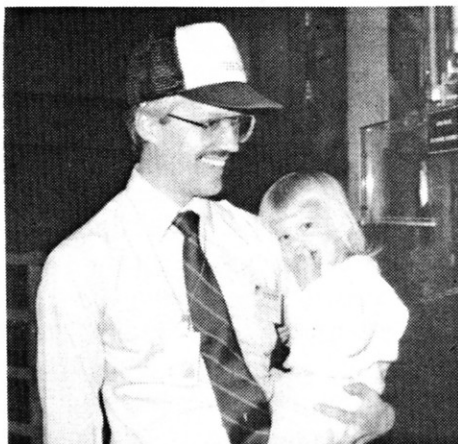
- ☆ **Plasma Sphere**—Plasma at your fingertips! Draw current towards you simply by touching this magic sphere.

Displays and Exhibits

- ☆ Winning student posters and essays from 40th Anniversary contest featured in the LOB Lobby. Other entries displayed in the TFTR tunnel.



This moment of fascination with a PPPL balloon happened at Community/Family Day in May, 1987. We hope this tot (now five) comes back for another balloon this year!



Jim Kamperschroer, wearing a souvenir cap, showed off PPPL to his two-year-old daughter Amy back in '87 at PPPL's Family and Community Day. Amy is now a first grader!

- ☆ Scientific and informational posters about PPPL and fusion placed throughout the Laboratory and along the self-guided tour routes.
- ☆ Scale models of a stellarator, the TFTR, PLT, and PBX tokamaks, and a TFTR Neutral Beam Ion Source and High Voltage Switchtube.

Tours

- ☆ Self-guided tours of TFTR, PBX-M, CDX-U, Atomic Beam Facility, C-Site MG sets, and small experiments.

Fire House Activities

- ☆ Clowns and balloons 10:00 A.M. to 2:00 P.M.
- ☆ Jaws of Life demonstration at 12:00 noon.
- ☆ Fire Engines on display.
- ☆ Literature on Fire Prevention Tips and Techniques.

Rides

- ☆ Double decker bus and trackless trolley rides around PPPL; shuttle service for overflow parking at B-Site.



Sagan

Continued from Page 1

from various backgrounds is reflected through the success of his books and the television show *Cosmos*, which won Emmy and Peabody Awards. *Cosmos* became the most widely watched scientific series in the history of American public television, and has now been seen in 60 countries by over 400 million people.

The accompanying book, *Cosmos*, was on the *New York Times* bestseller list for 70 weeks and is the best-selling science book ever published in the English language. His other best-known book is the Pulitzer Prize winning *The Dragons of Eden*.

In addition, Sagan is the author, co-author or editor of more than 20 other books including *Broca's Brain*, *Comet*, and *Contact*, and he has published more than 600 scientific and popular articles.

Sagan's work as an astronomer and scientific researcher has provided rich material for his writing and has led to numerous honors and awards—including 18 honorary doctorates from American colleges and universities.

In astronomy, Sagan has played a leading role in the Mariner, Viking, and Voyager expeditions to the planets, for which he received the NASA Medal for Exceptional Scientific Achievement; the Prix Galabert, the international astronautics prize; the NASA Medal for

Distinguished Public Service (twice), and other honors.

His scientific research has enhanced our understanding of the greenhouse effect on Venus, dust storms on Mars, the organic haze on Titan, the origin of life, and the search for life elsewhere.

Sagan is currently the David Duncan Professor of Astronomy and Space Sciences and Director of the Laboratory for Planetary Studies at Cornell University. He is also President of the Planetary Society, a 100,000-member organization which is the largest space-interest group in the world, and Distinguished Visiting Scientist at the Jet Propulsion Laboratory, California Institute of Technology.

Past, Present, Future of Fusion

Two-Day Symposium Slated

Many former PPPL staff members and other important contributors to fusion research will join speakers from the Lab to provide a stimulating, educational two-day program for PPPL's 40th Anniversary Celebration. The programs are designed to be of interest to a broad audience, and all PPPL staff members are encouraged to attend. To accommodate a possible overflow crowd and to meet the needs of those who can't leave their work stations, closed circuit video monitors will broadcast the program in the LOB Lobby and cafeteria and at other stations around the Lab.

On Thursday, the program will begin by focusing on the achievements, present activities, and future prospects of fusion research. On Friday, the program's emphasis will shift to the world's energy needs, the potential contribution of fusion to meet those needs, and how the international fusion program can develop that potential. On Thursday evening, as part of the symposium, Carl Sagan of Cornell University will speak at a banquet honoring PPPL's founder Lyman Spitzer, Jr. The complete program is given below. Speakers are listed alphabetically and not necessarily in the order in which they will speak.

Princeton Plasma Physics Laboratory 40th Anniversary Celebration

Program of Speakers M.B. Gottlieb Auditorium

Thursday, October 31

Morning

- | | |
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| 9:00-9:15 | Welcome
<i>Dr. Ronald Davidson</i> , Director, PPPL
<i>Dr. N. Anne Davies</i> , Director, Office of Fusion Energy, DOE |
| 9:15-10:50 | Experimental Research: Past, Present, Future
<i>Dr. Roy Bickerton</i> , former Associate Director, Joint European Torus
<i>Dr. Robert Goldston</i> , Head, Laboratory Research Council, PPPL
<i>Dr. Don Grove</i> , former Deputy Director for Technical Operations; former Head, TFTR Project, PPPL
Moderator: <i>Dr. Dale Meade</i> , Deputy Director, PPPL |
| 10:50-11:20 | Break |
| 11:20-12:00 | Remarks
<i>Professor Melvin Gottlieb</i> , former Director, PPPL |
| 12:00-1:15 | Lunch |

Afternoon

1:15-3:00

Engineering and Technology: Past, Present, Future

Dr. Harold Eubank, former Head, TFTR Neutral Beams, PPPL

Dr. Robert Mills, former Head, Engineering Department, PPPL; former Director of the Graduate Program in Plasma Science and Technology, Princeton University

Dr. Bruce Montgomery, Associate Director, Massachusetts Institute of Technology Plasma Fusion Center

Mr. Paul Reardon, Project Manager Superconductor Super Collider Project; former Deputy Director for Technical Operations; former Project Head, TFTR Construction

Moderator: *Mr. J.R. Thompson*, Deputy Administrator, National Aeronautics and Space Administration; former Deputy Director for Technical Operations, PPPL

3:00-4:30

Theoretical Research: Past, Present, Future

Professor Ira Bernstein, Department of Applied Science, Yale; former Theoretical Physicist, PPPL

Professor Alan Boozer, Department of Physics, College of William and Mary; former Head, Theoretical Group, PPPL

Moderator: *Dr. Paul Rutherford*, Associate Director for Research, PPPL

4:30-5:30

Plasma Science

Professor Joseph L. Cecchi, Head of Plasma Processing, PPPL; Director of the Graduate Program in Plasma Science and Technology, Princeton University

Dr. Barrett Ripin, Head, Space Plasma Branch, Naval Research Laboratory; former post-doctoral fellow, PPPL

Professor Ellen Zweibel, Chairman, Department of Astrophysical, Planetary, and Atmospheric Sciences, University of Colorado; former visiting scientist, PPPL

Moderator: *Dr. Francis Perkins, Jr.*, PPPL

Evening

7:00-8:00

Reception

8:00

Banquet

Remarks Remarks

Professor Lyman Spitzer, Jr., Founder and first Director, PPPL

Professor Carl Sagan, author and Professor of Astronomy and Space Sciences and Director of the Laboratory for Planetary Studies at Cornell University.

Friday, November 1

Morning

- 8:30-8:45 **Princeton University and Fusion**
 Professor Hugo Sonnenschein, Provost, Princeton University
- 8:45-9:30 **Fusion and the Environment**
 *Dr. John Clarke, Associate Director, Global Climate Studies, Batelle;
 former Director, Office of Fusion Energy, DOE*
- 9:30-11:10 **The World Fusion Program**
 *Dr. Atsuo Iiyoshi, Director-General, National Institute of Fusion Science
 (Japan); former post doctoral fellow, PPPL*
 *Dr. S. Tamura, Deputy Director, Department of Large Tokamak Research,
 Japanese Atomic Energy Research Institute (Japan)*
 *Dr. Paul Rebut, Director, Joint European Torus; designated new Director
 of the International Thermonuclear Experimental Reactor*
 Moderator: *Dr. John Schmidt, Head, Burning Plasma Experiment Project,
 PPPL*
- 11:10-11:25 **Break**
- 11:25-12:10 **Deuterium-Tritium Experiments**
 Dr. Dale Meade, Deputy Director, PPPL
- 12:10-1:55 **Lunch: (with Distinguished Invitees)**

Afternoon

- 1:55-2:40 **Energy for the Next 100 Years**
 *Professor Robert Socolow, Director, Center for Energy and Environmental
 Studies, Princeton University*
- 2:40-3:10 **Future Prospects**
 Ronald Davidson, Director, PPPL
- 3:10 **Tours**