PPPL
PRINCETON PLASMA PHYSICS LABORATORY
HOTLINE

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First PPPL Research Fellows Named

Recognized for their "extraordinary records of creativity and accomplishments in research over an extended period of time," three PPPL physicists have received the newly created PPPL Distinguished Research Fellowships. The first recipients of the Fellowships are Russell Hulse, James Strachan, and Roscoe White, who were honored during a formal ceremony on Monday, June 13, at the Lab's MBG Auditorium.

Said PPPL Director Ronald Davidson, "Through their exceptional accomplishments, the recipients bring great distinction to the Laboratory and the University."

The newly named Distinguished Research Fellows at PPPL are, from left, James Strachan, Russell Hulse, and Roscoe White.

Funded by DOE

The Distinguished Fellow Program, which is funded by the U.S. Department of Energy (DOE), was created in 1993 to recognize members of the Research Staff for their excellence in theoretical and experimental plasma physics research at the Laboratory. Fellows receive one-time gifts of $5,000 and qualify for priority in regard to their research programs.

Hulse, a recipient of the 1993 Nobel Prize in Physics, was honored "for fundamental contributions in two fields of physics: The discovery by radio astronomy of the first binary pulsar, and the description and computational modeling of processes involving high Z ions in tokamak plasmas." Hulse discovered the binary pulsar while working as a graduate student at the University of Massachusetts for Professor Joseph Taylor, who is now Professor of Physics at Princeton University. The discovery led to Hulse and Taylor winning the 1993 Nobel Prize in Physics. After earning a Ph.D. from the University of Massachusetts in 1975, Hulse changed from the field of astrophysics to plasma physics and came to PPPL in 1977. Since leaving radio astronomy and entering plasma physics, he has become a leading expert in computational modeling of impurity transport in tokamaks.

"It gives me special pleasure to be honored in this way by PPPL. I would like to thank PPPL and DOE for establishing the Distinguished Research Fellowship Program and for naming me as one of the first recipients of this award," said Hulse.

Strachan was recognized "for the discovery and scientific exploration of enhanced-confinement plasmas in the Tokamak Fusion Test Reactor (TFTR) in both deuterium and deuterium-tritium experiments and for the development of fusion product diagnostics which are required to investigate the physics associated with burning plasmas."

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Inside

Fellows

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Strachan was the leader of the research team which investigated high-power operation in deuterium-tritium plasmas resulting in 6.2 megawatts of fusion power. He is a past recipient of the American Physical Society's "Excellence in Plasma Physics Research Prize" and is the author of 41 papers. Strachan, who received a Ph.D. from the University of British Columbia in 1972, specializes in experimental plasma physics and is a Task Force Leader on the TFTR Project at PPPL.

"Through their exceptional accomplishments, the recipients bring great distinction to the Laboratory and the University."

— Ronald Davidson —

Commenting on receiving the Fellowship, Strachan said, "I feel privileged to be part of the fine team that has been formed at PPPL. It has been incredibly exciting to see the tremendous progress that has happened in fusion research over the 20 years that I've been here."

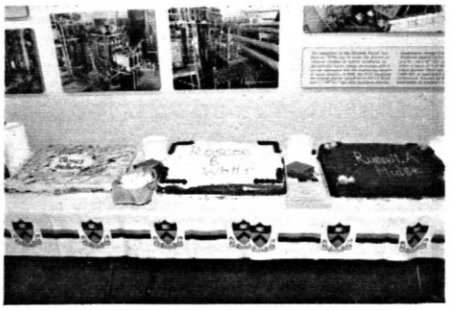
White was awarded "for outstanding contributions to magnetic fusion research in the areas of resistive and ideal magnetohydrodynamics, the interaction of high energy particles with magnetohydrodynamic waves such as fishbone instabilities, and stochastic transport induced by magnetic field ripple and field perturbations." He was also noted for his contribution to education in plasma physics.

White, who received a bachelor's degree in physics from the University of Minnesota in 1959 and a Ph.D. in physics from Princeton University in 1963, came to PPPL in 1974. He has held research positions at several other institutions, including Lebedev Institute in Moscow, U.S. Academy of Sciences exchange program; the International Center for Theoretical Physics in Trieste, Italy; the University of California, Los Angeles; and the Institute for Advanced Study in Princeton.

Upon receiving the Fellowship, White said, "I'm very honored to be a part of such an eminent research institution."

Lab employees celebrated with the newly named Distinguished Research Fellows during a reception in the Main Lobby. In the center is Dr. Ronald Davidson.

Following the ceremony, which drew many of the Lab's employees, a reception was held in the Lobby. The refreshments included three large sheetcakes—one for each Fellowship recipient.



A cake for each of the three Distinguished Research Fellows was served during the party following the presentation of the Distinguished Research Fellowships.

Advise Director

Approximately two PPPL Distinguished Research Fellows are expected to be appointed each year until the end of the decade. Fellows are expected to devote most of their time to active research. They will be required to describe their research during regularly scheduled colloquiums. The Fellows will form the Distinguished Research Fellow Council, which will advise the Director on the scientific direction of the Lab. Research staff holding senior positions in management and tenured faculty will be ineligible for consideration as Fellows.○

HOTLINE

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Lights, Camera, Physicists

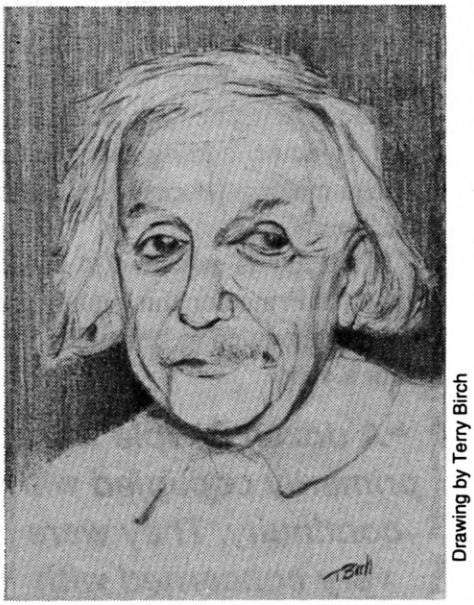
PPPL's Budny To Be Featured in "IQ" Film

Nassau Street in Princeton seems an unlikely place to be "discovered."

But when PPPL physicist Robert Budny was on his way to the bank one day, a casting staffer from Paramount Studios spotted him and asked if he would consider being an extra on the film "IQ."

"I guess I looked the part," said Budny, who played the role of one of an audience of scientists at a physics symposium.

Budny gave the casting person his work and home telephone numbers. "A month later, I got a call from Paramount asking if I would be available for a shoot," he said.



Drawing by Terry Birch

Albert Einstein

Hollywood Feeling

The PPPL physicist described showing up at the "IQ" headquarters on Alexander Road to be fitted for a costume. "There was a very interesting Hollywood feeling in the office and all of these extras were being given 1950's suits to try on," he said, adding that he also began trying on 40-year-old suits.

Once costumed and photographed, Budny moved onto the hair stylist, who cut his hair and slicked it back with a generous portion of hair oil. "Then they tagged my stuff and put my name on it and said they would call me," said Budny.

Not long after the fitting, the PPPL physicist found himself among 200 other extras—mostly professional actors—at Princeton University's Palmer Hall for a two-day shoot.

"They were filming at the top floor of Palmer, where there were huge lights, cameras, and a frantic feel in the atmosphere. Einstein spent a lot of time there (at Palmer) waiting for the Institute for Advanced Study to be built," said Budny. "A lot of the 'IQ' cast did not know that and were amazed to see all this Einstein memorabilia at Palmer."

The filming took place in one of the auditoriums where Einstein had attended seminars. (*See page 4 for decades-old photos of Einstein on campus with PPPL Professor Thomas Stix*). The room, which looks much the same as it did during Einstein's days, is also a place familiar to Budny.

"Curiously, when I first came to Princeton, I was an instructor on main campus and taught some courses at the auditorium," said the physicist turned actor. He noted that he helped teach "Physics for Poets."

Budny, a research physicist who works on TFTR, described his duties as a cast member of "IQ." "The role is just sitting in this lecture hall," he said, noting that it was briefly expanded when the director was trying to come up with poor physics jokes.

"The assistant director came in and asked if there was a physicist in the house and I stuck up my hand," said Budny, who was the only extra to respond. "She (the assistant director) led me in to talk to the director and actor Tim Robbins. I learned later the script was very fluid and they were working on it."

Director Fred Schepisi was looking for a lame physics joke for a section in the movie in which Robbins would bomb while telling the joke at the physics symposium, making him feel more awkward than he already felt. "I gave out some lame jokes but then they decided not to add the joke in the scene," said the physicist. When the filmmakers found out Budny did research in fusion, they invited him to look over a cold fusion speech that would be used in the auditorium scene. Budny was sent off to a corner away from the other extras to review the work, which he described as "very marked up" and "full of movie jargon."

Charming Script

After getting past all the corrections, Budny said he found the script "very charming."

The story, which has been filmed in and around Princeton for the last several months, is a romantic comedy about Einstein's fictional niece (played by Meg Ryan) and the intuitive genius/auto mechanic (played by Robbins) who falls in love with her. Einstein is portrayed

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IQ

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by Walter Matthau, who is rooting for the auto mechanic. In addition to the story line, Budny said he was interested in the allusions to physics that run through the script. "Einstein (Matthau) talked about God playing dice and about the relativity of time... And there's a lot of cold fusion running through the movie," he said.

The PPPL physicist, who sat just behind Matthau in the auditorium, said the veteran actor provided the entertainment for the crew between takes, barely pausing between quips.

Budny noted that the sequence he is in with Matthau will probably last just a few minutes in the film although a large amount of work went into producing it. "They spent a huge amount of time setting up the lighting and deciding where the camera would be. The camera simultaneously videotaped the scenes so the crew could view the results and make adjustments for the next take. A dozen people were primarily occupied with continuity. They were very concerned with Matthau's hair, and from time to time they would adjust my tie," said the Lab's budding actor, adding that seeing the filmmaking process first-hand was "fun."

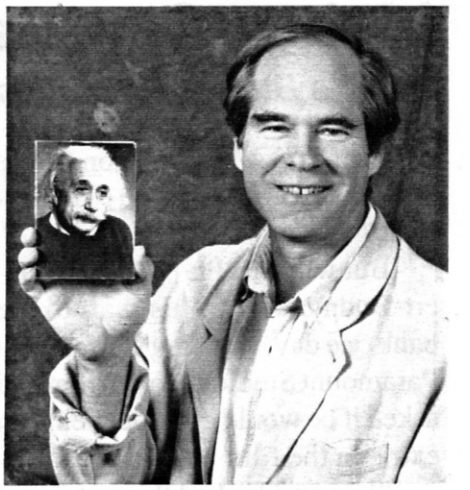
The crew is expected to finish filming in Princeton this month and "IQ" is scheduled to be released in about a year.

"A dozen people were primarily occupied with continuity. They were very concerned with Matthau's hair, and from time to time they would adjust my tie."

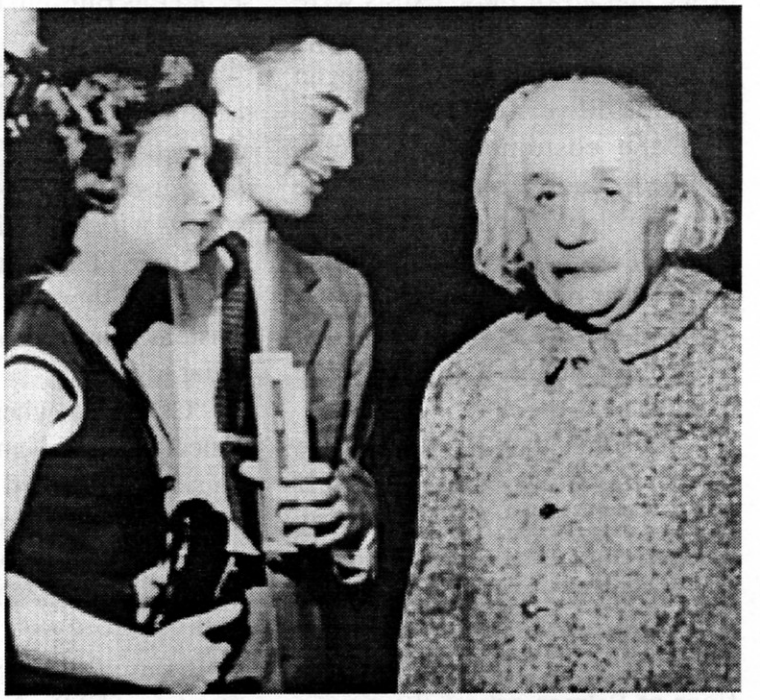
— Robert Budny —

In the meantime, although Budny invited the director to visit the Lab with "Einstein" and his "niece" and received a thank-you note back, he claims he himself has no further acting ambitions. He said the acting stint was a one-time gig, despite its perks, which included monetary and culinary compensations.

"I got paid about $8 an hour," said Budny, adding that he was also plied with all the food he could eat during the shoot. "Walter Matthau called it 'Meals on Reels.'"○



Robert Budny



In 1954, Albert Einstein attended a meeting for the Princeton United Jewish Appeal at the Princeton Inn (now Forbes College) on Princeton's campus. Another attendee was Thomas H. Stix, currently a PPPL Professor. In the top photo, Professor Stix is seated at the right of Einstein. In the photo at right are Stix (middle) with his wife, Hazel, and Einstein. (Photos courtesy of Professor Stix.)

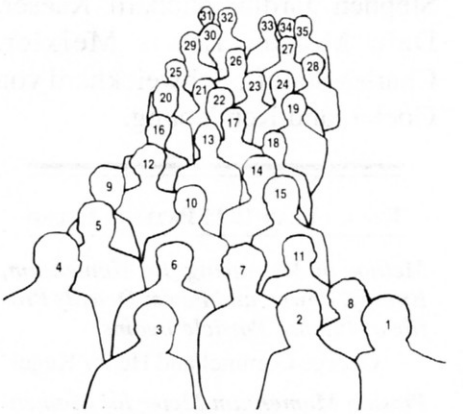
Laboratory Inventors Honored at Dinner

Patents have come a long way since George Washington inked the documents on the first U.S. patented invention—fertilizer—in 1790. They've advanced for PPPL, as well as for the nation.

On May 25, fifty-five inventors from the Laboratory were honored for their creativity at the twelfth annual Patent Awareness Program Dinner held at Princeton University's Prospect House. The dinner, which was co-hosted by the U.S. Department of Energy and PPPL, recognized those who participated in the Patent Program in fiscal year 1993.

Delivering remarks during the dinner, PPPL Director Ronald Davidson unfolded how the nation's founders had protected the notion of inventors by passing laws.

Inventors who attended the Patent Awards Dinner in May posed for a group shot at the Princeton University Prospect House. They are: Masayuki Ono (1), Szymon Suckewer (2), Robert Motley (3), John Timberlake (4), Carl Szathmary (5), John Krommes (6), Harold Furth (7), Nathaniel Fisch (8), Charles Ancher (9), Leonid Zakharov (10), Harry Mynick (11), Charles Neumeyer (12), Joseph Cecchi (13), Ben LeBlanc (14), Ronald Bell (15), Sylvester Vinson, Jr. (16), Janardhan "Manny" Manickam (17), Harold Anderson (18), Jan Wioncek (19), John DeSandro (20), Steve Sesnic (21), Shoichi Yoshikawa (22), Michio Okabayashi (23), John Edwards (24), Mark Karlik (25), Lewis Meixler (26), Ronald Hatcher (27), Morrell Chance (28), Thomas Burgess (29),



Charles Skinner (30), Bruce Paul (31), Richard Rossmassler (32), George Bronner (33), Frank Tulipano (34), and Jack Mervine (35).

Protect Ideas

"Patents and copyrights are the best method to protect ideas," said Davidson, noting the progression of patents since President Washington signed the first U.S. Patent Grant. "Ideas are a valuable product of intellectual activity. They should be protected," he continued.

Davidson and PPPL Deputy Director Dale Meade thanked all of the PPPL inventors for their creativity and presented each with a Certificate of Recognition.

PPPL Principal Research Physicist John Johnson, who has chaired the Lab's Committee on Inventions since its inception, told the participants that technology transfer has become an important part of PPPL activity.

Al Sinisgalli, the University's Associate Provost for Research and Project Administration, added, "Patents and licensing are really effective tools in transferring technology. That's why we spend a great deal of time and effort to make sure the invention is protected." Sinisgalli applauded the inventors' efforts in filing their inventions.

Milton Johnson, Manager of the DOE's Princeton Area Office, said of the invention and filing efforts, "It will benefit this Lab and it will benefit the nation."

Johnson (Milton) recalled his early days of doing research when each inventor received $1 for a patent. "Now you all get a lot more," he said, which prompted gentle laughter from the audience.

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Patents

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For an invention disclosure, each inventor receives $100, up to a maximum of $300 per disclosure. If there are more than three inventors, the award is shared. Additional monies are awarded when the DOE files a patent application.

Johnson encouraged the participants to work with the Department of Energy on furthering the Lab's Patent Program. "Help us by making suggestions for the program," he said.

John Johnson commended Committee member Marilyn Hondorp for organizing the dinner at Prospect House and thanked Jean Mahoney, the University's Technology Transfer Officer, for her help throughout the year. Other Committee members are Peter Bonanos, Stephen Jardin, Richard Kaeser, Dale Meade, Lewis Meixler, Charles Staloff, Schweickhard von Goeler, and Ken Young.

Fiscal Year 1993 Patents Issued

Method of Measuring the Momentum, Energy, Power, and Power Density Profile of Intense Particle Beams
George Gammel and Henry Kugel

Plasma Momentum Meter for Momentum Flux Measurements
Fulvio Zonca, Samuel Cohen, Timothy Bennett, and John Timberlake

Injection of Electrons with Predominantly Perpendicular Energy into an Area of Toroidal Field Ripple in a Tokamak Plasma to Improve Plasma Confinement
Masayuki Ono and Harold Furth

Reflection Soft X-Ray Microscope
Szymon Suckewer, Roy Rosser, and Charles Skinner

Low Volume Flow Meter
Lewis Meixler

Patents Applied for Fiscal Year 1993

A Method for Sputtering with Low Frequency Alternating Current
John Timberlake

Method and Apparatus for Welding Precipitation Hardenable Materials
Holt Murray, I. Harris, J. Ratka, and W. Spiegelberg

Fiscal Year 1993 Inventions Disclosed

Enhanced Fusion Reactivity Using Energetic Fusion Byproducts
Nathaniel Fisch and Jean Rax

Creation of Diamond-Like Surfaces with a Powerful Subpicosecond Laser
Szymon Suckewer and William Tighe

Use of Common Lactic Acid to Produce Naturally Unavailable Chemicals by Means of Plasma Chemical Reactors
Shoichi Yoshikawa

Synthesis of Chiral Chemicals by Means of Plasma Chemical Reactor
Shoichi Yoshikawa

A Compact High Intensity, Hyperthermal Atomic Oxygen Source
Samuel Cohen

Variable Geometry Iron Shims
George Sheffield

Outboard-Trapped Particle Remover and Inboard-Trapped Particle Generator
T.-K. Chu, Ronald Bell, Ben LeBlanc, Michio Okabayashi, Masayuki Ono, Steve Sesnic, and Schweickhard von Goeler

Inside Hole Deburring-Countersinking/Counterboring Tool
John DeSandro, Jan Wioncek, Mark Karlik, and John Edwards

XMACRO
John Krommes

Dielectric Antenna for Launching Lower Hybrid Waves
Robert Motley and Samuel Cohen

Computer and Telecommunications Glossary
Jack Mervine

4 Quadrant 6 Pulse Rectifier Bridge
Charles Neumeyer, Ronald Hatcher, and George Bronner

Hex Pull Screw Applicable to Remote Restraining of Tokamak Tiles
Kenneth Redler

Chemical Tracking and Report Generating System
Peter DelGandio and William Slavin

Emergency Operations and Information Management System
Peter DelGandio and Richard Rossi

Waste Management and Report Generating System
Peter DelGandio

Helium Ash and Impurity Removal by Externally Launched Cold Electrostatic Ion Cyclotron Waves
Masayuki Ono

Remotely Operated Tooling for Manipulating and Torquing Bolts in Inaccessible Spaces
Thomas Burgess and Bruce Paul

Hydrogen Production by Means of Flow of Salt-Water in the Magnetic Field
Shoichi Yoshikawa

Improved Configuration for RF Biasing in an Inductively Coupled Plasma Source
James Stevens and Joseph Cecchi

Improved Method for RF Biasing a Substrate
James Stevens and Joseph Cecchi

Method and Apparatus for Producing Helilon Wave Plasmas with Planar Antenna Structures
James Stevens and Joseph Cecchi

Tokamak Plasma Stabilization and Disruption Avoidance Using Segmented Divertor Biasing
Henry Kugel, Morrell Chance, Janardhan "Manny" Manickam, Michio Okabayashi, Lothar Schmitz, and Leonid Zakharov

Tokamak Plasma Edge Ergodization Using Segmented Divertor Biasing
Henry Kugel, Morrell Chance, Janardhan "Manny" Manickam, Michio Okabayashi, Lothar Schmitz, and Leonid Zakharov

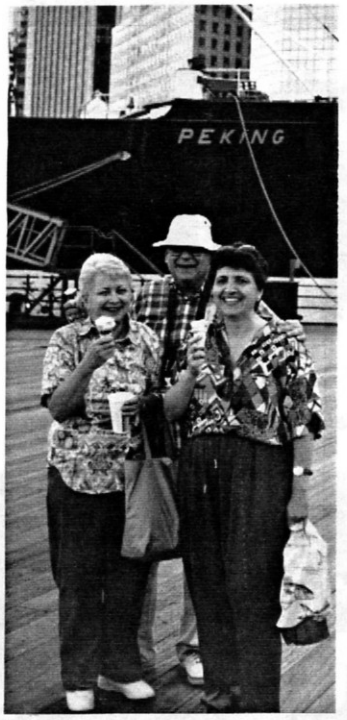
External Krytron Keep-Alive Device
Charles Ancher, Harold Anderson, and Carl Szathmary

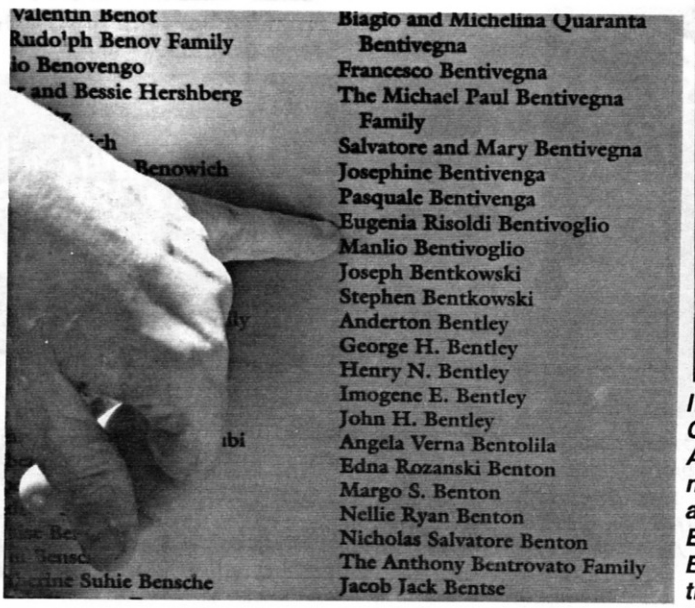
PPPL Tritium Waste Package
Richard Rossmassler, Lloyd Ciebiera, Frank Tulipano, and Sylvester Vinson

Fuse Assisted Solid State Interrupter
Charles Neumeyer and George Bronner

System for Helium Ash Removal by Frequency Sweeping
Harry Mynick and Neil Pomphrey

PPPL'ers Visit Liberty Statue and Ellis Island



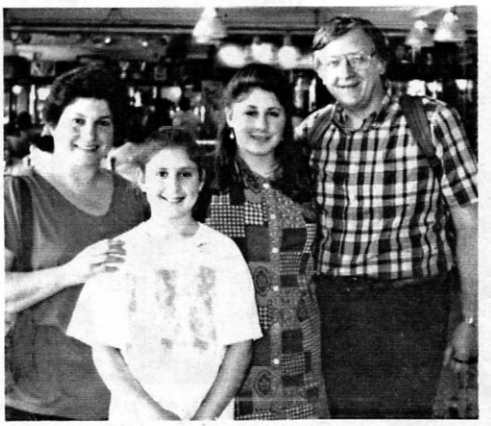


PPPL Employees celebrated springtime and heritage during a one-day bus trip to Ellis Island and Liberty Island on May 22. The 40 participants on the Lab-sponsored trip also stopped at the South Street Seaport. In the photos, clockwise beginning with the top left, and identifying people from left to right, are Phyllis and Bill Johnson and Elaine Candelori; Annette Iverson, Elaine Candelori, and Steve Iverson with Lisa, his daughter; Eleanor Schmitt, Madeline Michalowski, and Olga Bernett at the South Street Seaport; Elaine Candelori, Bill Johnson, and Bill's wife, Phyllis, on the ferry; and, Richard and Marsha Bodinizzo and Valentina Moreau enjoying ice cream at Ellis Island. Valentina, who is married to PPPL employee Henry Moreau, was last on Ellis Island as a youngster in 1951, when she emigrated with her parents from Russia.

In the center photo, Elaine Candelori, wife of PPPL employee Angelo Candelori, points to the names of her grandparents, who are listed on the Wall of Honor at Ellis Island. Eugenia Risoldi Bentivoglio and Manlio Bentivoglio came through Ellis Island on their arrival from Italy in 1907.

Visiting the South Street Seaport, from left, are Jim and Charlene Totaro with Sallie Young and John Citrolo.

From left are Mark Snyder, Heidi Hughes, Daisy Haas, and Jerry Siminoff.



PPPL employee Jim Chrzanowski was accompanied by his wife and their two daughters on the trip. The family, who paused during a stop at the South Street Seaport, are, from left, Linda, Sabrina, Amanda, and Jim.

The "troops" posed for a group shot at the South Street Seaport.

Trip participants dined at a South Street Seaport restaurant. From left are Henry Moreau, Ed Mazzuca, Lewis Morris, Marcia Bodinizzo, Richard Bodinizzo, and Val Moreau.

All aboard! Laboratory employees, along with their families and friends, hopped the bus to and from the ferry stop to Ellis Island and the Statue of Liberty.

The next PPPL bus trip is scheduled for Saturday, August 27, with a destination of the Baltimore Inner Harbor. Don't miss it! Watch for details in the upcoming issue of the HOTLINE.