

## The First Forty Years: A Celebration



THE FIRST FORTY YEARS



... I am very pleased to be here to have participated in the ground breaking today for the Alternating Gradient Synchrotron Accumulator-Booster. I also strongly support the RHIC. And, as you know, x-ray lithography, in my view, probably represents the best possible opportunity for the United States to take back the leadership in the computer chip technology field. ... I'm very excited about the potential you have here, and today very clearly was an important step for you and the nation and the world.

—George Hochbrueckner  
U.S. Congressman  
First Congressional District



For the last 40 years Brookhaven has been an important resource for this state and for this country. It has produced both theoretical and practical breakthroughs in high energy and nuclear physics, in superconductivity, medical technology, energy conservation and a whole range of other fields. You have served as a catalyst for the unprecedented growth economically of this section of Long Island. ... You have established a great tradition ... and we salute you for those accomplishments.

—Stanley Lundine  
Lieutenant Governor, NYS

... My approach to accelerator building has been somewhat aesthetic: I try to make the form simple and pleasing. When all the parts feel right and the whole is in proportion to those parts, then I have a good feeling about the design, and I think it will work. It is intuition and reason, which have to come together in some mysterious symbiotic manner, and then you come up with the ultimate design. I make sculpture in exactly the same way, and I can't see the difference.

—Robert Wilson  
Cornell University



Since Brookhaven opened its gates 40 years ago, the Laboratory has been like a magnet, attracting scientists to do research among their colleagues at exciting, world-class facilities.

This magnetic effect was strongly apparent September 9-11, as scientists were drawn to BNL for an anniversary celebration marking BNL and AUI's first forty years. Many were returnees: retirees or former facilities users who could trace important portions of their scientific careers to Brookhaven. They were joined by others for whom BNL is still their place of research and work.

Others who came to wish Brookhaven well included U.S. Congressman George Hochbrueckner, First Congressional District, and Stanley Lundine, Lieutenant Governor of New York State (NYS). Though they could not attend the festivities, good wishes came from:

• John Herrington, Secretary of Energy

... For four decades, Brookhaven has been a beacon of world renown for scientific progress and the pursuit of excellence. You can be justly proud of Brookhaven's many contributions to the Nation's energy security, scientific leadership, and technological competitiveness. It is also because of your work in exploring the frontiers of science that we can look to the future with confidence.

The history of symmetry principles in modern physics is inseparable to that of Brookhaven. ... The strong focusing principle, which made it possible to build the accelerators to test these principles ... theoretical papers on the questions of parity, conservation and the related subjects ... the first test of associated production of strange particles and also the strangeness quantum number ... establishment of the symmetry of the  $K_L$ , neutrino helicity, CP violation ... confirmation of SU(3) symmetry and the generation concept of protons and leptons, based on the discovery of two neutrinos, Omega-minus, J-psi and var-



ious resonances —they were all made at this Lab and most of the people who made them are present in the audience.  
—T.D. Lee  
Columbia University



... Nick [Samios] was trying to find charm particles with neutrinos, and, of course, Nick knows that if you want to find anything in the world, all you have to do is look through a few million bubble chamber photographs and it is going to be there — at least if I tell him it is going to be there. I didn't tell him its mass [or] its properties, but he found it and we happened to meet and our numbers jived completely. Retrospectively, you got the honor of discovering the first charm particle, but only retrospectively because no one believed you at first — except me, and a few other people.

—Sheldon Glashow  
Harvard University

The Department looks forward to a continued partnership with Brookhaven as you carry on its great tradition in the years ahead.

• Mario Cuomo, Governor of New York

... The wide range of research that the laboratory has conducted has been of immense benefit to this country and a continuing source of pride for New York State. Your recent efforts in technology utilization and transfer will certainly boost the economic competitiveness of both the State and the nation.

I see your fifth decade full of promise with developments in superconductivity, advanced materials, and biomedical technologies, and I assure you of New York's continuing support for your work in research and technology transfer. ...

Highlighting the celebration was an anniversary symposium, two days of talks by the six distinguished speakers pictured below. Also, the Alternating Gradient Synchrotron (AGS) Complex was dedicated to Leland J. Haworth and ground was broken for the AGS Accumulator-Booster.

As shown on this page by the excerpts from talks given throughout the anniversary celebration, at all the events, one theme was common: To review the past and examine the present with an eye on the next forty years ... and beyond.

Photos on this page by Mort Rosen

As we listen to the speakers, many of us will reflect on the trials, the near misses, the triumphs and the joys of discovery that have punctuated these many years —most importantly, the colleagues who shared those trials and those joys with us. ... On this occasion, it is appropriate to recognize those whose burdens were such that they came to symbolize the Laboratory itself, namely the Directors ... Phillip Morse ... Leland Haworth ... Maurice Goldhaber ... George Vineyard ... and Nicholas Samios.

—Robert Hughes  
AUI President



... Our mission is essentially the same as it was at our founding: namely, the design, construction and operation of large facilities doing research at the frontiers of science with our own staff, as well as our users. We pride ourselves on being a user-research laboratory: 80% of our research is done by outside users. ... We have pioneered dedicated facilities: the National Synchrotron Light Source is a Brookhaven concept, with a symbiosis among universities, industry and national labs. ... Sometimes we are number one and we are proud of that, but we are sometimes number three, such as with high temperature superconductors. Whether we are one, two or three, the important this is that we're in the ball game.

—Nicholas Samios  
BNL Director



... From the point of view of a potential user, it might be useful for you to know what this Laboratory looks like from the outside. We count, of course, a collection of distinguished scientists here and many of us come to visit them ... but the Lab as a lab looks like an enormous version of the instrument in the cafeteria which dispenses soft drinks. There are a large number of faucets. Out of some of them come neutrons, out of others come photons, in a variety of different wavelengths. ...

—Frederic Richards  
Yale University

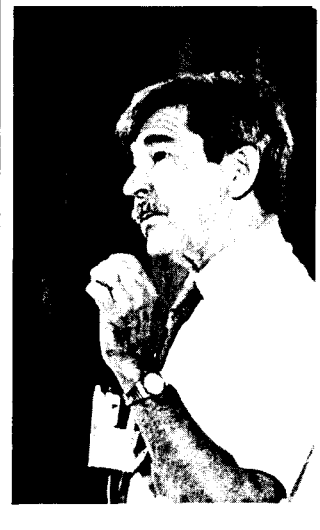


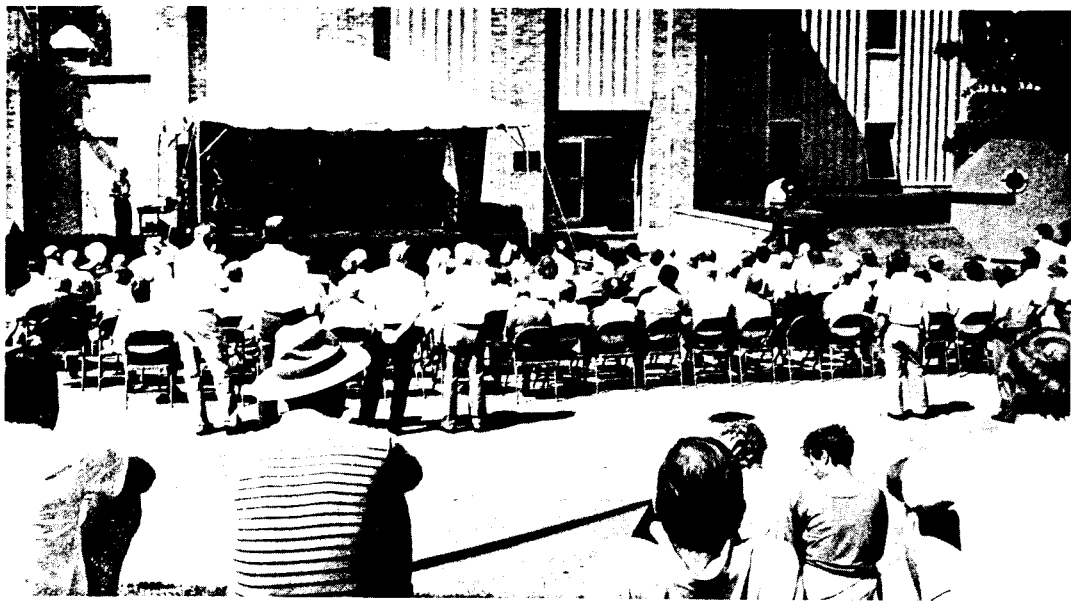
... I have decided to look back on four decades of achievement in the Chemistry Department. ... This has been world-class science on many fronts. But my choice of topic has been made easy because one particular area is one that I've been closely associated with in my own research, a particularly simple class of oxidation-reduction reactions. If one were to look at the progress made by various groups, no other group has contributed more to this area than the group here at Brookhaven.

—Henry Taube  
Stanford University

... The discovery of high temperature superconductivity is one of the most remarkable, if not the most remarkable, things to happen in physics in recent history. ... I will now confine my talk to history that goes back a month — to what Gen Shirane, who everybody probably knows is the world's premier neutron scatterer, and a couple of other people in the audience did this past summer at Brookhaven's High Flux Beam Reactor on this class of problem, and you can decide what you think.

—Robert Birgeneau  
Massachusetts Institute of Technology





Photos below:  
(top) Gerald Tape

(bottom) Irene Haworth and BNL Director Nicholas Samios.



Speaking at the dedication, Louis Girifalco, Chairman of the AUI Board of Trustees, noted, "BNL has been blessed with a truly outstanding series of Directors — all men who have given their grand talents to the Lab and brought to the Lab precisely what was needed at that time." Seated are: (from left) Gerald Tape, AGS Department Chairman Derek Lowenstein and Irene Haworth.

## AGS Complex Is Dedicated To Leland J. Haworth

Scores of observers looked on under a perfect September sky, as the Alternating Gradient Synchrotron (AGS) was dedicated on September 10 to the memory of Leland J. Haworth. He was Laboratory Director from 1948 to 1961, the period in which the AGS went from conception to operation.

The main speaker at the dedication ceremony was Gerald Tape, who had served with Haworth as BNL's Deputy Director (1951-62), as AUI's President (1963, 1969-80), and on the Atomic Energy Commission (1963-69).

As a result of this long association, Tape noted, "Leland J. Haworth will be remembered as a master builder of research facilities, a foremost scientific administrator and, above all, a man of exceptional integrity and selflessness. . .

"If it were possible to consult Leland today about naming this accelerator complex in his honor, he would say no. He would tell us about all of the great people who have participated in its development and shared in its problems and its successes and that it should not bear the name of any one person. But I can think of no better name to carry that recognition and spirit than that of Leland J. Haworth."

Following Tape's remarks, Irene Haworth unveiled the dedication plaque on the side of Bldg. 911. "I think that Gerry Tape was right when he said that my husband would be kind of embarrassed," she said, "but I think that at the same time, he would be very happy."



Beside the plaque dedicating the AGS Complex to the memory of Leland J. Haworth are Irene Haworth, (left) her son John Haworth and (right) Gerald Tape.

## BNL's Fabulous

Eugene Cronkite, John Blewett and I were intimately involved with Brookhaven during three sessions of the Anniversary, BNL's Fabulous Forty Years.



... To keep a good research spirit alive you have to allow scientists the hot pursuit of their ideas. Though this wasn't always popular when I was Director, this was one thing I had to defend: the right of scientists to hot pursuit. Hot pursuit has led us into fields which a priori looked very improbable: Who would have ever thought that chemists would look at solar neutrinos and nuclear physicists at supernovas? This is encouraged at Brookhaven if it grows naturally out of the ideas scientists have.

—Maurice Goldhaber  
BNL Director, 1961-7



## Breaking New Ground



AUI President Robert Hughes; Congressman George Hochbrueckner; William Hess, DOE Associate Director for High Energy & Nuclear Physics.



BNL Director Nicholas Samios; Jerry Bellows, Manager, DOE Brookhaven Area Office; AGS Accumulator-Booster Project Head William Weng.



AGS Department Chairman Derek Lowenstein; Robert Adair, BNL Associate Director for High Energy & Nuclear Physics; Eric Forsyth, Chairman, Accelerator Development Department.

Photos on these pages by Mort Rosen, except as noted.

# 's Forty

urice Goldhaber have each been inti- years. As the moderators of the sium, each offered his reflections on

... Most of what I have reflected upon as primarily classical biology and medicine. Those days of simple, dramatic research are gone forever: High technology has invaded biology and medicine. Today, the Biology Department and the NSLS are combining efforts to elucidate the structure of biological molecules. The Medical Department, in collaboration with the SLS, is exploring clinical application of specific energies of x-rays for imaging and improved radiotherapy. With the new technologies and an influx of young, innovative scientists, the future promises to be even brighter than the past.

—Eugene Cronkite  
Medical Department Chairman,  
1967-79



... The Brookhaven Cosmotron came online in 1952, first in the world to a billion ... Its construction was a very exciting deal, but was so full of innovations and hopeful solutions to problems that had never been faced before that we were all fully scared. I still remember my sister visiting us and looking at the half-built machine and saying, "Where will you look for a job if it doesn't work?" But [Ernest] Courant and [Nelson] Blachman's predictions were right, our designs worked and Brookhaven had its first high energy physics facility.

—John Blewett  
Senior Physicist, 1947-75



An attentive audience at the Anniversary Symposium.

At the center of the area about to become the Accumulator-Booster for the Alternating Synchrotron (AGS), ground was broken on September 11. As BNL Director Nicholas Samios observed, "We're switching now from looking backward to looking forward."

Guest speaker Congressman George Hochbrueckner, First Congressional District, told those assembled, "I know you will make this a success, and this will be of great benefit to us, the nation and the world."

Wilmot Hess, who heads the Office of High Energy and Nuclear Physics, Department of Energy, called the "a new and very important accelerator ... an enormous addition to ... the Leland J. Haworth Complex, which, when finished, will substantially enhance the capabilities of that complex. ... in not very many years we'll find that this Leland Haworth complex is really only the injector into that larger machine, which Nick [Samios] described a little bit ago, the RHIC. ... I look forward to that day, and I pledge to Nick that I will do everything I can to bring that day about rapidly."



(Photo left) Wilmot Hess; Jerry Bellows, Manager, DOE's Brookhaven Area Office; David Goodman, Assistant Manager for Laboratory Management, DOE Chicago Operations Office; and George Hochbrueckner.

## Ground Is Broken for the AGS Accumulator-Booster



(Photo right) Congressman George Hochbrueckner and BNL Director Nicholas Samios.



AGS Department Deputy Chairman Robert Foelsche; Gerald Peters, DOE Headquarters Point of Contact for the AGS Booster-Accumulator; Robert Palmer, Special Assistant to the Director.



Julius Spiro, Consultant to the Director; Physics Department Chairman Peter Bond; Jerome Hudis, AUI Vice President — Programmatic Affairs.



Norman Ramsey, Harvard University and original AUI Trustee; Nicholas Samios; Nobel laureate Sheldon Glashow, Harvard University.



William Wallenmeyer, DOE Director of High Energy Physics; Parke Roher, BNL Associate Director for Management & Physical Plant.

—photo by Peter Horton

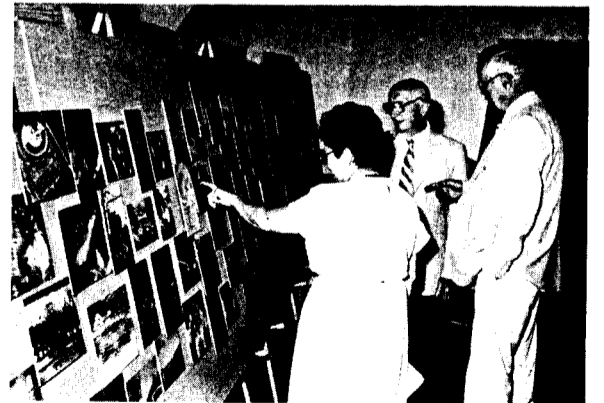




# A Candid Look At BNL's 40th



— photos by Peter Horton



## BROOKHAVEN BULLETIN

Published weekly by the Public Affairs Office for the employees of BROOKHAVEN NATIONAL LABORATORY

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