

PROFILE

Murray Rosenthal's nuclear adventures

Murray Rosenthal's life in Oak Ridge has spanned more than half a century. He was around when nuclear reactor development at ORNL was in its infancy, and he was an eyewitness to the growth and development of nuclear power from the 1940s to the 1960s.

In our interview Murray noted that he and other young scientists of the time were excited about the early nuclear technology work performed at Oak Ridge, and he still feels that enthusiasm all these years later.

"It was fun to come to work during those days and see what was going on," Murray said recently, following a presentation to about 200 researchers and staff in the ORNL Conference Center. "We felt then that nuclear energy was going to be very important to the world, and the Laboratory was one of the major research centers. The way things operated in those days, we got to do a lot of things that today are more restricted.

It was more hands-on work. It was a great time to be here."

Murray arrived in Oak Ridge with a doctorate from MIT in 1953, the same year President Eisenhower proposed the Atoms for Peace program during a speech to the United Nations General Assembly. Oak Ridge played a major role in developing peaceful uses of nuclear energy that reached far beyond its fences.

"Using the Bulk Shielding Reactor, the Lab led the development of shielding for nuclear submarines, and then we investigated shielding for proposed nuclear-pow-

er airplanes by hoisting reactors high in the air at the Tower Shielding Facility," Murray said.

"In five months, a reactor was built and tested here before it was flown to Geneva, [where it was] operated with great excitement at the first international conference on nuclear energy. Technology developed in the Aqueous Homogeneous and Molten Salt reactors is used worldwide. The famous Swimming Pool and Oak Ridge Research reactors were the models for dozens of research reactors built around the world."

Murray also noted that Oak Ridge contributed its technology to the development of a nuclear-powered merchant vessel, the U.S.S. Savannah, and to transportable Army reactors, including one used at McMurdo Sound in the Antarctic.

Murray is encouraged that college interns with majors related to nuclear technology come to the Laboratory each summer.

"A lot has changed since I started in this, but there are still some factors that are as true about nuclear technology now as almost 60 years ago," Murray says. "Nuclear technology requires very capable people who are careful in what they are doing, understand its importance, and know how to go about it. It requires very well trained people. If our experience was anything like it is now, these young people are very fortunate to have gone into this field." —Fred Strobl

"Oak Ridge played a major role in developing peaceful uses of nuclear energy"



Young researcher Murray Rosenthal is flanked by Clarence Larson (left), Lab director 1950-55, and Alvin Weinberg (right), Lab director 1955-73.

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You can read Murray Rosenthal's book, *An Account of Oak Ridge National Laboratory's Thirteen Nuclear Reactors*, on ORNL's website at <http://www.ornl.gov/info/reports/2009/3445605700845.pdf>. You can also find it on the OSTI website at <http://info.ornl.gov/sites/publications/files/Pub20808.pdf>. There are no printed copies because the book was published as a Laboratory report, ORNL/TM-2009/181, August 2009.

A new Reporter

This is the inaugural issue of the redesigned *Reporter*, news for retirees of Oak Ridge National Laboratory.

You are a group of 4000 colleagues, and we believe you deserve a newsletter written and edited specifically for you.

As you read through this issue, please make notes about items you find helpful, interesting, and enjoyable, and let us know what you like about these sections.

Likewise, if we've missed the mark, let us know how to improve *Reporter* to make it more useful to you.

We also want to feature *your* stories, so tell us what you and other ORNL retirees are doing in your community, family, and leisure activities.

Send me an e-mail, call, or write. I want to hear from you.



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Climate research in Minnesota spruce bogs

Scientists hope to get a glimpse of the future with a proposed experiment facility in northern Minnesota. Researchers believe the proposed facility, to be built in a high-carbon spruce bog within the Chippewa National Forest, would provide answers to key questions about the effects climate change could have on vegetation and ecosystems. Researchers at ORNL, working in cooperation with the Department of Agriculture, are hopeful construction of the facility could begin in December 2011.

Scientists are calling the multi-year experiment SPRUCE, which stands for Spruce and Peatland Responses Under Climatic and Environmental change. The 20-acre site is located in a black spruce bog forest about 25 miles from Grand Rapids in the Forest Service Northern Research Station's Marcell Experimental Forest.

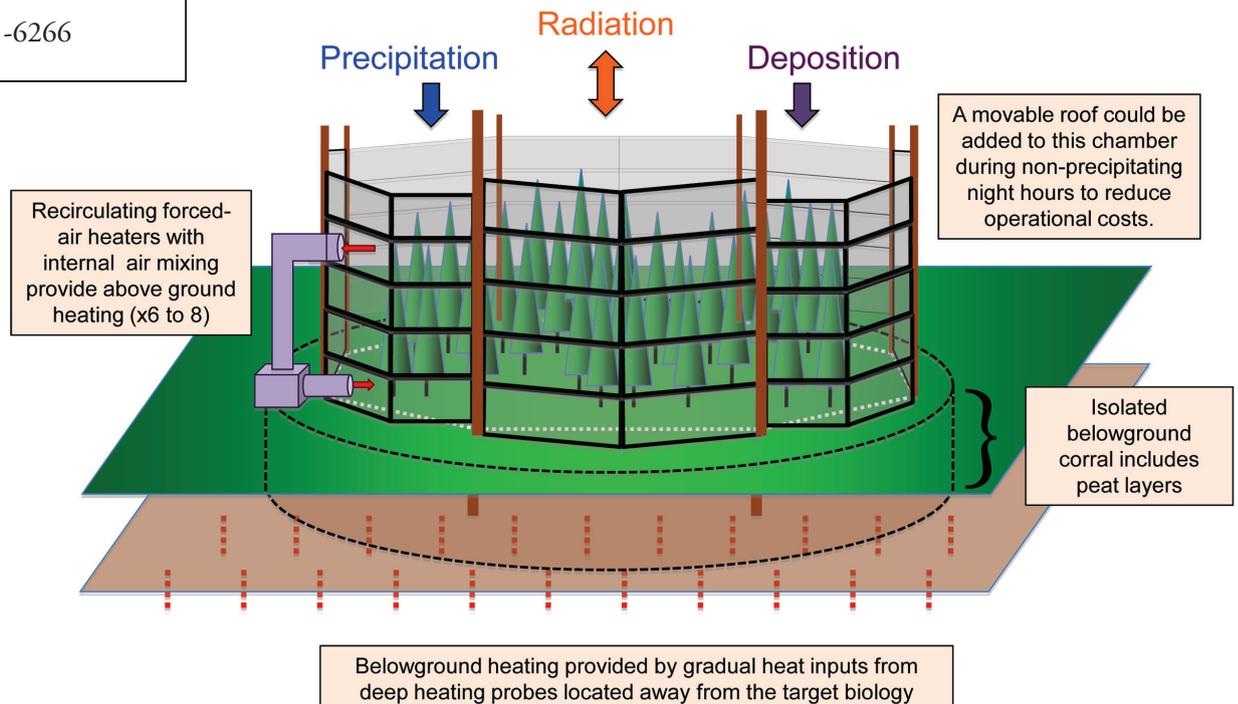
"Our approach includes developing and performing experiments that expose critical ecosystems and their components to a broad range of temperature increases - both above and below ground - combined with atmospheric carbon dioxide enrichment," said Paul Hanson, a member of ORNL's

Environmental Sciences Division and the lead researcher for the project.

To make this possible, ORNL and Forest Service researchers propose to design and build a system of open-top enclosures featuring recirculating forced-air heaters with internal air mixing to provide above-ground heating. The enclosures would also have belowground heating units. The facility would allow scientists to increase the temperature from ambient conditions to plus-9 degrees Celsius and boost carbon dioxide levels to at least two times ambient levels.

Hanson and colleagues plan to conduct experiments and take a wide range of measurements over a 10-year period. Scientists need this information to develop ecological forecasting tools for policy makers to evaluate the consequences of greenhouse gases and their effects on global and regional climates.

"We anticipate that the completed SPRUCE experimental facility will be a focus area for science conducted by investigators from the DOE national laboratories, Forest Service and independent universities," Hanson said. 🌲



Schematic diagram of an ecosystem warming enclosure to allow exposure of an intact ecosystem (including soils to ~2 meters) to multiple levels of warming and elevated atmospheric CO₂ concentrations. The aboveground structure reduces the cost of maintaining air treatments while allowing for near-normal radiation and precipitation inputs. A belowground corral isolates the experimental plot's water cycle for full evaluation of treatment effects on local hydrology.

Posing with the President and other stories

When Gary A. Baker of ORNL's Chemical Sciences Division received a Presidential Early Career Award in Science and Engineering in Washington, D.C., on January 13, he wasn't the only person in the room with ORNL connections.

Dr. Melina Kibbe, the daughter of ORNL retiree Keith Kibbe, also received the prestigious White House award at a ceremony attended by President Obama, for her work for the U.S. Department of Veterans Affairs (VA).

Nine federal departments and agencies join together annually to nominate young scientists and engineers whose work is of greatest benefit to the nominating agency's mission. Dr. Kibbe, who was nominated for the award by the VA, will receive research funding from the department for five years as part of this award.

Dr. Kibbe is a vascular surgeon, associate professor of surgery at the Feinberg School of Medicine (Northwestern University), and is the director of the Vascular Laboratory and co-chief of the vascular surgery service at the Jesse Brown VA Medical Center in Chicago. Her research in the field of nitric oxide vascular biology promises to extend the effectiveness of balloon

angioplasty, artery bypass grafting, and other vascular procedures that currently have a limited durability.

Melina, who joined Northwestern University in 2003, has received grant funding for her research from the National Institutes of Health, the American Heart Association, the Department of Veterans Affairs, the state of Illinois, the American Vascular Association, and other private foundations and societies.

She has authored more than 65 peer-reviewed research articles and has served on study sections for the National Institutes of Health and the VA. She is an associate editor of the *Journal of Surgical Research* and is active in many societies, including the Association for Academic Surgery.

"These extraordinarily gifted young scientists and engineers represent the best in our country," President Obama said. "With their talent, creativity, and dedication, I am confident that they will lead their fields in new breakthroughs and discoveries and help us use science and technology to lift up our nation and our world."

Are you proud of an "ORNL kid"? Let us know. Contact Deborah Barnes, barnesds@ornl.gov, 576-0470. 🌱



Melina Kibbe and her dad, ORNL retiree Keith Kibbe, after the award ceremony.

"These extraordinarily gifted young scientists and engineers represent the best in our country."
—President Obama

Join Team UT-Battelle in the March of Dimes "March for Babies"

Team UT-Battelle is looking for people to participate in this year's March for Babies, scheduled for Saturday morning, May 1, at Bissell Park in Oak Ridge.

"The May 1 event covers Anderson, Roane and Loudon counties, but anyone from anywhere is welcome to participate," says Biological Sciences Division's Marilyn Kerley, the 2010 Team UT-Battelle captain. "It would be great if we could get some of our retirees and their spouses and other family members to participate in the event, as well."

Team UT-Battelle has been a major supporter of March of Dimes events in East Tennessee for more than a decade. The March of Dimes gives hope to more than 1 million babies born too soon each year. The money raised from the March for Babies supports programs in the community that help mothers have healthy, full-term pregnancies. It also funds research to find answers to the problems that threaten babies.

Everyone who signs up for the walk and raises \$25 on-line will receive a free T-shirt. Every \$15 raised above the \$25 amount will result in that person's name being entered into a drawing for two free movie passes.

To join the Team UT-Battelle effort for the May 1 walk, e-mail Marilyn Kerley at kerleymk@ornl.gov. If you choose to register online for this event, here's the url: <http://www.marchforbabies.org/> 🌱

Calendar of upcoming Club ORNL events

Club ORNL is sponsored by UT-Battelle for its employees and retirees. The Club offers a variety of informal events throughout the year, on and off campus.

Here's a list of some of the events the Club is planning over the next several months. Specific information about the events, including cost and how to register, will be available closer to the time of the event.

June 6: Joseph and the Amazing Technicolor Dreamcoat

June 12: Smokies Baseball vs. West Tennessee

June 17: Spring Golf Tournament

July 17: White Water Rafting

August 14-15: Fall Creek Falls Overnight

ORNL IN THE NEWS



Building 3026 before demolition. The former Radioisotope Development Laboratory has been inactive for about 20 years.



Building 3026 after demolition. The remaining concrete structures, which contain the old hot cells, are being “weather-proofed” to prevent the spread of contamination until work can begin on their dismantlement and removal.



New biorefinery at Vonore will test the commercial viability of cellulosic ethanol developed at ORNL.

ORNL enjoys a strong presence in media outlets, both national and international. In the last month, the Lab was mentioned in an array of nearly 700 media sources, ranging from newspapers and broadcast news outlets to trade and international sources. Following is a sampling of some of the stories that have been covered.

The Knoxville News Sentinel: The Obama administration’s proposed budget for 2011 recommends an overall increase in funding for Oak Ridge National Laboratory and strong support for a new production facility at the Y-12 nuclear weapons plant, while maintaining stability in the environmental cleanup activities. “It looks pretty good,” ORNL Director Thom Mason said. “The overall budget climate is pretty constrained, but most of the areas that we’re active in are fairly high priorities, so they’ve come out OK—in some cases with a fairly healthy increase.”

Birmingham Business Journal: One of the world’s first cellulosic ethanol demonstration plants has opened near Vonore, Tennessee, and has begun producing ethanol—marking what Gov. Phil Bredesen calls “an important step forward” in the race to reduce dependency on fossil fuels. Startup of the plant is also good news for researchers at nearby Oak Ridge National Laboratory, the Department of Energy’s largest research center, which finds itself at the forefront of applied carbon fiber research.

Cybermedia India Online Limited: ORNL researchers have found evidence that supports the theory that magnetic properties cause high-temperature superconductivity. “High-temperature superconductivity, say the researchers at Oak Ridge National Laboratory, could lead to ultra-fast electronic devices which make use of high-speed electrons that travel in a material, the resistance of which has been reduced to zero.”

Chemie.DE Information Service: In a recent report outlining trade-offs of biofuel production, Virginia Dale, Keith Kline, John Wiens and Joseph Fargione reviewed the current research on biofuel production and its potential effects on ecosystems.

They also analyzed the social, economic, and ecological challenges of biofuel production and the most effective routes to developing sustainable, renewable fuel alternatives.

OakRidger: The Department of Energy’s Oak Ridge National Laboratory has begun cleanup and demolition of the former Radioisotope Development Laboratory, a long-vacant facility on the lab’s central campus. According to a news release, contractors expect to employ approximately 30 workers for the project. “This project will eliminate the significant radiological and fire hazards associated with this facility,” said ORNL Director Thom Mason. “Many people think of this as a cleanup activity, but this project is also important because it eliminates the risks that this aging structure presents to ORNL’s ongoing research mission.”

WATE: Because of its light weight and its ability to conduct heat “very, very, very fast,” James Klett’s graphite foam is being used for investigations into the gravitational forces of the moon and in the development of cookware that heats and subsequently cooks uniformly.

MSNBC: Based on technology licensed from ORNL, “Thinergy”—an energy storage device that’s about the size of a postage stamp—promises to last the life of the electronic device it powers. The battery uses lithium chemistry similar to the battery in an iPhone. The difference is the substance that carries the electric charge, called the electrolyte, which sits between the battery’s two electrodes.

UPI: U.S. Energy Department officials have named student teams from 22 universities as semifinalists in the 2010 Global Venture Challenge. The Global Venture Challenge, now in its fourth year, is an educational competition featuring entrepreneurial and technology-based business proposals presented by graduate student teams from around the world. The semi-final round will be held March 25 at the Department of Energy’s Oak Ridge National Laboratory, with the finals held the following day. 🌱

Health and wellness

ORNL's Wellness partner, the Mayo Clinic, shares healthy living tips, including healthy recipes, with us each week through their Embody Health program. We'd like to share some of those tips with you.

Keeping skin comfortable

The dry winter months can take a toll on your skin. Fortunately, there are some simple steps you can take to prevent this problem.

Try these tips.

- Be smart about bathing. Keep your daily bath or shower to less than 5 or 10 minutes, use warm water instead of hot, and use a mild, fragrance-free cleanser that moisturizes, such as a moisturizing body wash. Deodorant bars can dry your skin.
- Within 3 minutes of your bath or shower, apply a moisturizer to your skin. Continue to apply a moisturizer two or three times daily, as needed.
- Use a humidifier in your home to add moisture to the dry winter air.
- Take extra care with the skin on your hands. When you wash your hands, use warm water and a mild soap. Then apply a moisturizing hand cream.

So what the heck are “probiotics”?

Probiotics: It's a term you may have heard in television commercials or seen in the supplement aisle at your local drugstore. But what are probiotics—and why should you care?

Ours bodies contain billions of bacteria and other microorganisms, with most of them living in the colon. Many of these microorganisms help your body, while others can harm it. Probiotics—the good kind of microorganisms—are found in dietary supplements or foods such as yogurt.

Though more research needs to be done to confirm the effectiveness of probiotics, initial studies suggest that probiotics may help prevent or treat

- Diarrhea
- Irritable bowel syndrome
- Inflammation of the large intestine and colon (ulcerative colitis)
- Lactose intolerance
- Allergy symptoms, such as eczema or runny nose (rhinitis)
- Cold and flu symptoms 🌿



Five steps for a healthier you

A healthier lifestyle can be achieved through making small changes in your routine.

- Brush and floss your teeth, using a soft toothbrush and a fluoride toothpaste
- Wash your hands, to help prevent the spread of colds and flu and other common infections
- Schedule regular checkups, for your physical and dental health
- Apply sunscreen (at least SPF 15), to protect your skin in all seasons
- Get moving, even if you have only five minutes to exercise

Healthy Recipe



Minestrone Soup

1 T extra-virgin olive oil	2 large tomatoes, seeded and chopped
½ cup chopped onion	½ cup chopped fresh spinach
1/3 cup chopped celery	1 (16 oz.) can chickpeas, drained and rinsed
1 carrot, diced	½ cup uncooked small pasta shells
1 garlic clove, minced	1 small zucchini, diced
4 cups fat-free, unsalted chicken broth	2 T chopped fresh basil

In a large saucepan, heat the olive oil over medium heat. Add the onion, celery, and carrot and sauté until softened (about 5 min.). Add garlic and continue cooking for another minute. Stir in broth, tomatoes, spinach, chickpeas, and pasta. Bring to a boil over high heat. Reduce heat and simmer 10 min. Add zucchini. Cover and cook for 5 min. more. Remove from heat and stir in the basil. Ladle into individual bowls and serve immediately. Serves 4.

Nutrition analysis per serving: Calories 190, Fat 4g, Saturated fat 0.5 g, Trans fat 0 g, Carbohydrate 30 g, Cholesterol 5 mg, Sodium 400 mg, Fiber 8 g

It may not be like Mama used to make, but it can be just as good for you.

THE NEWS

OAK RIDGE NATIONAL LABORATORY

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OAK RIDGE, TENNESSEE

Friday, September 8, 1967

Technique May Be Applied To Several Fields

Radioisotopic Light Source Photometer Tops In Industrial Research Competition

Oak Ridge National Laboratory is a winner in the 1967 "I-R 100" competition sponsored by *Industrial Research* magazine. The Laboratory's winning entry is the radioisotopic light source photometer developed by H. H. Ross of Analytical Chemistry Division.

One hundred products were selected on the basis of their technical importance, uniqueness, and usefulness by the *Industrial Research* editorial advisory board composed of 30 leading scientists, engineers and research administrators.

Sixty-nine companies, two universities and two federal institutions will be honored September 19 at an awards dinner in New York for developing the winning products. The dinner will follow a two-day exhibit of the winning products.

ORNL's instrument is a new concept in high precision photometric analysis. Photometric measurement is a method used for quantitatively determining the amount of a specific material in a sample by analyzing its light absorption properties.

The heart of the system is a self-powered radioisotopic light source consisting of a small amount of beta-emitting radioisotope (chlorine-36) mixed with a

scintillating material (phosphor).

Beta particles emitted by the isotope cause the scintillator to be excited, with the subsequent emission of visible light pulses. Because these pulses are proportional to the isotope's decay rate and a predictable beta energy, the source is ultra-stable.

Since the output data from the system are digital rather than analog, maximum sensitivity and precision can be realized. The output also allows digital computing equipment to be coordinated directly.

For the future, the technique holds promise of application to remote analysis, space and oceanographic exploration, and trace determinations of organic materials important in the study of biochemical processes involved in

Continued on Page 2



H. H. ROSS (Analytical Chemistry Division) makes preparations for an analysis using the radioisotopic light source photometer. The instrument is used for quantitatively determining the amount of a specific material in a sample by analyzing its light absorption properties. In the inset (upper left), the light source glows prominently when all lighting in the laboratory has been extinguished. The glow is accentuated by the liquid scintillator (phosphor) content of the source. Photometric analysis, using the radioisotopic light source, was perfected at ORNL under the supervision of Ross.

Facility For Housing Pathogen-Free Animals Finished at Biology Division

A facility to house pathogen-free animals in a controlled environment has been completed at Oak Ridge National Laboratory. The new structure will be used in research programs of ORNL's Biology Division.

M. L. Simmons (DVM), Biology Division, will be in charge of the facility programs.

The barrier facility offers maximum protection from infectious agents for the Specific Pathogen-Free (SPF) animals (those free of known pathogenic viruses, bacteria and parasites).

As an added precaution each cage within the barrier area will have a filter top. This has been effective in preventing certain infections in a conventional environment, and is expected to be an added line of defense within the barrier system.

Initial stock for the facility will be acquired by surgical procedure. Female mice which have reached the end of their pregnancy are surgically prepared, and the unborn young are removed by sterile procedure. The young are then placed with germ-free nurse mice whose new litters have been removed. Growth and replenishment of stock will then be produced by inbreeding.

Although production of animals on a small scale will begin in about a month, approximately two years will be required for breeding on a regular basis. After that, it is anticipated that 1,600-2,000 animals per week will be produced.

A computer will be used to keep mouse breeding and inventory data up to date. The system will be programmed to keep accurate records and to generate useful information from basic data. It will maintain inventory, initiate breeding control, provide weaning and weighing lists, notify when to retire breeders, and record inbred lines which may be traced back from generation to generation.

Basically, there are five methods of entry into the barrier area of the building. One method is for



FILTER TOP CAGING, which has proven effective in preventing certain infections from occurring in a conventional environment, is expected to be an added line of defense within the barrier system of Biology Division's new facility. The new structure will house Specific Pathogen-Free animals (those free from known pathogenic viruses, bacteria and parasites).

personnel and four are for materials and equipment.

Personnel may enter through a change and shower area. Materials and equipment enter through a positive transfer hood, bulk sterilizer, cage- and bottle washer, and a chemical sterilization pass-through vat.

The facility contains seven animal rooms inside the barrier area. Each room accommodates 400 animal cages and is supplied with a sufficient volume of air to provide a minimum of 15 changes per hour. Air is introduced into the top of the cell via a continuous slot-type diffuser running the entire length of the room. The resulting flow pattern does not cause excessive drafts. Air is exhausted from the floor level and conducted via ductwork to the wash area.

Unique services and construction details include flush-mounted electrical receptacles with water-

tight covers, and vapor-tight lighting fixtures in animal rooms. This permits spraying and rinsing of walls and ceilings for frequent cleaning and decontamination.

To prevent the entry of any contaminated air into the barrier area through the conduit system, sealing conduits were installed in all electrical conduit runs entering the facility from the outside. To prevent air flow between certain areas, caulking compound composed of a polysulfide base sealant was used throughout the facility.

Two air locks, located at the north end of the facility, are arranged in such a manner that the first door will close automatically before the second door can be opened.

An alarm thermostat located in each of the animal rooms and a humidistat, with a sensing element located in the exhaust duct

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OR Section Of SNT To Meet Tuesday

Oak Ridge Section of the Society for Nondestructive Testing (SNT) will hold a meeting at Oak Ridge Marina Tuesday. Dinner will be served at 6:45 PM, and the technical session will begin at 8 PM.

Floyd Odell, manager of the Washington, D.C. office of Field Emission Corporation, will speak on "High Speed and Stop Motion Radiography."

Odell received the B.S. degree in chemistry from Linfield College, McMinnville, Oregon, and the Ph.D. degree in biology from Yale University. He has worked in the field of X-ray technology for many years.

Commemorates First Weighing Of Plutonium

G. E. Boyd Will Speak Sunday At U. Of Chicago Ceremonies

G. E. Boyd, ORNL assistant director, will speak Sunday at University of Chicago's silver anniversary ceremonies commemorating the first weighing of plutonium which took place there September 10, 1942.

Boyd is one of nine members of the University's chemistry division, who took part in the weighing, scheduled to speak at the event. About 200 other scientists and technicians who worked in the early period of plutonium research have been invited to attend the anniversary.

G. W. Beadle, president of University of Chicago, will welcome the participants, and G. T. Seaborg, Chairman of the U.S. Atomic Energy Commission, will make informal remarks at a dinner that evening.

Following remarks from the participants, Room 405 of George Herbert Jones Chemistry Laboratory at the University will be formally designated a National Historical Landmark by the U.S. Department of the Interior.

Included in the University's

Continued on Page 2

This front page of the "ORNL News" from September, 1967, features two stories of some relevance today. The "Radioisotopic Light Source Photometer" had just won an I.R. 100 award, ORNL's first victory in a competition that subsequently became the R&D 100 awards. ORNL now leads all other labs, and is second overall, with 148 of the prestigious awards. The other article describes a "pathogen-free" barrier facility developed for the Mouse House. The Laboratory finally achieved a pathogen-free mouse vivarium in 2003. The mouse program ended, however, in 2009.

From the Lab Director

Welcome to my first column for the new *ORNL Reporter*, which has now been tailored to our retiree readers. I intend to use this space to share with you news about the Laboratory from a director's perspective and my activities in the course of directing the nation's largest energy laboratory.

ORNL fared well in the President's FY 2011 budget request. We can expect funding for operation of our neutron facilities and a significant increase for our Leadership Computing Facility. The request also provides some additional funding for research in the biological and environmental sciences, with added emphasis on climate research. The budget request now begins its journey through Congress. Funding for Laboratory programs often depends on our success in submitting competitive proposals. Our resources, combined with efforts to focus our strengths on the nation's energy security needs, place us in an excellent position.

ORNL's recent growth in terms of people has been significant. We added more than 400 new staff members in 2009. When we factor the turnover during the period, such as retirements, the Lab grew by 185 staff members. Nearly one-third of our current Lab staff has been here for three years or less. We are enjoying a healthy mix of seasoned Lab veterans and new faces, a sign of a dynamic and growing Laboratory.

I recently attended the opening ceremonies for the cellulosic ethanol biorefinery in Vonore. The biorefinery is the nation's first demonstration-scale facility to make a renewable fuel from switchgrass and crop residue. ORNL is a partner with the University of Tennessee and others in this major R&D effort toward cost-effective processes for making ethanol from sustainable biomass.

Nissan's national tour featuring its new Leaf all-electric vehicle made a stop in Knoxville recently, and I joined several Lab staff members at the World's Fair Park event. As part of our Sustainable Campus Initiative and an overall effort to reduce the Lab's carbon footprint, we plan to make electric vehicles such as the Leaf, which will have a 100-mile range, a viable commuting option for ORNL staff.

Former ORNL researcher Bem Culiati and NellOne Therapeutics, the spinoff company based on her Nell-1 gene research, recently entered into a licensing agreement with UT-Battelle. The agreement supports, with investments from Battelle Ventures and Innovation Valley Partners, the startup company's efforts to develop a therapy for improving the lives of victims of heart attacks and severe muscle wounds. NellOne is a fine example of how tech transfer, and support of startup companies, can ultimately make lives better for many people.

Thom Mason



“We added more than 400 new staff members in 2009.”



A new Chemical and Materials Sciences building is under construction. The building is expected to be open for business by summer 2011.

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On Extreme Makeover with Secretary Chu

Secretary of Energy Steven Chu was a featured guest on the prime-time TV show *Extreme Makeover, Home Edition*, in February. The network show, which identifies deserving and needy families or groups and performs whirlwind renovations of their dwellings, built a 2,700-square-foot home and a 6,700-square-foot school.

Jeff Christian, ORNL's leading Near-Zero-Energy proponent, became a principal technical advisor and make-it-happen person for the show.

"They inquired about technologies to approach zero energy—advanced wall and roof panels, solar modules, hybrid water heaters, triple-layer windows, geothermal heat pumps, a weather station—and if I could get everything donated in a week's time," Jeff says. "We got everything they wanted. It was miraculous."

When the Secretary of Energy visited the school's set with two other cabinet-level officials, Jeff prepped him for the show's taping by explaining the energy-efficient technologies. 🌱



ORNL's Jeff Christian explains the *Extreme Makeover, Home Edition*, project to Secretary of Energy Steven Chu.