

**SCIENCE**

## Officials launch Carbon Fiber Technology Facility, announce new manufacturing initiative



*(Foreground, from left) DOE Assistant Secretary David Danielson joined Congressman Chuck Fleischmann, Council on Competitiveness CEO Deborah Wince-Smith and Gov. Bill Haslam for the dedication of DOE's Carbon Fiber Technology Facility at Oak Ridge National Laboratory. (Photo by Jason Richards)*

Gov. Bill Haslam, Congressman Chuck Fleischmann, DOE Assistant Secretary David Danielson, Council on Competitiveness President & CEO Deborah Wince-Smith, R&D leaders from Ford Motor Company and Dow Chemical Company and a large crowd of local business and civic leaders came to the Carbon Fiber Technology Facility (CFTF) March 26 to dedicate the new materials research lab and to kick off a new EERE initiative.

Danielson, who is assistant secretary for Energy Efficiency & Renewable Energy, announced the launch of the Clean Energy Manufacturing Initiative, an effort to bolster U.S. competitiveness in producing clean energy technologies and increasing energy productivity.

“Our nation faces a stark choice: The energy technologies of the future can be developed and manufactured in America for export around the world, or we can cede global leadership and import these technologies from other nations,” Danielson said.

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Carbon fiber has tremendous opportunity to boost American competitiveness as the leading manufacturer of fuel-efficient gasoline and electric vehicles.

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Referring to the CFTF's efforts to reduce carbon fiber's high cost, Danielson noted: “Many of these new clean energy technologies are within reach of being cost competitive.”

Nearly all the speakers cited the CFTF's example of bringing public research together with private entrepreneurship to push important energy saving technologies to the market. “Otherwise, the research goes nowhere,” said Ford's James DeVries, who heads the automotive company's materials and manufacturing research.

Gov. Haslam noted the role ORNL is playing in attracting jobs to the region. “The University of Tennessee and Battelle partnership is a major competitive advantage for the state,” he said.

The CFTF, located in the Horizon Center on the Oak Ridge Turnpike, includes a nearly 400-foot-long line for producing raw fiber to explore more efficient and less costly production methods.

Carbon fiber has tremendous opportunity to boost American competitiveness as the leading manufacturer of fuel-efficient gasoline and electric vehicles. Next generation lightweight materials, such as carbon-fiber composites, could reduce passenger car weight and improve fuel efficiency without compromising performance or safety. DOE estimates that through the strategic use of carbon fiber, automakers could cut the weight of cars and trucks by up to 750 pounds by 2020.

Currently, carbon fiber materials are more expensive and complicated to manufacture than more traditional materials like steel and aluminum. The CFTF will produce up to 25 tons of carbon fiber each year, providing U.S. companies with enough material, infrastructure and technical resources to test and scale-up different approaches to lower carbon fiber costs and efficient production.

Also speaking at the March 26 event were Lab Director Thom Mason and Dow's Florian J. Schattenmann, who directs the company's polyurethanes, systems & automotive solutions group. 🌱

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## Janet Swift travels near and far



Janet Swift re-enacts an Eagles song.

**Janet Swift's retirement has been anything but the norm.** Janet has traveled. And not to Waikiki or some other beach palm tree-covered resort, but to obscure, barely blazed sites. And her memories reflect it, making a map no one could forget.

Janet recalls that out of all the places she's traveled, her most memorable trips were taken with family members.

Thanks to her husband, Don Spong, who still works at ORNL, Janet had the chance to visit the Ukraine a few years ago. During Don's meeting-filled days, Janet explored the centuries-old Ukrainian capital Kiev. She toured the streets and monuments, and even visited a museum dedicated to the 1986 Chernobyl nuclear accident.

"That visit had a very profound impact on me," Janet says. "I was working with many of the people from Oak Ridge who were involved with the follow-up back then. Having experienced what was taking place on this end, it meant a lot to read the stories of what was taking place on the Chernobyl end."

A cross-country trip from Oak Ridge to Los Angeles with daughter Kate Swift-Spong was another special experience.

"Kate was moving to Los Angeles to attend graduate school at the University of Southern California, so we drove out with all of her belongings," Janet says. "It took four nights and five days. We saw the Cadillac Ranch in Texas, stood on the corner in Winslow, Ariz., and drove a portion of the old Route 66."

Janet says she has done a lot of traveling over the years, but that cross-country trip had special meaning.

"As much as I've traveled, I had never driven across the country in a car," Janet says. "Kate and I got to have a good mother-daughter bonding. That is an experience I will never forget."

Early on during her retirement, Janet visited Kate while she was attending a circus school in Great Britain during a gap year after high school. Kate moved on to Olin College of Engineering near Boston, where she would earn a degree in electrical and computer engineering.

Janet credits three summers of internships at ORNL for motivating Kate toward her current graduate pursuits in computer science and human-robot interaction.

"Kate did learn to juggle when she was in that performing arts school in England and she still does that on the side, but Don and I are proud of what Kate has accomplished as she is now going for her PhD," Janet says.

Closer to home, Janet volunteers as a guide for the DOE Oak Ridge Public Tour each summer as well working as a volunteer at the American Museum of Science and Energy. Janet is quite active in activities at First Presbyterian Church of Oak Ridge. She has a leadership role in the Altrusa International of Oak Ridge and still helps with the area Girl Scout organization.

"I can say that I've traveled to each of the four Girl Scout World Centers in India, England, Switzerland and Mexico," Janet says. "I also helped organize a Girl Scouts day camp for Oak Ridge girls that took place at Camp Tanasi for two years. You can say I'm a lifetime Girl Scout."

Janet worked 31 years at ORNL, starting in central management. Much of her time was spent in Human Resources, but she also helped write and edit the old Lab Newsletter, as well as producing a special ORNL publication in 1976 as part of the U.S. Bicentennial.

"When I look at some of those old publications and all of the history that is contained in them and compare that to everything going on at ORNL today, I can say that I've experienced a lot about ORNL," Janet says. "That's why I became a Public Tour guide, because even though I've been retired from ORNL since 2007, I still feel very much a part of ORNL."—Fred Strohl, with Joshua Haston

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"Kate and I got to have a good mother-daughter bonding. That is an experience I will never forget."

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## Local FIRST robotics teams dominate UT-Battelle continues support for engineering event

Frisbee-flinging robots took over the Knoxville Convention Center March 28-30, as thousands of high school students, mentors and volunteers gathered for the third annual FIRST robotics Smoky Mountains regional competition in Knoxville, Tenn.

Local teams Hardin Valley Academy, Oak Ridge High School, and Halls High School netted the championship title in a nail-biting finale at the regional event, qualifying them to compete in the national finals held April 24-27 in St. Louis. A team from Roane County High School, which won the Rookie All Star award, is also bound for nationals. The four high schools are among 14 teams sponsored by UT-Battelle, the managing contractor of Oak Ridge National Laboratory.

The FIRST robotics competition gives high school teams six weeks to design, build and program a complex robot that can meet the intense demands of the year's game. Throwing discs and climbing pyramids were among the challenges of the 2013 game, called Ultimate Ascent.

In its third year supporting the FIRST competition, UT-Battelle has provided more than \$50,000 to 14 local teams, the regional tournament and a host of related activities. Thanks to support from the Department of Energy's Advanced Manufacturing Office, ORNL also opened its Manufacturing Demonstration Facility, a state-of-the-art research laboratory, to local teams as a building and educational space. Several teams are taking advantage of the opportunity to learn about cutting-edge manufacturing techniques such as additive manufacturing and carbon fiber composites, which they have applied to building to their robots.

"It's a thrill to see kids learning about and integrating next-generation manufacturing technologies into their robots," says FIRST mentor Craig Blue, director of ORNL's Manufacturing Demonstration Facility. "This program is an unparalleled opportunity for high school students to learn engineering and business skills, along with the value of teamwork, to prepare them for the workplace of the future."

Other award winners at the Knoxville Smoky Mountains regionals include:

- Mark Buckner, ORNL researcher and mentor of Oak Ridge High School, won the Woodie Flowers Finalist Award, which recognizes outstanding adult mentorship.
- The Blount County robotics team, composed of Maryville and Heritage high schools, received the Highest Rookie Seed and Rookie Inspiration awards.
- Hardin Valley Academy won the Excellence in Engineering Award.
- Oak Ridge High School won the Quality Award. Team member Sydney Buckner was recognized as a FIRST Dean's List Finalist.
- Catholic High School was named a regional finalist and also received the Innovation in Control award.

Photos from the regional event are available at ORNL's Flickr site: <http://www.flickr.com/photos/oakridgelab/sets/72157632465346818/>.—Morgan McCorkle



(From left) Students from Hardin Valley Academy, Halls High School and Oak Ridge High School celebrate winning the 2013 championship title at the FIRST robotics Smoky Mountains regionals on March 30. UT-Battelle, managing contractor of ORNL, has supported the program for the last three years. (Photo by Michael Messing)

### Tips on accessing your Rx information at Express Scripts.com

As a retiree, when you or your spouse turns 65, Express Scripts will transition you to a prescription drug plan that is designed to work with Medicare. When this change occurs, your spouse's account information at [www.ExpressScripts.com](http://www.ExpressScripts.com) will change. You will no longer be able to access information for both you and your spouse under your account. Your spouse should set up a separate account under his or her name. This new account will contain all of his or her information that was previously available under the old account and can be used to fill prescriptions, etc. If the information does not transfer correctly, please contact Express Scripts Customer Service at 1-877-701-9946.



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## Honors and awards

**Steve Zinkle**, Corporate Fellow and chief scientist for the Nuclear Science & Engineering Directorate, has been selected as a 2013 Fellow of the Materials Research Society. Zinkle was recognized for “pioneering contributions to the understanding of radiation effects in materials and for advancing the scientific basis of performance limits for structural materials in advanced nuclear energy systems.”

**Xiaoguang Zhang** and **Eliot Specht** have been named fellows of the American Physical Society. Zhang, of the Computer Science & Mathematics Division, was recognized “for pioneering work in the development and application of the scattering theory and computational methods to materials studies, in particular to the study of electron transport in magnetic tunnel junctions.” Specht, of the Material S&T Division, was recognized “for contributing to the understanding of how crystallographic alignment in polycrystalline materials affects current flow, and how thermomechanical processing can be used to control crystallographic alignment.”

The Materials S&T Division’s **Hua-Tay Lin** has been selected to receive the 2013 Distinguished Engineering Achievement Award from the Engineers’ Council.

**Gary Van Berkel**, **Olga Ovchinnikova** and **Vilmos Kertesz** of the Chemical Sciences Division received the 10th Rapid

Communications in Mass Spectrometry Beynon Prize for their paper, “Combining transmission geometry laser ablation and a non-contact continuous flow surface sampling probe/electrospray emitter for mass spectrometry based chemical imaging.”

**Shawn Reeves** of the Materials S&T Division’s Microscopy group has been awarded the 2013 Outstanding Technologist Award in Physical Sciences from the Microscopy Society of America.

**Kim Jeskie**, Director of the Integrated Operations Support Division and Directorate Operations Manager for Facilities and Operations, has been appointed to the National Research Council’s Committee on Establishing and Promoting a Culture of Safety in Academic Laboratory Research.

**Carol Wood**, a senior research staff member in the Environmental Sciences Division, has been elected to a four-year term on the board of directors of the American Board of Toxicology.

**A. C. Buchanan III** of the Chemical Sciences Division has been awarded the 2013 Henry H. Storch Award in Fuel Science for his research on the chemistry of hydrocarbon fuels.

The Center for Nanophase Materials Sciences’ **Nina Balke** has been unanimously selected by the American Ceramic Society’s board of directors to receive ACerS’s Robert L. Coble Award for Young Scholars.



### Service Anniversaries

#### April

**35 years:** **Norberto Domingo** and **C. Keith Rice**, Energy & Transportation Science; **Vickie G. Langley**, Logistical Services; **Darrell Simmons**, Nuclear Security & Isotope Technology; **Robert J. Bruce Warmack**, Measurement Science & Systems Engineering; **Norty Payne**, Fabrication, Hoisting & Rigging; **W. Kelly Roy**, Environmental Science; **Karen P. Simonson**, Materials Science and Technology

**30 years:** **C. Gail Lewis**, Internal Audit Dir.; **Joy D. Nix**, Communications; **Thomas M. Alderson**, Laboratory Protection; **Doug Smelcer**, Information Technology Services

**25 years:** **Letitia H. Lewis**, Information Technology Service; **Dale A. Caquelin**, Nonreactor Nuclear Facilities; **Muriel C. Johnson**, Research Accelerator; **Brian Keith Sizemore**, Logistical Services; **Scott D. Taylor**, Human Resources Dir.; **Jeffrey D. McNabb**, Fabrication, Hoisting & Rigging; **Dami Rich**, Communications

**20 years:** **Teresa N. Powers**, Health Services; **Tracey Oliver Lawson**, Strategic Business Services; **Kevin J. Hart**, Chemical Sciences

#### May

**40 years:** **Howard Edward Freeman**, Fabrication, Hoisting & Rigging

**35 years:** **Kaye P. Habenschuss**, Accounting; **Ronald Ray Brunson**, Nuclear Security & Isotope Technology; **Byrl P. Adkisson Jr.**, Integrated Operations Support; **Dennis L. Brown**, Facilities Management; **Cynthia H. Johnson**, Communications; **Cecil V. Parks**, Reactor & Nuclear Systems; **Mark W. Wendel**, Instrument & Source Design

**30 years:** **Denny Ray Wilson**, Fabrication, Hoisting & Rigging; **Lisa Marsh Thompson**, International Security & Analysis

**25 years:** **John Kenneth Keith Jr.**, Research Reactors; **Teresa A. Childs**, Office of Integrated Performance Management; **Richard Edward Hale**, Reactor & Nuclear Systems; **Alta Marie Williams** and **Vincent William Campbell**, Materials Science & Technology; **Ted A. Bumbalough**, Facilities Management; **Michael William Price**, Fabrication, Hoisting & Rigging; **Dale R. Anderson**, Nuclear & Radiological Protection; **Stephanie A. Burke**, Human Resources; **Melissa Byrd Hood**, Accounting

**20 years:** **Nageswara S. Rao**, Computer Science & Mathematics; **Peter V. Bonnesen**, Chemical Sciences; **Cindy L. Wilson**, Accounting; **Joy L. Anderson**, Communications; **Dez Davis**, Financial Management Services; **Jeff Guilford**, Legal Dir.; **Laura D. Marlino**, Energy & Transportation Science; **Elvira Mealer Hodges**, Office of Integrated Performance Management; **Gregory R. Hanson**, US ITER Nuclear Systems

## “The Girls of Atomic City” author says Americans fascinated by Oak Ridge



Denise Kiernan

**The people of Oak Ridge kept the secret**, but a very large building gave a broad hint to anyone in an airplane.

It was the mile-long “U” of K-25, completed in March 1945 (and demolished recently). U can stand for uranium, generally called “tubealloy” during the Manhattan Project days.

Denise Kiernan teased the crowd of 300 people on her new book *The Girls of Atomic City*: “Who came up with that idea? Top secret, eh?”

She gave the talk on March 19, the 64th anniversary of the opening of the gates to the newly incorporated City of Oak Ridge. She has been promoting her book around the country. A week after the book hit the stores, it made the *New York Times* Best Seller List.

“The country is fascinated by your town, your women and other people,” she said. “I told the true story of the Manhattan Project through the eyes and experiences” of the Oak Ridge women and others she interviewed and through her research. Her talk focused on questions people in her audiences ask about the book and Oak Ridge.

**How did you find the story?** She was working on another project and came across Ed Westcott’s famous photo of the calutron girls on stools at control panels. “I wanted to find out more about this place,” she said. At the time she lived in Asheville, N.C.

**Why did you focus on the women?** The story has been told many times through the eyes of General Leslie Groves, Enrico Fermi, Robert Oppenheimer and Arthur Compton. Most of the focus has been on Los Alamos, N.M.

“I wanted to tell the perspective from women in the Manhattan Project,” she said. “Imagine that you are 18 years old and you are being told that you will go to a place somewhere in Tennessee, where there’s a job for you, but you’re not going to be told what you will be doing.”

In the age of Facebook and Twitter, she added, young people cannot fathom how someone would take a job without knowing a lot about it and the location.

“They were told that the work they would do would help end the war and that was enough. Everyone was touched by the war.”

The topics she heard most about were mud and dating. “I talked to many people who actually lost shoes in the mud,” she said.

**How did they keep [the existence of] this town secret?** Kiernan said her audiences seem to think that an “invisibility shield came down” over Oak Ridge except for the people who could get through the gates.

“There were reminders to please be careful about what you are saying,” she said. “There was voluntary self-censorship throughout the country. Scientists and newspapers were not publishing [certain information] because no one wanted to be responsible for derailing the war.”

People she interviewed in Clinton said they used to see trains coming in with lumber, bricks and tankers holding chemicals, and then leave empty.



Women played important technical roles at X-10’s “pile,” which came to be known as the Graphite Reactor.

“Everything’s going in, nothing’s coming out,” they told her. “The only thing that went out was a coffee canister with a few teaspoons of uranium that a guy carried in a briefcase chained to his wrist. No wonder they managed to keep it secret.”

**What jobs did women get?** Elizabeth Edwards was brought down from the main branch of the New York Public Library to start the rolling library and public library here. Oak Ridge women worked in administration and transportation, as telephone operators, as technicians, as calutron operators and as statisticians.

One woman manager told her, “I had men working under me making more than me,” Kiernan said, “It was a wonderful time for women, but there were limitations and frustrations.”

**How did you do your research?** “I interviewed people here and went to the Smithsonian Institution, UCLA School of Medicine, and the National Archives in Washington and Atlanta (which has 5,000 boxes of files including the Atomic Energy Commission archives).”

Dr. Eric Clarke, psychiatrist, was asked to establish a mental health practice here, she learned from her research. “He speaks with such incredible affection and admiration for the true pioneer spirit of the people who came, stayed and banded together to make the best of what was a trying and stressful time—when you have to meet a deadline and don’t know what the deadline is for.”

Kiernan ended with her favorite question: **Is Oak Ridge still there?**

“I got this question in New York once and twice in Washington, D.C.,” she said. “Oak Ridge is still a Secret City to some.”—Carolyn Krause

# THE NEWS

## OAK RIDGE NATIONAL LABORATORY

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Vol. 5, No. 38

OAK RIDGE, TENNESSEE

Friday, April 3, 1953

### 1954 APS Meeting Slated for Ridge; Callihan Re-elected

The Southeastern Section of the American Physical Society will hold its next annual meeting early in April of 1954 in Oak Ridge, with the Oak Ridge National Laboratory and Oak Ridge Institute of Nuclear Studies serving as co-hosts for the occasion.

This decision was made at the annual meeting of the Southeastern Section of the APS held at Duke and North Carolina Universities on March 26-28. The meeting was held jointly with other divisions of the parent society. Nearly a thousand physicists, many of whom were from Oak Ridge, were in attendance at the conference last week end.

The selection of Oak Ridge as the site for the next meeting was made during the business session of the section. Dixon Callihan of the ORNL Physics Division, was re-elected secretary of the group for the coming year. A. H. Nielsen, professor of physics at the University of Tennessee and a consultant to K-25, was elected chairman. Walter Gordy of Duke University is the retiring chairman.

### AICHe Will Hear Speech on Fluids On Thursday Night

The Knoxville-Oak Ridge Section of the American Institute of Chemical Engineers will hear Dr. J. Henry Rushton, professor and director of the Department of Chemical Engineering at the Illinois Institute of Technology, speak at a meeting scheduled for next Thursday, April 9, in Oak Ridge. Dr. Rushton will use as his subject, "Fluid Flow and Mixing."

After obtaining his formal education at the University of Pennsylvania, Dr. Rushton taught at Drexel Institute, University of Michigan, and the University of Virginia before moving to his present position. He is well known in the chemical engineering field as an author of numerous technical articles on fluid flow, extraction, mixing, and process-equipment design.

The meeting will be held at 8:00 PM in Music Room C-121 of the Oak Ridge High School. This room can best be reached by using the Turnpike entrance.

#### SCIENTIFIC GERMAN

The second quarter of Scientific German will be offered to Oak Ridgers by the U-T Graduate School, if there are enough members of the class to warrant offering the course, it was announced this week. Anyone who is interested in this course is asked to call Anne Holbrook, 5-5606, or to register at 6:30 this evening in the ORINS Building on Administration Road. Professor Fuller of U-T will teach the course if a class is formed.



ORNL PHYSICIST DR. EDWARD C. CAMPBELL demonstrates an atomic squirt gun for performing quick chemical separation with a tiny ion exchange column in a hypodermic syringe. When a few drops of liquid are squeezed out of the syringe into a test tube, as shown above, and held near the counter, the rapid decay of the chemically separated radioisotope of lead can be seen by the flashing of lights on the scaler, upper right. (NEWS photo by Jernigon)

### ORNL Physicist, Chemist Announce Success of Chemical-Separation Test

A chemical-separation experiment which definitely establishes the genetic relationship of and gives additional chemical support to the proposed decay scheme of bismuth-207 to lead-207 has been announced by Dr. Edward C. Campbell of the Oak Ridge National Laboratory Physics Division.

Two years ago, Dr. Campbell, working with Dr. Max Goodrich of Louisiana State University, discovered a new activity in pile-irradiated lead leading to the present experiment. Two ORNL chemists, Dr. Kurt Kraus and Fred Nelson, working with anion exchange resins, furnished the data on the separation of lead and bismuth with anion exchange, which provided Campbell and Nelson with the necessary information to complete the experiment, thus establishing what Campbell calls "a simple and illustrative quick chemical separation."

The experiment proves that the bismuth-207 does decay at least partially via the 6.82-second, lead-207 isomeric level. Under the direction of J. A. Martin, the bismuth-207 was produced by bombarding a lead target with fast protons in the Y-12 cyclotron, the reaction being lead-208 (p, 2n) bismuth-207. A small portion of the target material was dissolved in nitric acid and then converted to the chloride.

Kraus and Nelson found that, in chloride solutions, bismuth with a valence of three is considerably more strongly absorbed than is lead with a valence of two. Thus, almost all of the bismuth-207 activity in the sample could be fixed

Continued on Page 3

#### CAFETERIA SPECIAL

The cafeteria special for Wednesday, April 8, will feature as its entree, braised beef tips with noodles. The special will include a choice of two vegetables, salad or dessert, tea or coffee, rolls and butter for 75 cents.

### Contracts Awarded for Construction Of New Radiation-Research Facility

#### Double-Tower Structures To Be Used To Study Radiation Scattering From Materials In Air

The award of two lump-sum contracts totaling \$986,320 for construction of a radiation-research facility in the Oak Ridge National Laboratory area was announced this week by the Atomic Energy Commission. The facility will be used by ORNL to study radiation scattering from materials suspended in the air.

Karl Koch Erecting Company, Inc., of New York, received a contract for \$500,000 to erect the steel on the facility. Charles Hobson Company, Inc., of Knoxville, was awarded a contract for \$486,320 for site preparation, utilities, and concrete work.

The steel work will include two double-tower structures 200 feet apart. Each structure will consist of a pair of steel lattice columns nine feet square and 315 feet high, joined at the top with a lattice truss. Koch also will build accessories such as platforms, hoists, lighting systems, conduits, guys, tie cables, and a lightning protection system.

The Hobson contract calls for about two miles of improved access roadway, site clearing and excavation work, foundation work, construction of an electric power substation, control house, exclusion fence, and drainage and sewage systems.

Construction is expected to start within a few weeks, the announcement stated.

April Is Big Month

### Group Insurance Dividend Checks Available Today

Approximately one-third of the amount employees paid into the 1952 Group Insurance Plan will be returned to them today in the form of dividends, according to an announcement received in the News office this week. The dividend amounts to \$239,217.14 for the three Carbide installations at Oak Ridge, and checks for both weekly and monthly salaried employees will be available at regular pay points.

In addition to the \$239,217.14 distributed as dividends, employees at the three Oak Ridge installations received \$681,497.55 in group insurance benefits during 1952.

Total group insurance payments to employees in dividends and benefits in 1952 amounted to some \$920,714.69. This compares with \$707,460.26 in dividends and benefits in 1951.

### Five Men from Lab Set for Lectures This Coming Week

## Sixty years ago this month

### Taken from *The ORNL News* for April 1953

- Atomic Energy Commission awarded a contract to ORNL to construct a radiation-research facility to study radiation scattering from materials suspended in the air. This became Tower Shielding Facility.
- ORNL has set a radioisotope shipping record. Phosphorus-32 and iodine-131 were the leaders. Carbon-14 has expanded its value in medicine, biology and industry.
- The ORNL Homogeneous Reactor Experiment has successfully produced electric power from nuclear energy.
- The Fourth National Science Fair, a three-day event held in Oak Ridge (aka Atomic City), had a participation of 71 future scientists from all over the United States, judged by world-famous scientists. Finalists were taken on a tour of ORNL, the UT-AEC Agricultural Research Program and the Biology Division at Y-12.—prepared by ORNL History Room volunteers

## From the Lab Director

I've been fascinated by the history of Oak Ridge National Laboratory since arriving as a researcher in 1998 and, in particular, how Ernest Wollan, Lyle Borst, and others did the early experiments that essentially established the field of neutron scattering science. I put some of that fascination to use recently in an article I wrote with the considerable help of ORNL's Tim Gawne, Steve Nagler, and Bonnie Nestor and Argonne National Laboratory's Jack Carpenter, which was published in *Acta Crystallographica Section A* in January 2013.

"The early development of neutron diffraction: science in the wings of the Manhattan Project" describes early investigations of neutron scattering by Wollan and Borst at Clinton Laboratories (as ORNL was then known), and by Enrico Fermi, Walter Zinn, and others at Argonne. That particular issue of *Acta Cryst.* commemorates the centennial of Bragg's law, which established the foundations of crystallography that Wollan and his colleagues were building upon during the course of the Manhattan Project.

The achievement of the Manhattan Project's chief aim — the end of World War II — still brings many visitors to Oak Ridge. Just recently Clifton Truman Daniels visited ORNL and the Graphite Reactor, where Wollan conducted his first experiments, in the course of research for a book on the two atom bomb detonations that ended the war. Daniels' grandfather was Harry S Truman, who was fatefully handed one of the most difficult decisions in history: To use the weapons created by the Manhattan Project on enemy cities.

The transition of the Manhattan Project facilities to peacetime missions made it possible for Ernie Wollan to expand his work on neutron diffraction. He chose to remain in Oak Ridge and, joined by a young researcher named Clifford Shull, used the Graphite Reactor to investigate the fundamentals of neutron diffraction. They noted neutrons' advantages over X-rays in certain applications and made the surprising discovery of antiferromagnetic "Bragg peaks" that became important to cosmology and particle and condensed-matter physics.

Wollan recognized the promise of neutron scattering, describing it in 1945 as "a very useful and simple physical 'tool,' when used in conjunction with a pile." Shull reaped the reward of this prescience with a share of the Nobel Prize in 1994 for his neutron diffraction work, 10 years after Wollan's death. Neutron scattering is now recognized as a key tool for a range of scientific applications. And while ORNL's history draws many visitors to the Lab, the High Flux Isotope Reactor and the Spallation Neutron Source draw many more, in the form of scientists with neutron scattering experiments to perform.

We hear a lot these days about budgets, deficits, sequestration, and the uncertainty of future funding for science. Looking back at our ORNL forebears, I see a dedication to science — often in the face of hardship and uncertainty — that has given us exceptional capabilities for solving the most compelling problems of our time. Our responsibility now is to focus on the right things and continue to do the work that is most important to the nation.

The full article is freely available at this link:  
<http://scripts.iucr.org/cgi-bin/paper?S0108767312036021>

You can read the story of the memo that Wollan sent to Richard L. Doan, director of Clinton Laboratories, to request approval for neutron diffraction experiments in the "Logbook" section of *symmetry* magazine at this link: <http://www.symmetrymagazine.org/article/january-2013/neutron-scattering>



Thom Mason




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"Our forebears had a dedication to science — often in the face of hardship and uncertainty — that has given us exceptional capabilities."

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Clifton Truman Daniels, grandson of President Harry S. Truman, visited the Graphite Reactor in March. (Photo by Jason Richards)

## AARP membership renewal not required

If you are enrolled in an AARP Medicare supplement plan you may have received an AARP membership renewal invoice. Please be aware that you do not have to renew your membership to keep your supplemental coverage. You can cancel your membership and it will not impact your AARP Medicare supplement plan. AARP only requires membership when an individual enrolls for the first time in an AARP Medicare supplement plan. For more information, contact Extend Health at 1-888-592-8348.



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## Nature Walks explore wild side of the ORR

The Oak Ridge Research Park began its annual series of Oak Ridge Reservation Nature Walks in February. The Tennessee Wildlife Resources Agency's Vincent Pontello (right) brought a Harris's hawk and a merlin to the first walk on February 23. More nature walks are scheduled into June. The schedule for the nature walks can be found on the Environmental Sciences Division's website at [www.esd.ornl.gov/facilities/nerp/2013walkschedule.pdf](http://www.esd.ornl.gov/facilities/nerp/2013walkschedule.pdf). (Photo by Nicholas Morris)



## Club ORNL events

Get the details and latest news online via <https://info.ornl.gov/sites/clubornl>. Request an XCAMS account, which will allow you to participate in these events or contact Lara James at 865-576-3753 or [jamesla@ornl.gov](mailto:jamesla@ornl.gov).