

Nuclear Division News

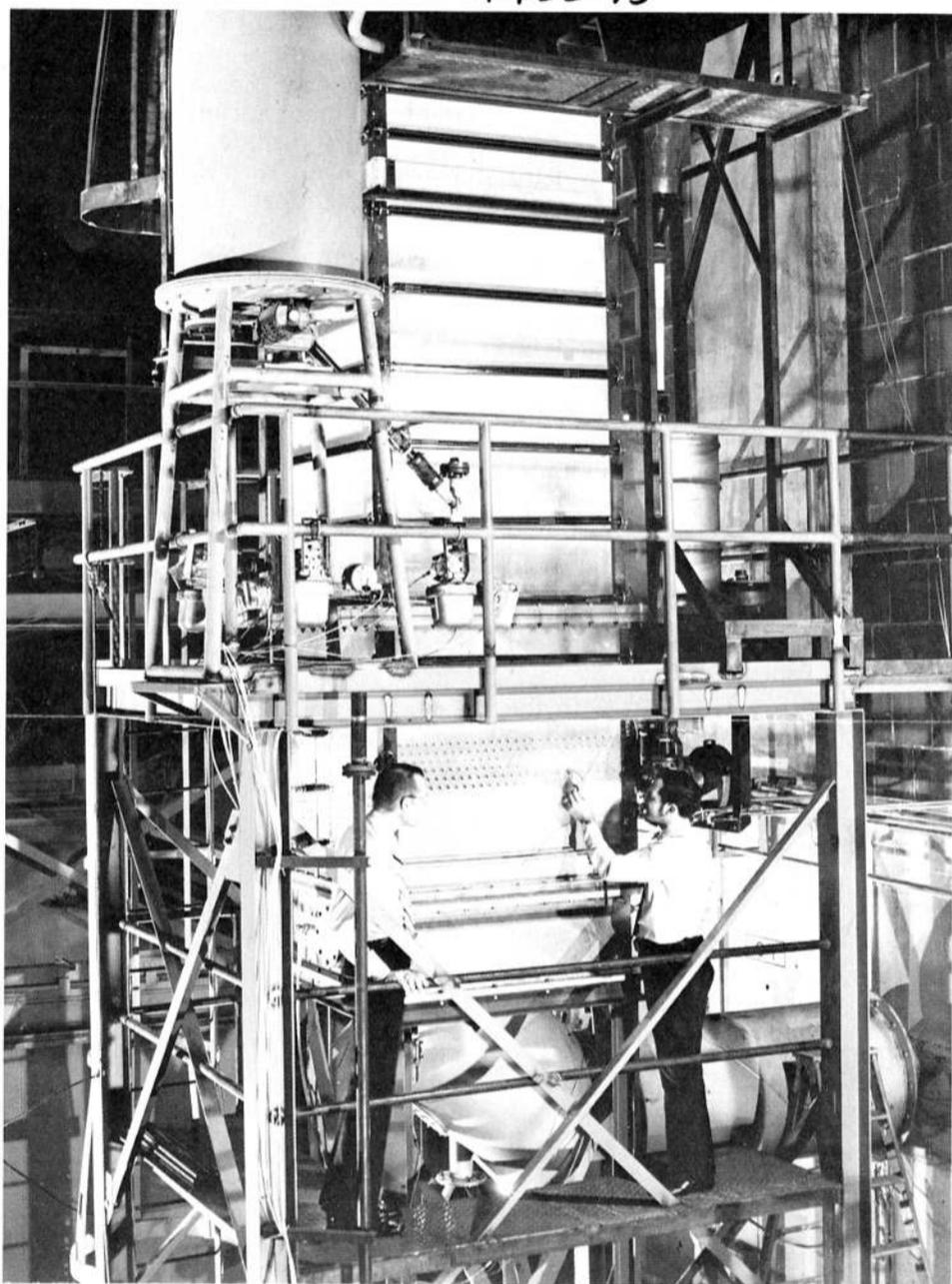


A Newspaper for Employees of the Nuclear Division, Union Carbide Corporation

Vol. 7, No. 9 / April 29, 1976

New coal-burning prototype to be built

4922-15



FLUIDIZED BED FURNACE — A system for burning high sulfur coal (without polluting the environment) to drive a gas turbine and produce electricity is being developed at the Oak Ridge National Laboratory. Construction of a facility to demonstrate this concept gets under way in June.

A prototype coal-fired, fluidized bed, gas turbine system designed to produce electric power by the clean consumption of high sulfur coal is being developed at Oak Ridge National Laboratory.

The prototype system, developed under the sponsorship of the Department of Housing and Urban Development (HUD) and fossil energy program of the Energy Research and Development Administration, will be constructed and tested at the Oak Ridge Y-12 Plant. Construction of the facility is scheduled to begin in June, 1976, with completion expected in July, 1977.

Environmentally acceptable

The fluidized bed method of combustion has been used both in the United States and abroad for some 20 years for such applications as ore processing and industrial waste incineration, but this is the first known planned application for use with a closed-cycle gas turbine to produce power.

It is expected that the new coal-burning system will make it both environmentally acceptable and economical to produce power by burning high sulfur coal. Approximately two-thirds of the nation's coal reserves contain a high percentage of sulfur which, under federal guidelines and many state laws, requires costly processing to reduce the amount of sulfur dioxide escaping to the environment.

The ORNL concept has been designed for use in a Modular Integrated Utility System (MIUS), a HUD-sponsored program which

would provide a community of limited size with the utility services of energy, water and waste disposal from an on-site, combined package plant. A typical user of a MIUS could be an apartment complex housing 700 to 1,000 families. The complex would have facilities to produce its own electric power; to provide heating and cooling; to provide potable water and to provide for liquid and solid waste treatment and disposal. Such a complex might require three or four such turbine power systems, each producing about 500 kilowatts of electricity.

One of the requirements of a MIUS type system is that it should be able to operate semi-unattended, so that the operator need tend it only an hour or two each day. One of the purposes of building the prototype is to determine if this kind of reliability can be realized. Information obtained in the operation of the prototype will be shared with commercial manufacturers and utilities.

Limestone reduced

In the ORNL system, a fuel mix of coal and limestone — both about 1/16-inch particle size — is fed into a furnace and agitated by a thousand tiny jets of pre-heated air, causing the coal to burn. The heat produced converts the limestone (calcium carbonate) to calcium oxide. The calcium oxide then combines with the sulfur dioxide from the coal to form calcium sulfate (gypsum). Because the bed is highly turbulent, particles are tossed about during the combustion process. Fine particles are blown up and out of the open chamber above the bed and recovered by a cyclone separator, while the larger and heavier particles — the bulk of the material in the bed — fall back into the bed and

(Please turn to page 8)

\$44 million sales in toll enrichment for first quarter

Approximately \$44 million in toll enrichment sales were reported at the Oak Ridge Gaseous Diffusion Plant during the first quarter of 1976.

During the three-month period, almost 499,000 pounds of enriched uranium were shipped for use in nuclear reactors in Belgium, Spain and Switzerland and in the following states: Arkansas, California, Illinois, Nebraska and South Carolina.

Under the Toll Enrichment Program, privately licensed owners bring their uranium to a gaseous diffusion plant for enriching on a toll basis. Customers are charged for the services required to separate from natural uranium the desired percentage of the uranium-235 isotope, usually between two and three percent.

inside ...

Hugo Bertini, well-known marksman, has written the second in a series of articles on after hours recreation among Nuclear Division men and women. His in-depth philosophy on the joys of riflery appears on page 6.

Other features in this issue:

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- Visits in authorized areas discouraged ... page 4
- ORDGP, Paducah promotions page 5
- Medicine Chest page 7

Family Day date finalized: Saturday, May 22 at both sites

Family Day at Oak Ridge National Laboratory, announced in the last issue of *Nuclear Division News*, has now been planned for a single day — Saturday, May 22 — to better accommodate those who wish to visit both the X-10 and Y-12 locations at the Laboratory.

Tentative dates announced earlier had been May 8 (X-10 area only) and May 22 (Y-12 area only).

In addition to Union Carbide employees, all ERDA and other contractor employees and their families are invited to participate in the Family Day event. Employees must display their authorized badges and register all members of their families to gain admission to the plant areas.

Each participating division is responsible for visitor control within its facilities and for determining precisely which areas of its facilities will be open.

Parking for visitors at X-10 will be at the East and West Portals. At Y-12, visitors may park in the Biology Division and East Portal parking areas.

(Please turn to page 8)

question box

If you have questions on company policy, write the Editor, Nuclear Division News (or telephone your question in, either to the Editor, or to your plant contact). Space limitations may require some editing, but pertinent subject matter will not be omitted. Your name will not be used, and you will be given a personal answer if you so desire.

Illegal parking at Y-12

QUESTION: About 20 cars are parking illegally in the east side of the Y-12 North Portal parking lot, at an 85-degree angle. They back into moving traffic lanes at 4:30 p.m., sometimes across two of the three outgoing lanes. I have called this hazard to the attention of several in Y-12. Can anything be done about this serious situation?

ANSWER: Parking spaces are provided for 24 vehicles in the parking lane at the extreme eastern end of the North Portal parking lot. Present design requires drivers of vehicles parked there to back out into the outgoing traffic lanes. Possible changes in this parking lane have been under consideration for some time. A decision has been made to redesign that specific lane to permit parallel parking. The new arrangement, which will be implemented soon, will certainly be a safer one.

Safety awards discriminatory?

QUESTION: The 18 items selected by Y-12's safety committee for 1975 awards seems very discriminatory to me. It is my understanding the committee consisted of 11 men and 4 women. My question is why isn't the committee made up of an equal number of women and men?

ANSWER: While a conscious effort was made to have women on the selection committee, the Safety Department says it had no fixed numerical goal in mind. It turns out that women were 27 percent of the committee, which is about 2.5 times their 11 percent representation on Y-12's payroll. While about half of the items selected cannot clearly be identified as being more appealing to either sex, you are right that there are fewer items which traditionally have appeared more appealing to women than to men. The Y-12 Safety Department has been made aware of your comment.

JOS query

QUESTION: A Y-12 employee in Metal Preparation Division recently was elevated from clerk to supervisor trainee. The job was not bid. Why not? Others would have liked the opportunity to bid on this position.

ANSWER: The position in the Metal Preparation Division is one where the person is being placed in a supervisory position which will result in reclassification to the monthly payroll upon completion of the training program. Exempt salaried jobs and nonexempt salaried jobs which are temporary entry level to exempt jobs are not covered by the Job Opportunity System.

Government vehicle rules

QUESTION: Why are plant superintendents' secretaries permitted to drive the boss's vehicle to the cafeteria? Are they exempt from the rules and regulations set forth in the procedures regarding the use of government vehicles?

ANSWER: There are no exemptions. There are cases, however, when a secretary might be authorized to use her supervisor's car to go to and from the cafeteria; for example, if her supervisor is pressed for time and asks to bring his lunch to the office, or when official guests need to be transported, etc. If the supervisor's vehicle has been used under other circumstances, it would have been contrary to the regulations. The regulations will be further emphasized to avoid possible abuse.

Criticality alarms

QUESTION: On January 27, about 11:30, a criticality alarm was sounded over the Building 9202 PA system. Practically no one paid any attention, let alone reacted. Are all Y-12 alarms to be ignored? Why was no explanation given? Is this not "crying wolf?"

ANSWER: The alarm system in question was tested on January 13. Although we have examined all pertinent records, we cannot confirm any evacuation alarm affecting Building 9202 and occurring on January 27. To be certain you recognize the immediate evacuation alarm, which is the criticality alarm, please dial 3-7888 for a recorded demonstration. At any time the Immediate Evacuation Alarm is tested there will be an appropriate announcement made over the PA system which will explain the nature of the test and also give instructions. At all times, other than for an announced test, when the Immediate Evacuation Alarm is sounded, evacuation is mandatory.

Chemistry journal appoints Shults



W. D. Shults

Wilbur D. Shults, associate director of the Analytical Chemistry Division at Oak Ridge National Laboratory, has been appointed to a three-year term on the Editorial Advisory Board of *Analytical Chemistry*, the leading journal in analytical chemistry.

As a Board member, Shults will be asked to serve as a special consultant and informal contact at scientific meetings. Members of the Board function as an information link between the editors and the readers. The Advisory Board meets formally once a year to provide suggestions on policies and publication programs of the journal.

Shults received his B.A. and M.S. degrees in chemistry from Emory University and his Ph.D. in chemistry from Indiana University. He joined the Analytical Chemistry Division in 1951 as a junior chemist and held various chemical and management positions before assuming his present position in February, 1975.

He served for two years with the Army Chemical Corps and held an Atomic Energy Fellowship for doctoral study from 1962 to 1964. His main research interests are in electro-analytical chemistry, instrumentation, chromatography, and spectroscopy.

Shults resides at 1011 W. Outer Drive in Oak Ridge with his wife, Suereta. They have two daughters, Susan and Sheri, and a son, Stephen.

division deaths

John A. Owen, supervisor in the Instrument Engineering Department at the Oak Ridge Gaseous Diffusion Plant, died April 11 at his Oak Ridge home.



Mr. Owen

A native of Bradley County, Mr. Owen served in the U.S. Navy and was a graduate of the University of Chattanooga. He also held a master's degree in administrative engineering from the University of Tennessee. He joined Union Carbide in 1954. A certified, licensed Professional Engineer, he was a member of the Instrument Society.

Survivors include his wife, Mary Howell Owen, who works at the Oak Ridge National Laboratory; two daughters, Linda and Nancy Owen; three brothers, James, Joe and Ben Owen; and six sisters, Mrs. Emmett Edgemon, Mrs. O'Brien Atkisson, Mrs. Herbert Brown, Mrs. Marie Osment, Mrs. Mary Mayer and Mrs. Ernest Bidwell.

Lloyd Hunt, an instrument mechanic in the Oak Ridge Gaseous Diffusion Plant's Instrument Fabrication Department, died April 10 in the Blount County Memorial Hospital.



Mr. Hunt

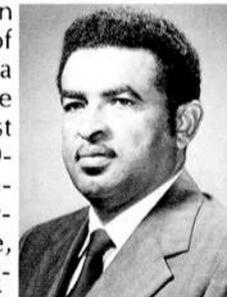
A native of Monroe County, Mr. Hunt had been with Union Carbide since 1952.

He is survived by his wife, Lucreeda Allman Hunt, Greenback; his mother, Lila F. Hunt; and two sisters, Mrs. Reed Harrison and Mrs. Mark Linton.

Funeral services were held at the Niles Ferry Baptist Church with the Rev. R. M. Everett and the Rev. Charles Bryant officiating. Burial followed in the St. Mary's Methodist Church Cemetery.

John A. Scales, a skilled laborer in the Plant and Equipment Division, Oak Ridge National Laboratory, died April 18 at his home.

Mr. Scales, an Army veteran of World War II and a member of the Talladega Baptist Church, was a 29-year ORNL employee. He is survived by his wife, Mattie Pennington Scales, 246 S. Benedict Avenue,



Mr. Scales

Oak Ridge; two sons, Eugene Scales and Johnny Scales Jr.; two daughters, Loretta Scales and Jacquelyn Logan Scales; three brothers, Joseph Scales (an employee at the Oak Ridge Gaseous Diffusion Plant), Sam Williams and Ernest James Scales; a sister, Mrs. Joyce Adams; an aunt, Georgia Wallace; and an uncle, George Scales.

Services were held at the Weatherford Mortuary Chapel in Oak Ridge, with the Rev. J. D. Ward of the Mt. Zion Baptist Church officiating.



ENJOY PHOTOGRAPHIC EXHIBIT — The Paducah Gaseous Diffusion Plant employees have been enjoying a photographic exhibit in the cafeteria for the past several weeks. The beautiful work is all non - professionally done by photographers in the plant. From left are Pat Mills, Reba Stovall, Bill Switzer and Garvelene Wolfe.



"SPIRIT OF PRIDE" — In keeping with the Bicentennial theme SPIRIT OF '76, the slogan "Spirit of Pride" has been adopted for the 1976 Annual Cleanup, Fix-up campaigning at the Oak Ridge Gaseous Diffusion Plant. Superior quality appearance, storage, and housekeeping will be emphasized during the campaign, directed by A. J. "Gus" Legeay, Operations Division Superintendent.

Picked as 'Engineer of Year'



Charles D. Scott

Charles D. Scott, chief of the experimental engineering section in the Chemical Technology Division, Oak Ridge National Laboratory, has been named Engineer of the Year by the Knoxville-Oak Ridge Section of the American Institute of Chemical Engineers (AIChE).

Scott was nominated for his development of special equipment and techniques for analyzing various human body fluids. He has developed high-resolution, automated, liquid chromatographic analyzers used to identify and measure over 200 different body fluid molecules.

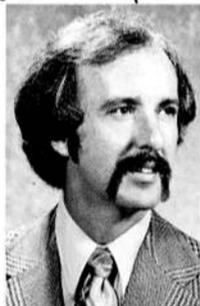
A native of Chaffee, Mo., Scott joined the Nuclear Division in 1953 as a development engineer at the Y-12 Plant. He transferred to ORNL in 1957. In his present capacity he is also program manager of several biotechnology development programs which represent multidisciplinary efforts spanning four ORNL divisions.

He received a B.S. degree in chemical engineering from the University of Missouri in 1951 and M.S. and Ph.D. degrees in chemical engineering from the University of Tennessee in 1961 and 1966. He has served as a part-time professor of biomedical engineering at the University of Tennessee, where he was chairman of the Committee on Bio-

medical Engineering Education. Currently he is a visiting lecturer in chemical engineering at UT.

Scott has been the inventor or co-inventor in several patents, and is the author of over 60 scientific and technical papers in the areas of his main research and development interests: biomedical technology, clinical laboratory instrumentation, heterogeneous kinetics, and energy production.

Elected fellow of AAAS



J. Clarke

John Clarke, director of the Thermonuclear Division at Oak Ridge National Laboratory, has been elected a Fellow of the American Association for the Advancement of Science (AAAS).

In announcing the election, the AAAS cited Clarke for his "scientific contributions in the field of plasma physics and his leadership in controlled thermonuclear research."

Clarke joined the Laboratory staff in 1966, following completion of his doctoral work in nuclear engineering at the Massachusetts Institute of Technology. He was named director of the Thermonuclear Division in January, 1974.

A native of Long Island, N.Y., Clarke received a B.S. degree from Fordham University in New York City in 1961, and an M.S. degree in plasma physics from M.I.T. in 1964.

He is a member of the American Physical Society and has served on several review committees on the controlled thermonuclear research program. He and his wife, Martha Kettle, live at 24 Brookside Drive, Oak Ridge.

Lowell McCauley appointed to OWI administrative post

176-30

Lowell L. McCauley has been appointed manager of administration for the Office of Waste Isolation, according to Clayton D. Zerby, Director.

McCauley has been director of the Industry Participation Program of the Nuclear Division for the past four years. Prior to that time he was an executive assistant in the Atomic Energy Combined Operations Planning (AECOP). He joined Union Carbide at the Oak Ridge Gaseous Diffusion Plant in 1951 in the Technical Division, and later served as a development chemist in the Separation Systems Division.

A native of Lansing, Mich., he has a B.S. degree from Northwestern University and has done graduate work at the University of Tennessee.

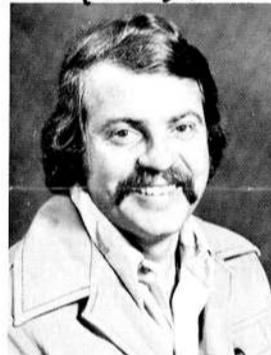
Mrs. McCauley is the former Nancy Warter of Trenton, N.J., and they live at 107 Baker Lane, Oak Ridge. They have three children, Cynthia Ewbanks, employed in the Separations Systems Division at ORGDP; Lowell L. Jr. and Meridith McCauley.



Lowell L. McCauley

McCauley is a former member of the board of directors of the Oak Ridge Community Art Center. He is currently serving on the board of directors of the Oak Ridge Chapter of the American Red Cross and is a member of the Foothills Craft Guild.

Ferguson named material supervisor



W. P. Ferguson

Wayne P. Ferguson has been named a material supervisor in the Materials and Services Division in the Y-12 Plant.

Ferguson, a native of Oak Ridge, was in the U.S. Air Force before joining Union Carbide nine years ago.

He and his wife, the former Deloris Forsythe, live at Route 22, Beaver Creek Drive, Knoxville. They have three children, Wayne F. Jr., David and Leann.

Second Bicentennial Lecturer

'Life in Universe' Wald's topic

George Wald, second in a series of six Bicentennial Lecturers on Technology and Society, will speak on Thursday, May 13, at 8 p.m. in the auditorium of the American Museum of Atomic Energy in Oak Ridge. He will speak on the topic "Life in the Universe — From Cosmology to Politics."

Sponsored by the Oak Ridge National Laboratory, the Oak Ridge Bicentennial Lectures are open to the public free of charge. The series emphasizes the history of technology in the U.S. and its present and probable future impacts on society.

Wald, a Higgins Professor of Biochemistry at Harvard University since 1968, is most well known for discovering vitamin A in the retina. He was a co-winner of the 1967 Nobel Prize in Physiology or Medicine for research on the biochemistry of vision; in particular, on the role of vitamin A in vision.

A native of New York, Wald received his B.S. degree in zoology at

Washington Square College of New York University in 1927. In 1932, he earned a Ph.D. in zoology at Columbia University.

Many honors and awards have been given to Wald for his work in biochemistry, including the 1939 Eli Lilly Award for "Fundamental Research in Biochemistry" from the American Chemical Society, the 1953 Lasker Award of the American Public Health Association, and the 1955 Proctor Medal of the Association for Research in Ophthalmology. He has also received the honorary degree of M.D. from the University of Berne, and honorary Doctorates of Science from nine colleges and universities worldwide.

Wald is a member of the National Academy of Sciences and the American Philosophical Society, a Fellow of the American Academy of Arts and Sciences, and a honorary member of the Cambridge Philosophical Society.



G. Wald

patents granted

To Norman G. Anderson, formerly of ORNL, and John E. Caton Jr., ORNL, for "Rotor for Centrifugal Testing of Electrophoresis Gel."

ORNL develops noise power thermometer

A new, absolute thermometer for measuring temperatures of nuclear-reactor fuels and industrial processes was the subject of an Oak Ridge National Laboratory seminar for representatives of industry and research laboratories here earlier this month.

The measuring system, known as the Johnson noise power thermometer, is a development of the ORNL Instrumentation and Controls Division. The seminar was coordinated by the Nuclear Division's Technology Utilization/Commercialization Program.

The Johnson noise power thermometer can measure temperatures up to 1,500 degrees Celsius (2,700 degrees F.) accurately and reliably for long periods. Accuracy, shown to be one percent or better in tests of the system, is not affected by aging, chemical, or radiation effects on the temperature sensor or by high pressures or magnetic fields.

One application of the new ORNL-developed system is in nuclear reactor development, where temperatures of nuclear fuel are measured to determine the effects of neutron radiation on the thermal conductivity of the fuel, its melting point, and structure. Because other types of thermometers (thermocouples or resistance thermometers) are affected by neutron radiation, decalibration errors of hundreds of degrees have been observed. The new device does not decalibrate under these conditions.

Participating in the Oak Ridge seminar on this development were C. J. Borkowski and Theron V. Blalock, inventors of the Johnson noise power thermometer; Robert L. Shepard, project leader, and other members of the ORNL Instrumentation and Controls Division.

next issue . . .

The next issue will be dated May 13. The deadline is May 5.

Unauthorized visits in area discouraged

Did you know that a casual motor-bike ride through portions of the Oak Ridge reservation could result in the loss of five years' worth of research, or that even a harmless hike through reservation woods could result in a great deal of damage to research study plots?

Valuable research materials, equipment and rare and endangered plant species have been destroyed as the number and frequency of visits by unauthorized personnel to the reservation have increased during the past few years. Warning signs and even fences have been ineffective in keeping intruders off the reservation.

In addition to destroying research materials, intruders interfere with the natural interaction between plant-life, wildlife and the environment, which is very important to studies being conducted by ecologists in Oak Ridge National Laboratory's Environmental Sciences Division.

Several potential safety hazards exist on the reservation to which the unknowing person might be exposed. Some of the quarries, in which many local youths have been caught fishing and swimming, are extremely deep in places and are filled with dangerous rocks. Old home sites on the reservation are very unsteady and may collapse when entered, and many of them are favorite nesting places for copperheads.

Both to protect individuals from potential hazards on the reservation and to protect the reservation from individuals who might destroy its resources, a contract has been awarded to the Atomic City Investigation and Security Service for providing a special watch patrol to maintain surveillance of the outlying research areas.

COOL FOODS ON COUNTERTOP

Most foods should be cooled outside the refrigerator after cooking. A few recipes call for rapid chilling, but most things can be cooled at room temperature, reducing the load on the refrigerator.

U.S. savings bonds give parents college fund advantage

Ronald D. Smith and Alan Van Hull, Operations Analysis and Long Range Planning, compiled the following facts during last year's U.S. Savings Bonds campaign. The data is based on 1974 income tax regulations.

An employee, desiring to establish an education or gift fund for a child, will find the regular purchase of Series E United States Savings Bonds both convenient and favorable from a yield standpoint. The bonds should be purchased in the child's name with the parent as beneficiary. At the end of the first year, the parent should file a Federal income tax return in the child's name listing the year's increase in bond value as income to the child. No other returns need be filed, nor tax paid, unless the child's income exceeds his unearned personal exemption (\$750). Ultimately, when they are cashed for educational expense, the interest on the bonds is income tax free. The parent should retain a copy of the child's income tax return as evidence of intent to pay the bond interest tax. The parent's gifts to the child in any one year should not exceed \$3,000 or liability for gift tax is incurred.

To evaluate Series E United States Savings Bonds as an investment for this purpose, the required yield from alternative investment must be com-



puted. The advantage of the Savings Bond investment plan, outlined above, is that, unlike most alternative investment plans, no income tax is paid on the interest. Thus, the required yield from an alternative investment is dependent on the parents' yearly income. The following table, which gives the required yields of alternative investment, is based on a typical family of two parents and two children. It is assumed that the parents file joint income tax returns and take the standard deduction.

SERIES E UNITED STATES SAVINGS BONDS EVALUATION AS EDUCATIONAL INVESTMENT

Annual Income	Taxable Income	Incremental Tax Rate	Required Yield of Alternative Investment*
\$10,000	\$5,500	19%	7.41%
15,000	10,000	22	7.69
20,000	15,000	25	8.00
25,000	20,000	28	8.33
30,000	25,000	36	9.38
35,000	30,000	39	9.84
40,000	35,000	42	10.34

*Required yield (%) - 6/(100-Incremental Tax Rate)

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CERTIFICATION EXAM REVIEW — Paducah Plant engineers recently concluded a 19-sessions review covering many aspects of their fields. In a continuing effort to upgrade their knowledge in their profession, the 36 employees attended two hour classes twice a week from January through mid-March.

Cline son named to USAF academy

David Earl Cline, a senior at South High School, has received a notice of acceptance in the United States Air Force Academy. He received the notification from both Senator Howard Baker and Representative John Duncan.

David, the son of David P. Cline, Maintenance Division in Y-12, is the salutatorian of his graduating class at South and a member of the junior and senior National Honor Society. During his high school career, he was active in football, baseball and track.



D. Cline

The Clines live at 1917 Earl Avenue, Knoxville.

Gaseous diffusion plants tell promotions

PH 76-868 → PH 76-154

PH 76-860 PH 76-867



D. M. Andrews
PH 76-882

J. M. Campbell
PH 76-943

R. K. Campbell
PH 76-883

D. D. Forrester
PH 76-981



C. D. Oakerson

G. L. O'Kain Jr.

G. E. Robinette

J. B. Smith

Nine recent promotions have been announced at the Oak Ridge Gaseous Diffusion Plant.

David M. Andrews has been named a P.M. training instructor; John M. Campbell, Roy K. Campbell, Clarence D. Oakerson, Grady L. O'Kain Jr., Grover E. Robinette, Jerry B. Smith and George A. Van De Griff have been promoted to supervisors, all in the Fabrication Division; and Don D. Forrester has been promoted to a supervisor in the Finance, Materials and Services Division.

Andrews, a native of Knoxville, has attended the University of Tennessee more than two years. He served in the U.S. Air Force, was an electrician for the City of Knoxville, and was an instructor at the Knoxville OIC before joining UCC.

His wife is the former Ruthan Bowie and they live at 3128 Sunset Avenue, Knoxville. They have a son, Hansel.

John Campbell, born in Etowah, grew up in Oak Ridge. He joined Union Carbide more than three years ago, and attended Roane State Community College prior to that time.

Mrs. Campbell is the former Edwina Rymer, and they live at 115 Niagara Lane, Oak Ridge. They have two daughters, Sherry and Jill.

Roy Campbell was born in Tazewell, and grew up in the Powell community. He worked in the Y-12 Plant five years, and has been in ORDGP for the past 11 years. He was employed by the Floyd Early Construction Company before joining UCC.

He and his wife, the former Charlotte Ann Campbell, live on Ewing Road in Powell. They have a daughter, Karen; and a son, Bruce.

Forrester, a 21-year veteran in the Y-12 Plant, was born in Memphis. He transferred to ORGDP last year as a materials requisitioner. He has attended UT.

Mrs. Forrester is the former Hope Moore, and they live at 105 Macon Lane, Oak Ridge, with their four children, Mark, Jon, Connie and Rick.



G. A. Van De Griff

Oakerson was born in Ringgold, Ga., and has been at ORGDP almost two years. Prior to joining UCC he was with the Glidden Mining Company and with the U.S. Civil Service.

O'Kain, a native of Charlotte, Tenn., has attended UT, and has been at ORGDP a year. Prior to joining UCC he was with Rust Engineering and Management Services Inc.

He is married to the former Martha Ferrell, and they live at 9203 Burchfield Drive, Oak Ridge. They have three daughters, Carol and Karen O'Kain, and Wanda Jackson.

Robinette, a native of Roane County, was self employed and worked with Oak Ridge Associated Universities before joining UCC in 1951. He attended Roane State Community College.

Mrs. Robinette is the former Myrtle Peterson and they live at Route 3, Kingston. They have two children, James E. Robinette and Amy Gamble.

Smith, a native of Henderson, Tenn., grew up in Roane County. He attended Tennessee Technological University and Central Electronics School, and is presently attending Roane State Community College. He has been at ORGDP 10 years.

Mrs. Smith is the former Shirley Overton, and the couple lives at Route 4, West Ridgecrest Drive, Kingston. They have a daughter, Jo Terri.

Van De Griff was born in Knoxville and worked with Shredded Steel Products before joining UCC three years ago. He attended UT and is a graduate of Tennessee Institute of Electronics.

Mrs. Van De Griff is the former Vicki Bolding, and they live at Route 1, Louisville. They have a son, James.

Five recent promotions are announced at the Paducah Gaseous Diffusion Plant. Herman E. Anderson has been named an assistant general supervisor in the Maintenance Division. Gary L. McManus is a new supervisor trainee in Maintenance. Jesse M. Knott is a supervisor in Maintenance, also. James B. Smith is an assistant general foreman in Fabrication and Maintenance; and Michael L. Steger is a new supervisor in Maintenance.

Anderson, a native of Oakland, has been with Union Carbide since 1953. Prior to that he was with Holly Carburetor in Bowling Green, and served in the U. S. Air Force.

Mrs. Anderson is the former Betty Thread, and the couple lives at Route 4, Paducah.

McManus, a native of Paducah, joined Union Carbide in September of 1975. Prior to that time he was a group leader at CTS.

McManus lives at 1600 1/2 North Street, Paducah.

Knott, a native of Dover, Tenn., has been with UCC for 24 years. He was a blacksmith with the Illinois Central Railroad before that.

He and Mrs. Knott, the former Nannie Lee Lynn, live at Route 10, Paducah. They have two sons, Robert and Edward.

Smith was born in Paducah, and has been with UCC more than 24 years also. He was a machinist with ICRR prior to joining the Paducah plant.

Mrs. Smith is the former Dorothy Pirtle, and the couple has four children, Betty, James, Tommy, and a



H. E. Anderson



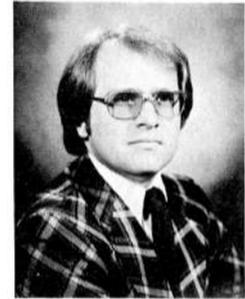
J. M. Knott



G. L. McManus



J. B. Smith



M. L. Steger

married daughter, Nancy Morris. They live at 26 Martin Circle, Paducah.

Steger was born in Louisville and has been with UCC more than three years.

He and his wife, the former Linda Cook, live at 3724 Alameda Drive, Paducah. They have a son.

division retirees



Rader



Rison

Georgia M. Rader, a supervisor in Materials and Services in the Y-12 Plant, will retire early this week, marking more than 31 years with Union Carbide. She lives at 908 Eagle Bend Road, Clinton.

John D. Rison, a guard in Oak Ridge National Laboratory's Laboratory Protection Division, took early retirement at the end of April. Rison, whose home is at 4405 Crestfield Road, Knoxville, ended 33 years company service.



ST. PAT'S SOCIAL — Members of ORNL's Chemical Technology Division, their spouses and friends gathered for Chem Tech's annual St. Patrick's Day Dance last month in Knoxville. Junction East provided music for dancing following a social hour.

"A different drummer"

ORNL's Bertini hits the mark in high power rifleering

(Second in a series)

Hugo Bertini, Oak Ridge National Laboratory's Neutron Physics Division, is a native of Chicago. He has a master's degree from Northwestern and a Ph.D. in physics from The University of Tennessee. He got interested in marksmanship while with the U.S. Army infantry, but began serious shooting in 1962. He has been at ORNL more than 23 years. The Bertinis live at 915 West Outer Drive.

Bertini's wife, Joanne, is also employed at ORNL.

by Hugo Bertini

There are 24 of us standing in a row, waiting for the command to start the shooting in the first stage of the high-power rifle tournament. "High power" in this terminology is usually a 30-caliber rifle, such as the M1 Garand of WWII. Our targets, one for each of us, are 200 yards away.

The man standing behind me (a U.S. Army service man) will be my scorekeeper for the whole darn tournament. Last year he won the national long-range highpower rifle championship. It's like having Johnny Miller as your personal scorekeeper in a golf tournament, or having Arthur Ashe keep your score in a men's tennis tournament or Yvonne Goolagong keep yours, if you are a woman.

It wouldn't be so bad if you were really good, but if you are a mediocre shooter like myself, it puts a little extra pressure on you. You know you will do something stupid at least once, such as missing the whole darn scoring ring, or shooting on the wrong target. Actually, your scorer couldn't care less, but knowing that doesn't help much.

The commands to load and start the shooting are given. My knees are shaking and my breathing comes in short gasps. I have no control over this nervousness, and this alone frosts me no end. Compounding everything is an urgent call to nature caused by the nervousness, which will just have to wait. I have 20 minutes to fire 20 shots while standing without any artificial support. This is called the offhand stage or "awful hand."

I raise my rifle to my shoulder and try to line up the front and rear sights with the bull's-eye. If the front sight at the front tip of the rifle is out of perfect alignment by seven-thousandths of an inch, I'll miss the highest scoring circle, the x-ring. A mediocre shooter finds that kind of accuracy almost impossible to achieve. If the front sight is off by 72 thousandths, I'll miss the lowest scoring circle and get a zero. A mediocre shooter will sometimes think that even that kind of accuracy is impossible to achieve.

"I raise my rifle to my shoulder and try to line up the front and rear sights with the bull's-eye."



"AWFUL HAND" — Hugo Bertini, who rates himself as a mediocre shooter is seen in the "awful hand" position. Hugo is in Oak Ridge National Laboratory's Neutron Physics Division.

The front sight whizzes back and forth past the bull's-eye while I'm holding my breath and squeezing the trigger. The steadier you can hold the rifle, the better your scores, but the gun wobbles back and forth to some degree for everybody.

The gun suddenly goes off while the front sight is just off the bull's-eye. I breathe a sign of relief, for I didn't miss the target. My target goes down and comes back up in a few seconds later with a score of an eight. For me, I'm off to a roaring start. If a good shooter started with a score of eight, he would throw up.

"Tensing destroys the sight alignment just as the shot is fired...."

After shooting about half of the 20 shots, my scorer says, "That was your tenth shot, Mr. Martini," deliberately mispronouncing my name. "Don't talk that way - it gets me thirsty," I tell him. "You, too?" he smiles. He's a nice guy, as most of them are.

You may wonder — if the rifle is so unsteady shooting offhand, why not pull the trigger at the moment of sight alignment? Well, this will work fine for about four shots and, out of exasperation, most beginners will try it. But then your body takes over. It doesn't care at all for the recoil or the blast of the shot. So, at just the right moment of perfect sight alignment — when your brain screams at your trigger finger, "PULL!" — the rest of your body says, "To heck with you, Jack, I'm looking out for No. 1," and it instantly tenses your body muscles in anticipation of the loud blast of the shot and the recoil while your finger yanks the trigger.

This tensing destroys the sight alignment just as the shot is fired, and the bullet will go anywhere but at the bull's-eye. So, when you shoot, you must trick your body. At each of the moments of perfect sight alignment during the time your rifle is waver-

recreationotes

Skeet league

March winners for the All Carbide Skeet League include Bill Davey Sr., Y-12, who fired a 48.511 handicap score. John Basler, ORNL, tallied 48.205; and Orville Laueredine, Y-12, came in third with a 47.760. With warmer weather in the offing, many new shooters are competing in the Sunday events. Firing under penalty were Phil Hayes, George Kwiecien and Bert Searles, who will be eligible to win this month (if they fire well enough)!

Hi power rifle league

Jack Spurling, Y-12, won the first match of the High Power Rifle League, with a 485 out of a possible 500. Jack Huff, also of Y-12, placed second with a 463; while A. Abbatiello, ORDGP, scored 458 to place third.

ing, you only squeeze the trigger but not hard enough to fire the shot. You maintain the same pressure on the trigger while the sights are off the bull's-eye, and as they come back on the bull's-eye again, you squeeze some more and maintain the new pressure on the trigger while the sights go off the bull's-eye again. And you continue to do this as your unsteady rifle sweeps back and forth or up and down past the bull's-eye.

At some pressure, the rifle will fire and, if done correctly, the shot will surprise you and your body. Hence no tensing of the body at the wrong time. Unfortunately, you must hold your breath while all this is going on. If your trigger squeeze is too light, it will take forever for the shot to go off. In the meantime, you can tell you are beginning to strangle from lack of air because the bull's-eye becomes difficult to see with the bulging eyes full of tears. And if you are the age that many of us are, i.e., pushing 40 - backwards - the bull's-eye becomes difficult to see at the longer ranges even without holding your breath. Anyway, that, sportsfans, is about seventy-five percent of what it takes to shoot well. The rest is the mechanics of rapid fire and "wind doping" or determining the effect of the wind on your bullets.

In a registered tournament, i.e., one sanctioned by the National Rifle Association, you will shoot 20 shots offhand, and then shoot 20 shots rapid fire (average of six seconds per shot) from a sitting position at the 200-yard range. Then, sequentially, you move to the 300-yard line and shoot 20 shots rapid fire from the prone position, then move to the 600-yard line and shoot 40 shots slow fire (one minute per shot) from the prone position.

"Least antagonistic sport in which one can participate."

The next day you will shoot 20 shots in the prone position from the 1000-yard line. Yep, that's a distance of a little over a half mile. The sight alignment must be about as accurate as it had to be at 200 yards because the

'Bowler-of-the-year'

Ray Smith, Oak Ridge Gaseous Diffusion Plant's Laboratory Division, has been named "bowler-of-the-year" by the Oak Ridge Bowling Association. He is the youngest man to be so named.



Smith

Smith is a certified Junior Bowling instructor-coach, and served two two-year terms as secretary-treasurer of the ORJBA. He has also served as secretary-treasurer of two Y-12 leagues, the Classic and C

Leagues. Smith served as co-director of the first Oak Ridge Mixed Bowling Tournament held last year, and directed the ORBA tournament held last December. He was the director of the All Carbide Mixed Bowling Tournament held earlier this year.

Smith bowls in three leagues regularly, and has been on two city champion teams ... the "Snow White" team in 1972; and the "Ridgers" in 1975.

Bowling, golf scores

Golf leagues in the three Oak Ridge plants have begun and results will appear in coming issues. In the next issue of the News, a breakdown on final results in bowling leagues will wind the season down.

(Last week-end's golf tournaments will also be covered next issue.)

scoring rings are much bigger for the 1000-yard targets. But now (and also at 600 yards) you must carefully allow for changes in the wind. At 1000 yards a wind change of five mph (very slight breeze) will cause the bullet to hit 30 inches away from the point of aim. Since there are only 36 inches from the center of the target to the edge, you can see you must stay alert, to say the least, for any wind changes.

Wherein lies the fun? Target shooting is about the least antagonistic sport in which one can participate. There is no immediate opponent, such as in baseball, or in football, or in tennis, or even in golf. You really are your own worst opponent, for you must try to psych yourself into overcoming your own stupidities. And this is its challenge.

It is also done outdoors, where you are swathed in refreshing breezes. However, these breezes seem to be either gales at temperatures of 30 degrees, or calms at 110 degrees, with torrential rains between. Only lightning will cause a registered tournament to be postponed — temporarily. There is seemingly no exercise. Yet at each firing position one is in a strained, awkward position, so sore muscles are commonplace for civilian shooters after a tournament.

Carbide sponsors miniature tournaments for its employees. If interested in participating, then y'all come — hear?



medicine chest

by T. A. Lincoln, M.D.

(Editor's Note: Dr. Lincoln alternates his regular column with "The Medicine Chest," where he answers questions from employees concerning health in general. Questions are handled in strict confidence, as they are handled in our Question Box. Just address your question to "Medicine Chest," NUCLEAR DIVISION NEWS, Building 9704-2, Stop 20, Y-12, or call the news editor in your plant, and give him or her your question on the telephone.)

QUESTION: "Because of all the recent press releases concerning the various risks involved in taking oral contraceptives, one wonders about the advisability of using these drugs. Can you comment on these risks and put them in the proper perspective, please?"

ANSWER: Oral contraceptives are the most effective method of fertility control. If unpleasant side effects are minimal, they are overwhelmingly preferred over other methods.

Unfortunately, however, a few users may have to pay an appreciable health price for their freedom from mechanical or chemical devices. Taking the pill is less hazardous than being pregnant, but that is little consolation for those who either never intend to get pregnant or who have already had all the children they desire.

Minor side effects

There are several unpleasant, but not dangerous, side effects that cause many women to stop using the pill. A greatly increased frequency of headaches is an occasional complication. Weight gain due to a stimulated appetite discourages many. The bloated, waterlogged sensation late in the cycle due to the fluid and salt retention leads to irritability and listlessness.

Nausea is a common early symptom which usually disappears, but sometimes it hangs on. A few women get unsightly pigmentary changes, often called "blotches," on their face. Some also complain of hair changes. When it comes to a choice between beauty and pleasure, beauty usually wins. Last, but certainly not least, occasional yeast infections of the vagina can be unpleasant enough to cause the weak-hearted to abandon their daily pill.

All the above side effects usually precipitate prompt action because the association of the medicine with the unpleasant side effect is fairly obvious. The long-range hazards are only vague possibilities, and many couples find them easy to ignore. The woman who will eventually develop a serious side effect is always thought to be some "other" woman. The user is confident that, "It will never be me!"

Strokes, clots, tumors possible

The greatest concern is thromboembolic disease. The pill increases the risk of blood clots (venous thromboses), and sometimes pieces of these clots break loose and travel to the lung, causing dangerous pulmonary emboli.

One of the best studies showing this association was published in 1974. Forty-six thousand women who were on the pill were followed about five years. There were five times as many cases of clots in the legs of the women on the pill when compared to a comparable control population not using the pill. There were also four times as many thrombotic strokes (blood clot in an artery which supplies the brain).

In another study done at Duke University, there was a fourfold increase in the incidence of thrombotic strokes for those on the pill when compared to a matched control. There was almost a 25-fold increase in hemorrhagic strokes in those women who had severe hypertension.

The authors urged physicians not to prescribe the pill for women who had high blood pressure. They also felt that heavy cigarette smoking and history of migraine headaches were additional reasons for being cautious.

The pill itself causes high blood pressure in some women, so all users should have a blood pressure check every six to twelve months. It has also been found that the pill occasionally causes an increase in triglycerides and can cause an abnormal glucose tolerance suggesting early diabetes.

With these abnormalities, the risk of heart attacks is increased, but when combined with the active use of the pill, the risk becomes about 2.5 times as great in the 30-39 age group and about 4.5 times as great in the 40-44 year age group.

There is an increased incidence of benign liver tumors and gall bladder disease. The tumors are relatively rare, but the gall bladder disease is fairly common. It is about twice as common in women who have used oral contraceptives than in nonusers, and it is related to the duration of use. Twenty years on the pill apparently leads to a considerably increased frequency of gall bladder attacks.

There does appear to be a benefit, other than preventing pregnancies, from using the pill. There is one report in the literature of a decreased incidence of benign breast tumors in women on the pill.

Who are poor risks?

When one reviews the side effects and long-range health hazards from use of oral contraceptives, it would be easy to say, "Don't ever use them." However, the incidence of serious complications is small. For example, the risk of a thrombotic stroke per year in young women taking the pill has been estimated as 1 in 10,000.

What is needed is better guidance



FORUM OFFICIALS — Officers of the ORNL Information Analysis Center Forum are, from left, Joel Buchanan, secretary; Betty Maskewitz, president; and Helga Gerstner, vice president.

IAC Forum coordinates information center activities

Information centers at Oak Ridge National Laboratory have joined in the information of an umbrella organization, the Information Analysis Center (IAC) Forum, to promote progress toward mutual aims and goals.

Officers for 1976 are Betty F. Maskewitz, president, manager of the Radiation Shielding Information Center (RSIC) and the Biomedical Computing Technology Information Center; Helga B. Gerstner, vice president, director of the Toxicology Information Response Center of the Information Center Complex; and Joel R. Buchanan, secretary, associate director of the Nuclear Safety Information Center located at the Y-12 Plant.

Information centers on increase

During the past 15 years there has been a steady increase in the number of specialized information centers at the Laboratory. These centers have been established in response to needs for technical evaluation of the large volume of information generated by the scientific staff, and computerized repackaging of this information into forms which can be used by and exchanged with other scientists and technical personnel.

There are currently 18 specialized ORNL information centers. Six of these handle information on the bio-

on who should not take the pill because the risk is too high. At present, women who have high blood pressure, diabetes, any known clotting disorders or a history of phlebitis or migraine headaches and who already have risk factors for coronary heart disease, such as cigarette smoking, strong family history of heart disease and serum lipid elevation (cholesterol and/or triglycerides) should probably avoid the pill. Women on the pill absolutely should have a careful breast and pelvic examination with a Pap test as well as a general physical examination at least once a year and preferably every six months.

Couples have to balance risks versus benefits. One compromise is to use the pill during the first ten years of marriage and then plan a weaning process or have the husband get a vasectomy.

logical and environmental sciences, and are operated by the Information Center Complex, Information Division. The others, organized along programmatic lines, handle information on a variety of subjects including nuclear safety, radiation shielding, regional and urban studies, research materials and controlled fusion.

The IAC Forum was organized in 1975 to facilitate coordination among the centers. Objectives of the Forum are to encourage and facilitate cooperation among member centers; to initiate and carry out mutually beneficial projects; to promote and publicize work performed by the centers; and to identify and solve problems of mutual concern.

All ORNL information centers and their personnel are automatically members of the IAC Forum, unless they specify otherwise.

Objectives cited

The IAC Forum has engaged in several activities since its inception last year. The program committee, headed by Betty L. McGill (RSIC), coordinates a lab-wide bimonthly seminar series with guest speakers in the information field. An exhibit on "the history of scientific information handling and sharing" was developed, and is part of the ORNL Exhibits Program.

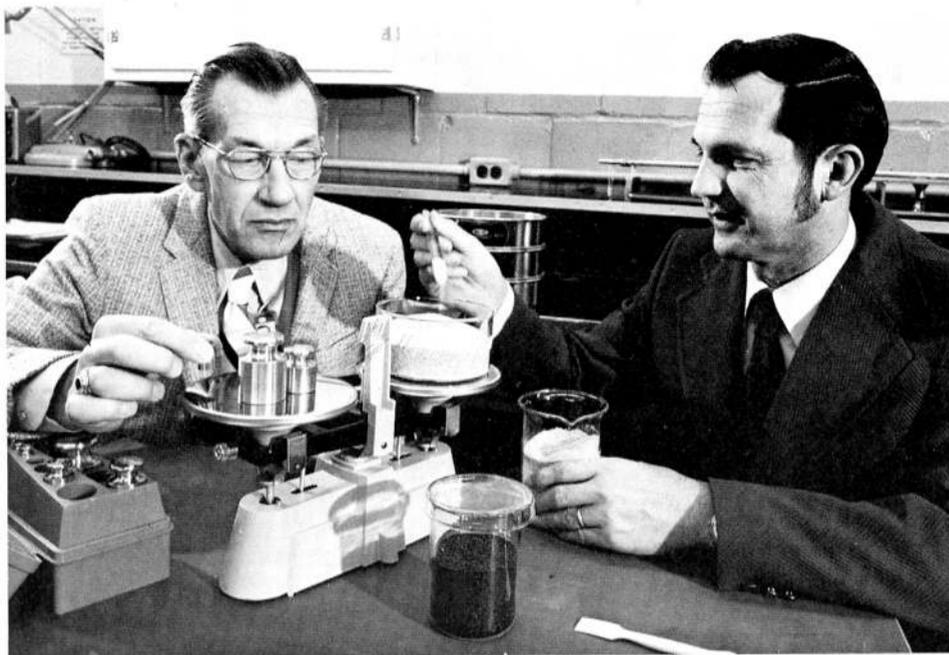
When asked to sum up the IAC Forum's role at ORNL, Mrs. Maskewitz said, "we work together in unison on problems we share in common."

calendar of events

TECHNICAL May 7

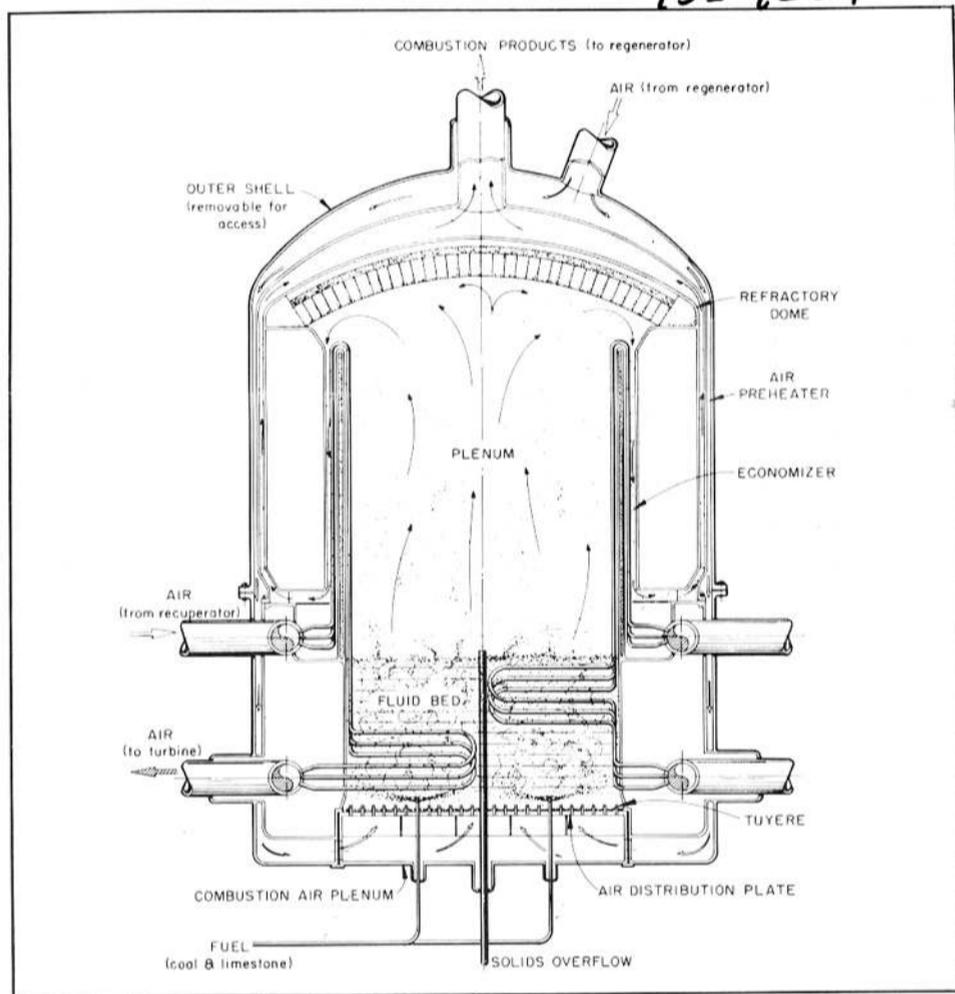
Laboratory-wide seminar, sponsored by Information Analysis Center Forum: "The Argonne Code Center and ERDA Software Sharing." Margaret Butler, director of the code center at Argonne National Laboratory. ORNL central auditorium, 7 p.m.

0134-76



COAL-LIMESTONE FUEL MIX — Fred Lynch, left, and Robert Holcomb measure out limestone (white) and coal (black) particles for a small-scale test of the fluidized bed, coal-burning furnace under development at the Oak Ridge National Laboratory. The limestone particles, which will outnumber the coal by a factor of about 99 to one, will serve the purpose of trapping the sulfur released by the burning of the coal.

75-9227



COLD-FLOW MODEL — This apparatus (located in Building 9201-3) was designed to study the problems associated with feeding fuel into a fluidized bed, coal-burning system.

Coal-burning prototype

(Continued from page one)

recirculate there. The net effect is that most of the sulfur dioxide is retained within the system (as a layer of calcium sulfate on the particles of lime) and does not escape to the environment.

Compressed air inside tubes immersed in the fluidized bed is heated to drive a gas turbine which can produce electrical power. Exhaust air from the turbine can be used for heating or cooling buildings.

Smaller scales used

To date, ORNL has operated two smaller scale, cold-flow versions of the fluidized bed system to investigate questions involving fuel loading

and mixing. One is a 10-inch-square test model used in laboratory studies, while the larger one is about two-thirds the size of the equipment to be installed in the operating prototype.

The ORNL fluid-bed system is being developed by an engineering team led by Arthur P. Fraas of the Energy Division. Other members of the team include Robert S. Holcomb Mack E. Lackey, John T. Meador, John J. Tudor and Marvin E. Whatley. Charles J. Claffey is responsible for the engineering design and Joseph Lewin and John A. Conlin will coordinate construction of the pilot plant.

Family Day May 22

(Continued from page one)

Maps marked with the bus tour route will be provided at the guard gates. Portals to be used for entrance are East and West at the X-10 area and East Portal and the Biology Division entrance at Y-12.

Employees are encouraged to fill out visitor passes in advance of their arrival to avoid congestion at guard gates. Passes will be available from divisional representatives several days before Family Day.

Employees wishing to bring family members who are not U.S. citizens must pre-register them with their divisional offices no later than Tuesday, May 18.

Children of all ages are invited to ORNL Family Day. Parents should remember, however, that no child care facilities are available at either plant.

X-10 area highlights

Some of the highlights to be featured at X-10 are: a glass blowing demonstration at the Plant and Equipment Division; computer games; free blood pressure check; displays of the radiation effects in aquatic ecosystems and mercury in the environment; smoking machines and "Fun with Chemistry" in the Analytical Chemistry Division; demonstration of a miniature fast analyzer used to determine irregularities in certain systems of the human body; mobile displays of various sources of energy and energy programs managed by the Energy Division, and a tour of the Aquatic Ecology Laboratory.

Y-12 features

Featured exhibits and demonstrations at the Y-12 area include:

Thermonuclear Division — Displays ranging from plasma theory to magnetics; the ELMO Bumpy Torus, an electron cyclotron heating experiment; the ORMAK, a thermonuclear fusion research experiment; Fusion Reactor Technology Program; Experimental Power Reactor Program; and more.

Reactor Division — Features will include the Thermo Transient Test facility, which measures the effects of rapid temperature changes on nuclear reactors; and the Fuel Failure Mockup, a simulated test which shows the effects of loss of cooling in reactors.

Biology Division — The materials, instruments and techniques used in various fields of biology will be on display. The Biology Library will be open.

Other Family Day services will include medical stations, a lost and found office, and a refreshment tent at ORNL which will sell soft drinks. Light refreshments will also be available from vending machines in canteen rooms of buildings to be visited. The South Canteen will be closed for remodeling.

Gem, mineral show and sale scheduled May 8

The Knoxville Gem and Mineral Society will sponsor a Gem and Mineral Show and Swap Shop next Saturday, May 8, from 10 a.m. until 6 p.m. at the Children's Museum in Oak Ridge.

Activities will include mineral exhibits (including the Alexander Hollander collection of South American minerals), gemcraft demonstrations, continuous slide shows, and gems and mineral swaps and sales. A panel will be on hand during the day to identify minerals for visitors.

Egg cartons filled with a dozen different kinds of rock or mineral specimens will be on sale by the Society as a fund-raising project.

Marvin T. Morgan, ORNL, is chairman of the Society's Educational Committee, which has handled arrangements for the show and sale. Several other Nuclear Division employees have held office in the Society, including Oscar Sisman, Robert W. McClung and Jack Ogle, ORNL, and Robert Walker, Y-12.



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MOTHER'S DAY