

## Family Day '80 at ORNL scheduled for November 8

Family Day is planned for Saturday, November 8, from 10 a.m. to 4 p.m. at ORNL facilities at both the X-10 and Y-12 locations. Families and friends of Nuclear Division employees and retirees, DOE employees and DOE contractors will have the opportunity to familiarize themselves with the Laboratory through displays, demonstrations, exhibits and guided tours.

Employees must display their badges and register all guests upon entry. Retirees should display either a Union Carbide identification card or some other personal identification.

Advance registration is necessary for non-U.S. citizen family members. Forms are available from Family Day division representatives and must be received by division offices for approval by Monday, November 3.

Entry into the plants will be through the East and West Portals at

ORNL and through the East Portal at Y-12 and into Biology Division facilities.

Visitors of all ages are invited to attend Family Day, but parents should remember that no child-care facilities are available.

Highlights to be featured at Y-12 include:

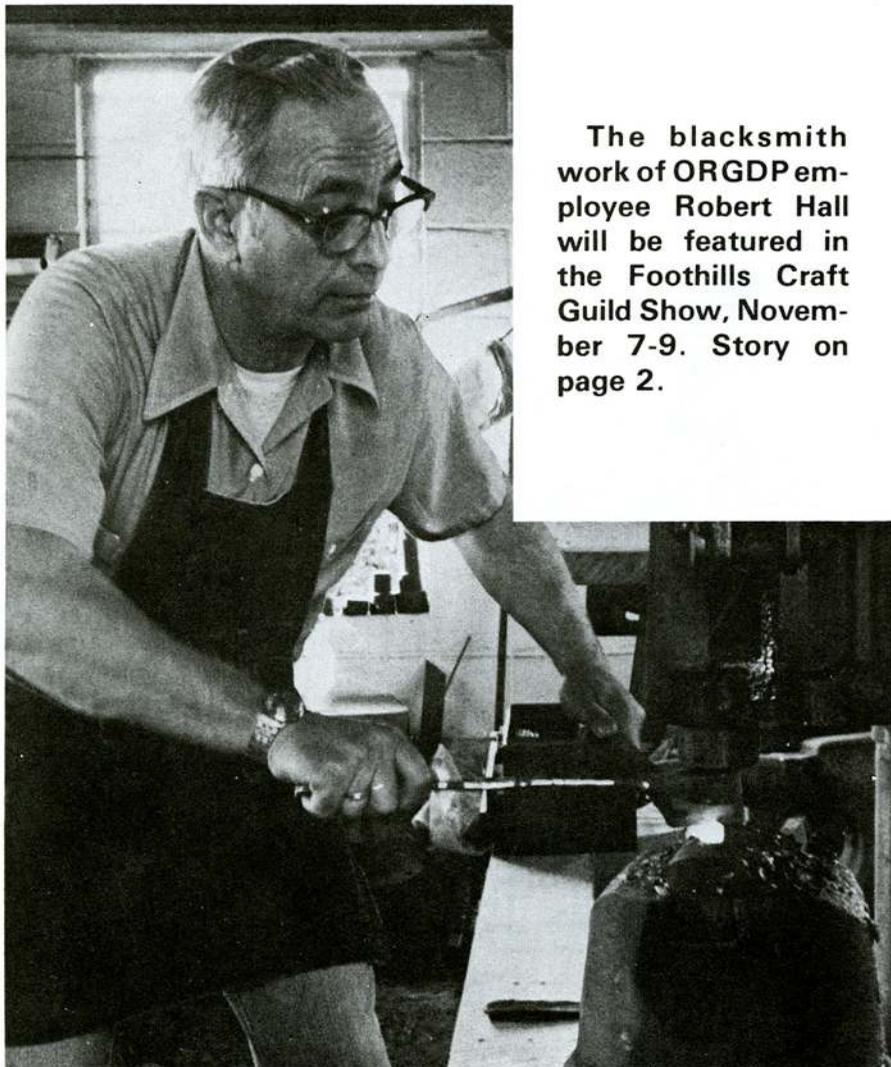
- A test facility demonstration simulating aspects of a hypothetical Liquid-Metal Fast-Breeder Reactor (LMFBR) accident
- Experimental facilities for testing the efficiency of appliances, including dishwashers, clothes washers, refrigerator/freezers and advanced water heaters
- A display of mice from the world's largest mammalian genetics facility

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**RECEIVES AWARD**—Charles D. Scott (right), associate director of the Chemical Technology Division at ORNL, receives the 1980 Ernest Orlando Lawrence memorial award from Worth Bateman, acting under-secretary of the Department of Energy. The award was made last week at the James Forrestal Building in Washington, D.C., and included a plaque, a medal and \$5,000. Other Nuclear Division staff members who have been honored with the Lawrence award include Paul R. Vanstrum, John M. Googin, John B. Storer, Adolphus L. "Pete" Lotts, James R. Weir, Chester R. Richmond and Dean A. Waters and former staff members Alvin M. Weinberg and Floyd L. Culler.

### *In this issue...*



The blacksmith work of ORGDP employee Robert Hall will be featured in the Foothills Craft Guild Show, November 7-9. Story on page 2.

#### Other features in this issue:

Question box ..... page 3  
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Dr. Lincoln ..... page 7

### *Corporate world of Union Carbide*

THE SUCCESSFUL STARTUP of the first phase of a 70-million-pounds-per-year ethyleneamines expansion program at the Taft, La., chemicals and plastics complex has been announced by Union Carbide.

The completed first phase has added 10 million pounds per year to the combined 130 millions pounds of ethyleneamines nameplate capacity in place at the Taft and Texas City, Tex. plants. The second and final phase of the program, slated for completion by the first quarter of 1981, will boost ethyleneamines capacity by an additional 60 million pounds, bringing total nameplate capacity to 200 million pounds per year.

Union Carbide is a pioneer in the development of ethyleneamines and produced the first commercial quantities in 1936. Since then the company has continued to expand production capacity and improve technology to remain the world's largest and most innovative producer.

UNION CARBIDE CORPORATION will build a silicones production facility at its South Charleston, W. Va. complex. Detailed engineering is underway with ground breaking slated for 1981. Scheduled to go on-stream in mid-1983 to manufacture a range of silicone products, the new facility will represent a capital investment of approximately \$150 million.

The new facility will be Union Carbide's second United States silicones plant and the second largest of the six worldwide facilities of Union Carbide and its affiliates. The productive capacity will substantially increase the corporation's ability to support a variety of high-technology silicones markets in which Union Carbide has always played a leading role — silicone surfactants and organofunctional silanes, as well as volatile silicones, standard and specialty oils, antifoams, emulsions and gum and elastomer intermediates.

Silicones are used in a multitude of industrial, commercial and consumer products, such as textiles, paper manufacture, paint additives, cosmetics, pharmaceuticals, polishes, glass fibers, adhesives, electronics and lubricants.

### Surplus sale set in November

Another "spot bid" sale of surplus vehicles and office equipment is being held. Inspection of the items may be made from 8:15 a.m. to 4:10 p.m. through November 11, including Saturdays, November 1 and 8.

Bids will be opened at 9 a.m. November 12.

Additional information may be obtained from D. R. McCammon, extension 6-1451.

# Employees participate in Foothills Craft Guild Show

Union Carbide employees and their families will be well represented in the 14th annual Foothills Craft Guild show November 7-9 at the Oak Ridge Civic Center. Some 20 families will participate, demonstrating their skills in pottery, blacksmithing, toymaking, quilting and many other crafts. They will join more than 60 other craft workers from a total of 23 Tennessee communities for one of the largest craft fairs in the area.

Participants include: Nancy (Mrs. David) Braski, exhibiting natural fiber baskets; James E. Brewer, displaying bolo ties and other accessories; and his wife, Jo, daughter, Elaine, and son, Mike, who work in stained glass; Ronald Carroll, who makes pictures from pressed wildflowers.

Jean (Mrs. Thomas) Cole, exhibiting pottery; Ann (Mrs. Edward) Frome, who works in macrame; Barbara (Mrs. W. D.) Hackett, displaying nature notes and enamels;

Robert Hall, who works as a blacksmith, with the aid of his wife, Elo-gene; Sandy (Mrs. Harold) Hartman, displaying quilts, quilted bags and soft toys; Peg (Mrs. Fred) Heddleston, who produces a variety of ceramic items;

George Kidd and his wife, Judy, the toymakers; Eun Sook (Mrs. Hee J.) Kim, displaying pottery; Jude (Mrs. Don) Martin, showing stuffed toys, soft sculpture and "wearable art" — handmade clothing — new this year;

Lowell McCauley, who does chair caning; and his wife, Nancy, who designs and works in needlepoint; Olive (Mrs. James) Morrison, with pine cone wreaths; Uldean (Mrs. John D.) Osborne, exhibiting crocheted items;

David Sampson, who makes doll houses; Jeanette (Mrs. Lawton) Smith, a potter; Betty (Mrs. George) Thoeming, who spins yarn and weaves it into fabric; and Herman Weeren and his wife, Fran, in a unique cooperative venture — she makes pottery and he glazes the products.

Hours of the Guild show are 10 a.m. to 9 p.m. Friday, November 7; 10 a.m. to 8 p.m. Saturday, November 8; and 1 to 6 p.m. Sunday, November 9.

A single ticket admits the bearer to all three days of the show, and it may also win one of the gift certificates to be given away throughout the show.

The display is sponsored by the Foothills Craft Guild and the Oak Ridge Department of Recreation.

## Energy facts

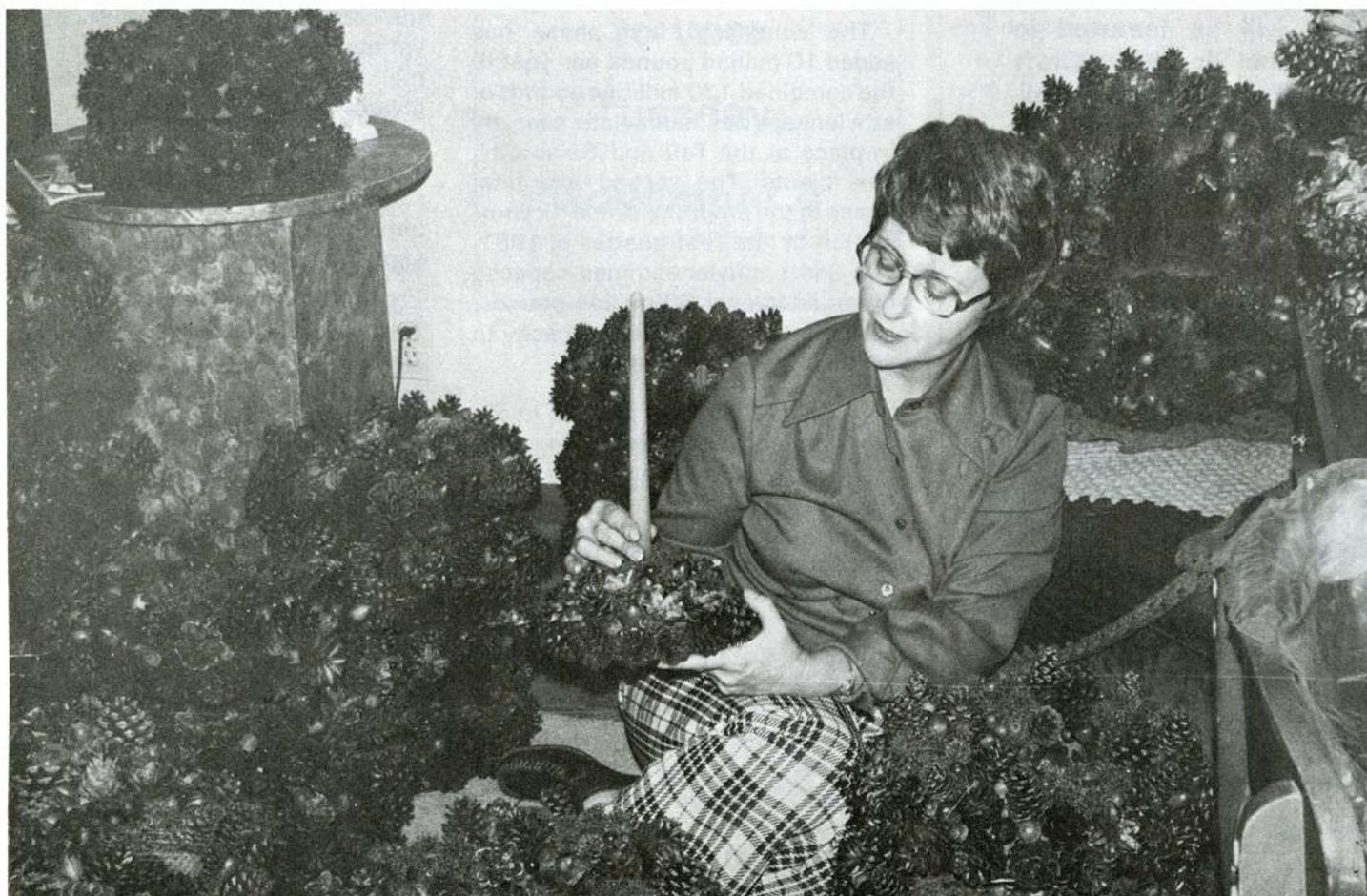
Thirty-seven percent of all energy used in the United States in 1978 was consumed in residential and commercial buildings. An estimated 60 percent of that energy is consumed in residential buildings, and 40 percent in commercial buildings.



George Kidd, toymaker



Pottery by Herman Weeren



Christmas decorations by Olive Morrison

## Nuclear Division News

UNION CARBIDE

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# Y-12 promotions announced

A number of promotions have been announced recently in the Y-12 Plant. Thomas R. Amos, Arnold A. Barnes, John T. Denson, Verlin E. Galyon, Clarence E. Hawkins, Carl H. Linginfelter and Lendon O. Wilson have been promoted to craft foremen in the Fabrication Division; Julia K. Lay has been named a dispatching foreman in Product Engineering and Scheduling; Connie P. Hall has been named an accounting supervisor in Technical; and James W. Taylor has been promoted to a supervisor in the Maintenance Division.

Amos, a native of Loudon County, joined Union Carbide in 1969 after working with Eaton Yale and Towne (now Scovill Manufacturing). He attended Tennessee Technological University. Married to the former Sammie Mourfield, he lives at Route 8, Lenoir City. The couple has a son, Timothy.

Barnes was born in Orme, Tenn., and joined Union Carbide in 1970 as a welder. He has worked as a sheet metal worker and a planner-estimator. Mrs. Barnes is the former Linda Lovely, and they live at 7301 Evanel Way, Powell. They have two sons, Brent and Keith.

Denson, a native of Orlando, Fla., attended Brevard Community College. He worked at Cape Kennedy, Fla., before joining Union Carbide last year. Mrs. Denson is the former Marlene Young, and they live on Shipe Road, Claxton, with their daughters, Teresa and Christy.

Galyon is a native of Roane County and is a graduate of the Training and Technology (TAT) Project in Y-12. He joined Union Carbide in 1967. He and his wife, the former Marcie Colboch, live at Route 2, Sweetwater. They have three children, Celissa, Mitchell and Ginger.

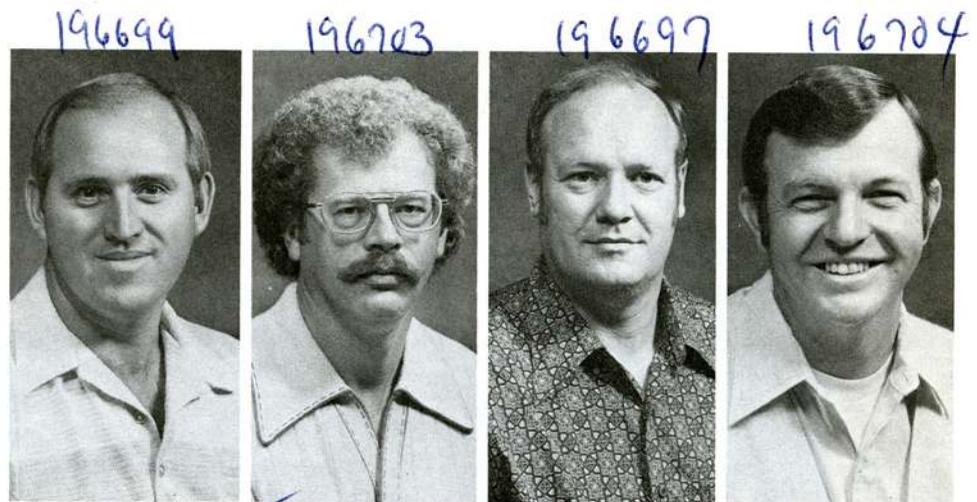
Hawkins was born in Caryville and also graduated from the TAT project. He was employed for six years with Oak Ridge Associated Universities before coming to Union Carbide in 1969.

He and his wife, the former Betty Jo Burum, live at 240 South Benedict Avenue, Oak Ridge.

Linginfelter is a native of Friendsville, Tenn., and lives at Route 2, Lenoir City. He was employed by the Caterpillar Tractor Company, Joliet, Ill., before coming to Y-12 in 1969. He has a son, Steven.

Wilson was born in Jacksboro and has attended Draughon's Business College and the University of Tennessee. He worked with Combustion Engineering before coming to Y-12 in 1970. Mrs. Wilson is the former Betty Harness. The couple lives at Route 1, Jacksboro, with their children, Robyn and Melissa.

Lay, a native of Clinton, is attending the University of Tennessee. She joined Union Carbide in 1967 after working with the City of Oak Ridge. She and her husband, Del, live at 12213 West Kingsgate Road, Concord. They have three sons, Michael, Kevin and David.



Amos

Barnes

Denson

Galyon



Hall

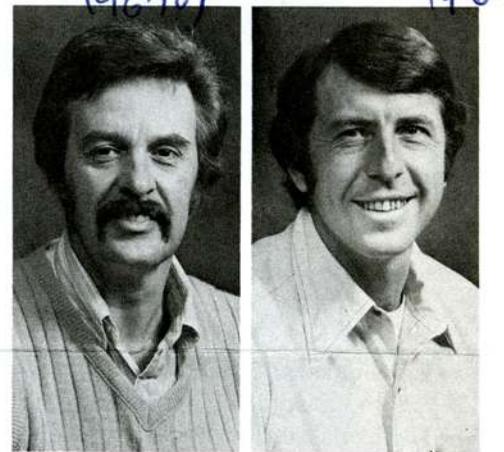
Hawkins

Lay

Linginfelter

Taylor was born in Cleveland, Ohio, and worked with Eaton Corporation and TRW before joining Union Carbide in 1976. He attended Case Western Reserve University. He and his wife, the former Nancy Van Voorhis, live at Route 20, Glastonbury, Karns. They have a daughter, Meg Perry; and three sons, Nicholas, Blake and Michael.

Hall was born in Lenoir City and has attended Roane State Community College and the University of Tennessee. He worked with Elm Hill Meats, Inc., before joining Union Carbide in 1976. She and her husband, E. B. "Buddy," live at Route 8, Lenoir City. They have two children, Tony and Tammy.



Taylor

Wilson



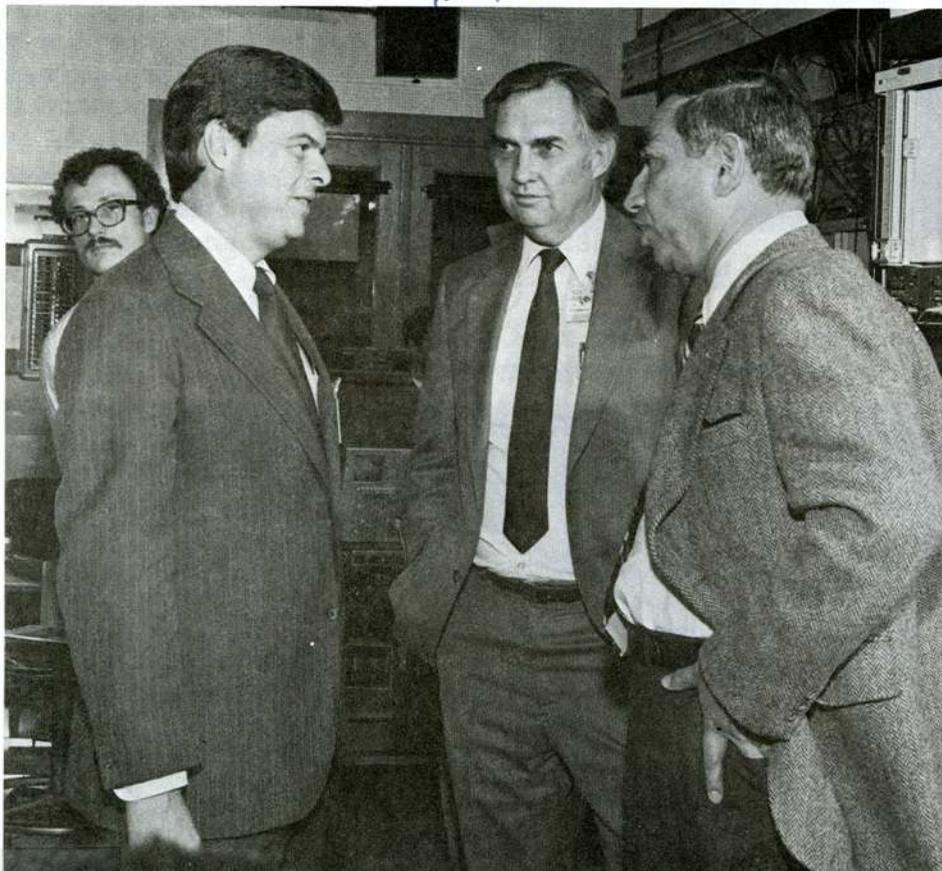
## Question Box

### Does Carbide offer free passes?

**QUESTION:** Some area companies give free passes to employees for recreational facilities in the surrounding section. Does Union Carbide offer any such tickets?

**ANSWER:** It is not Nuclear Division policy to promote certain businesses by purchasing tickets for our employees. However, without solicitation on our part, we receive discount tickets that we make available

to our employees through the Recreation Department for attractions such as Opryland, Silver Dollar City, Six Flags, Disney World, King's Island and Carowinds. A discount ticket entitles the holder to a discount on the purchase price of a ticket when he/she purchases it at the gate. The discount is \$1 in many cases, 10 percent in others, and from \$5 to \$7 at Disney World. If you are interested, call Bill Maddux at extension 4-1598.



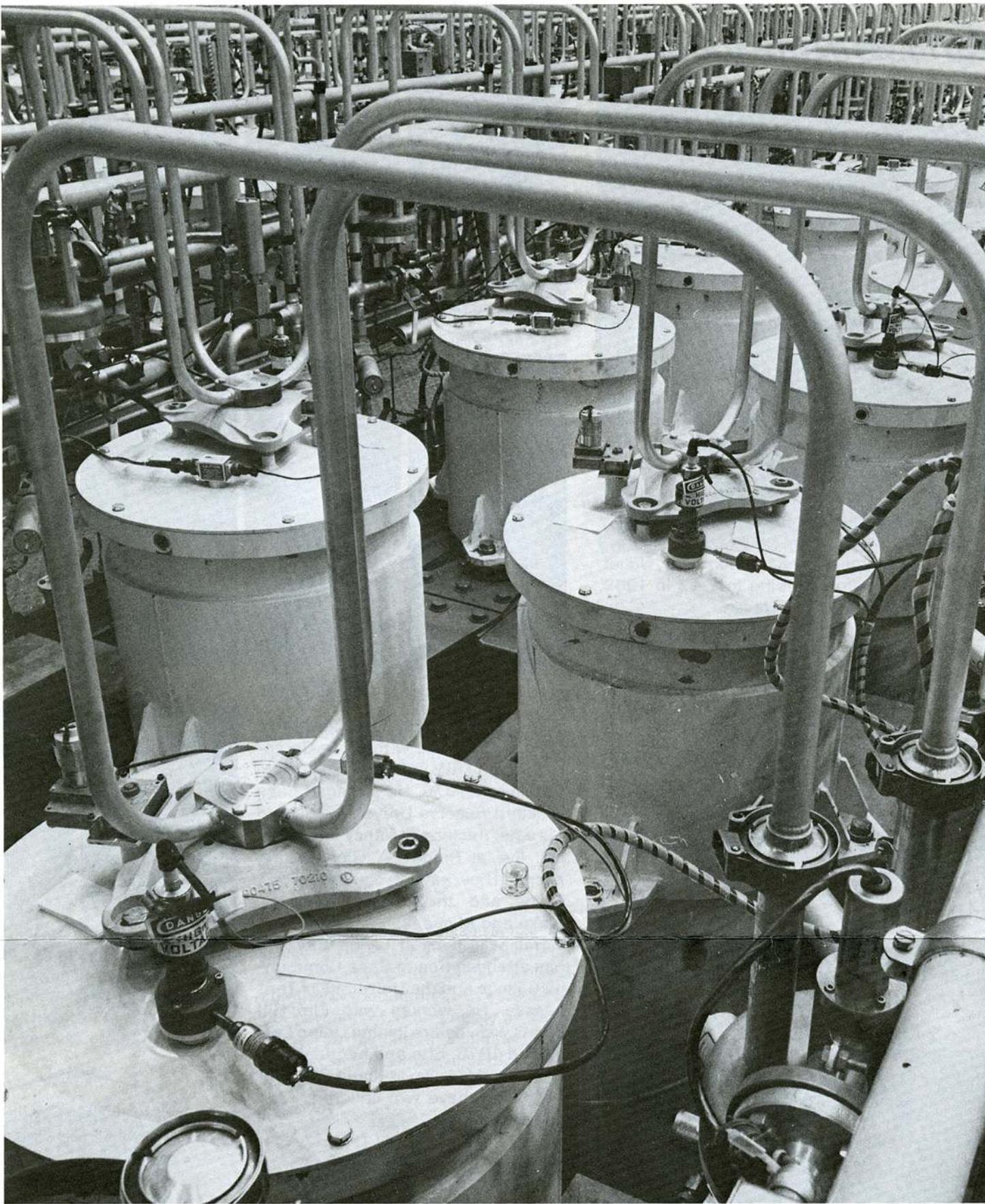
**SASSER VISIT**—Sen. James R. Sasser visited ORNL's Fusion Energy Division earlier this month for a briefing on EBT-P, the proof-of-principle EBT fusion device to be built in Oak Ridge through subcontract with McDonnell Douglas Astronautics Company. Sasser is shown here in the EBT control room talking with Bill Morgan, Fusion Energy Division director (center), and Murray Rosenthal, ORNL associate director for advanced energy systems and acting fusion program director. At left is John Glowienka of the EBT experimental staff.

## Safety Scoreboard

Time worked without a lost-time accident through October 23:

Y-12 Plant.....	31 Days	1,015,000 Employee-Hours
ORGDP .....	34 Days	1,036,948 Employee-Hours
ORNL .....	164 Days	3,930,158 Employee-Hours
Paducah.....	86 Days	823,000 Employee-Hours

OR077-170



Second generation gas centrifuge machines in a Nuclear Division test facility.

# The gas ce A 'new' loc

(Editor's note: The following is the fi  
status of the Nuclear Division's curre  
at Portsmouth, Ohio.)

Over the past several years a  
Division vocabulary, which alrea  
"OCPO"..."AETF"..."CPDF"..."G  
tall white buildings on the south  
of which can be confusing to th

The basis for all of this lies in Presid  
the next U.S. uranium enrichment facil  
built at the site of the Portsmouth (Ohio  
Division, which has been the governm  
research for some 20 years, is playing a  
industrialize this process. ORGDP has  
facilities to improve centrifuge machin  
to scale up and demonstrate centrifug

### Goal: uranium enrichment

The goal of both of the gaseous  
diffusion and gas centrifuge pro-  
cesses is the same: to enrich ura-  
nium for use as fuel in nuclear  
reactors. Only seven-tenths of one  
percent of the uranium found in na-  
ture is U-235, the fissionable iso-  
tope needed for power plants; the  
remainder is U-238. Most nuclear  
power plants require uranium that  
has been enriched to about three  
percent U-235, more than four times  
the amount that occurs naturally.

(Isotopes are atoms of a chemical  
element that have different numbers  
of neutrons in their nuclei, causing  
them to have different atomic  
weights. Although both U-235 and

Near ORGDP's main entrance, centrifuge development facilities and office buildings have changed the skyline.

OR079 251



# Centrifuge program: Work in uranium enrichment

...st of two articles dealing with the history of gas centrifuge development, the  
...nt centrifuge program and progress on the Gas Centrifuge Enrichment Plant

...collection of new acronyms has made its way into the Nuclear  
...dy abounds with them. We've been hearing them more and more:  
...CEP." Along with the new terms has come the construction of the  
...east side of ORGDP — and a lot of talk about "gas centrifuge," much  
...ose of us not directly involved.

...ent Carter's 1977 announcement that  
...ty would be a gas centrifuge plant, to be  
...Gaseous Diffusion Plant. The Nuclear  
...ent's largest contractor in centrifuge  
...lead role in the program to develop and  
...become the site of various development  
...s and their associated equipment, and  
...e technology.

U-238 are the same chemical ele-  
...ment, uranium, the U-238 atoms  
...have a greater number of neutrons in  
...their nuclei than do the U-235  
...atoms.)

Almost all of today's reactor-grade  
...uranium has been enriched by gase-  
...ous diffusion, the process that is the  
...basis of production at both ORGDP  
...and PGDP. In this process, uranium  
...hexafluoride gas ( $UF_6$ ) is compressed  
...and pumped into a diffuser unit con-  
...taining many barrier tubes with por-  
...ous walls. As the gas flows along the  
...walls of the porous tubes, half of it  
...diffuses through the walls.

Because the gas molecules con-  
...taining U-235 are lighter than those  
...containing U-238, they travel at a  
...greater velocity, and more of them  
...diffuse through the barrier pores  
...than do the molecules containing U-  
...238. The result is that the gas that  
...flows through the barrier pores is  
...slightly enriched in U-235 and the  
...gas that does not is depleted in U-  
...235.

The degree of enrichment obtained  
...in a single diffusion operation is quite  
...small, so enrichment of uranium for  
...reactor fuels requires that the diffu-  
...sion process be repeated many  
...hundreds of times. This is done by  
...coupling the diffuser units —  
...“stages” — in a series arrangement  
...called a cascade. Because pumping  
...the gas through each stage requires  
...very large amounts of electric power,  
...researchers began some 20 years  
...ago to be interested in the centrifuge  
...process, which held the promise of  
...being less power-consuming.

## Centrifuge technique

The gas centrifuge method for  
...enriching uranium is also based on  
...the fact that  $UF_6$  molecules contain-  
...ing U-235 are lighter than those con-  
...taining U-238. In this process, the  
... $UF_6$  gas is fed into the mid-section of  
...a rotor, a vertical cylinder that spins  
...at high speed inside a vacuum cham-  
...ber.

As the gas spins inside the rotor,  
...centrifugal force causes the heavier,  
...U-238-containing molecules to  
...move outwards toward the wall of  
...the rotor, leaving the gas near the  
...center of the rotor enriched in U-235.  
...The spinning also results in an inter-  
...nal circulation of gas up and down  
...the height of the rotor, which  
...increases the amount of enrichment  
...and makes both the enriched and  
...depleted gas easier to remove: de-  
...vices called scoops extract some of  
...the gas layer near the wall at the top  
... (enriched in U-235) and bottom  
... (depleted in U-235).

## A centrifuge plant requires only about four percent of the electrical power needed for a diffusion plant with the same enrichment capacity.

Since each centrifuge can process  
...only a small flow of  $UF_6$ , a number of  
...centrifuges are operated in parallel  
...to form one gas centrifuge stage. The  
...number of centrifuges per stage is  
...reduced in each succeeding stage as  
...the gas becomes increasingly  
...enriched. As in the gaseous diffu-  
...sion process, the stages are then  
...grouped together in series to form a  
...cascade.

## Some differences

There are several distinctions  
...between the design of a gas centri-  
...fuge cascade and that of a gaseous  
...diffusion cascade. In the gaseous dif-  
...fusion process, the stages are  
...grouped in a cascade because,  
...although a very large amount of gas  
...can be processed in one stage, the

amount of enrichment that can be  
...achieved in one stage is very small.  
...With large, high-speed gas centri-  
...fuge machines, it is possible to obtain  
...a much higher degree of enrichment,  
...but only a small flow of gas can be  
...processed by each machine.

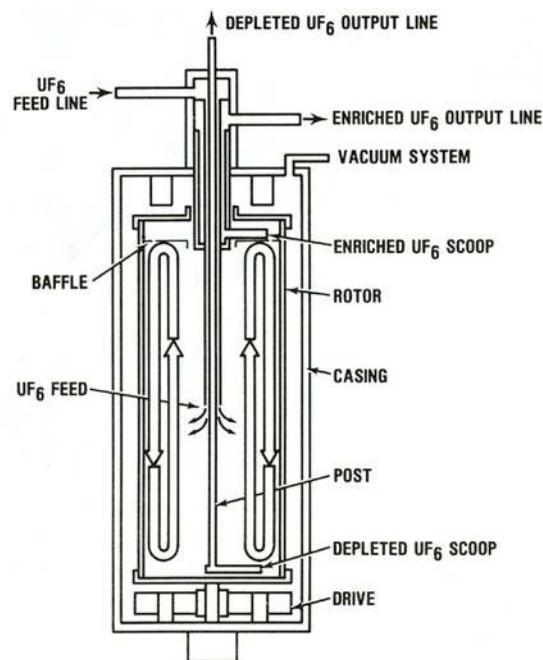
For this reason, the diffusion and  
...the centrifuge cascade arrange-  
...ments look quite different. A gaseous  
...diffusion cascade uses many  
...hundreds of stages, with one diffuser  
...per stage, joined in series. A gas  
...centrifuge cascade uses many centri-  
...fuge machines operating in parallel to  
...form each stage, but only a few of

these stages need to be joined in  
...series.

The most important difference  
...between the gaseous diffusion and  
...gas centrifuge processes is power  
...usage. A centrifuge plant requires  
...only about four percent of the electri-  
...cal power that is needed for a diffu-  
...sion plant with the same enrichment  
...capacity. For a plant with the produc-  
...tion capacity planned for the Ports-  
...mouth plant, the difference in the  
...amount of power required is enough  
...to provide electricity to 500,000  
...homes — equal to the power usage of  
...the four largest cities in Tennessee  
...combined! In addition to saving  
...energy, a centrifuge plant would  
...require considerably smaller

DWG K/G 78-134

## GAS CENTRIFUGE



This cross-sectional drawing of a gas centrifuge shows its basic components. The feed, enriched and depleted lines remain stationary while the rotor spins.

amounts of cooling water, another  
...important environmental consideration.

## Process not new

The use of gas centrifuges to  
...separate isotopes was suggested as  
...early as 1919, shortly after the exis-  
...tence of isotopes was discovered.  
...Researchers were unsuccessful in  
...making the technique work, how-  
...ever, until 1934, when Jesse W.  
...Beams of the University of Virginia  
...demonstrated an operating ultra-  
...high-speed centrifuge and soon there-  
...after successfully enriched the iso-  
...topes of chlorine. Beams, a pioneer  
...in this field, pursued centrifuge  
...research for more than 40 years and  
...was actively involved in the U.S.  
...centrifuge development effort for ura-  
...nium enrichment at the time of his  
...death in 1977.

Although an attempt was made  
...during World War II to enrich ura-  
...nium for military purposes using the  
...centrifuge technique, the electro-  
...magnetic (calutron) process and the  
...gaseous diffusion process were  
...judged to be surer and more direct  
...production-scale methods, and they  
...were chosen for use at Oak Ridge at  
...the Y-12 and ORGDP sites. Work on  
...the centrifuge process was resumed  
...after the war, and in 1955 the Atomic  
...Energy Commission (AEC) provided  
...funds to reactivate work on gas cen-  
...trifuges at the University of Virginia.

## Progress in '60's, '70's

Five years later, the AEC autho-  
...rized a three-year, \$6 million pro-  
...gram for the development,

(Please turn to page 8)

## Around the alleys...

### ORNL "A"...

The Limits moved into first place over the Dynamics by three points in the ORNL "A" League. Weekly prizes went to the Half Frames for high handicap series of 3027. Ray Smith, Zots, rolled a 677 high handicap series. Knee, Turkeys, won the high handicap game with a 252. Montgomery and Callaham rolled a 213 high scratch game.

### ORGDP Women's...

The Payoffs have a commanding lead over the Spotters in the ORGDP Women's League. The Woodbees are in third place. Elaine Griffies was bowler of the week, rolling a 255-233-224 = 712 handicap series. The Spotters won high handicap game and series with a 909/2570.

### K-25 Tuesday Men's...

The Mishaps lead over the Valve Shop in the K-25 Tuesday Men's League. J. H. Peer, All Stars, rolled a 563/659 high series. J. W. Stapleton, City Slickers, won the weekly high game of 240/268.

### Y-12 Classic...

The Splinters hold a slight edge in the Y-12 Classic League, two points ahead of the All Stars. Scott Krebs holds high series, a 712; while Ray Smith rolls the high single, a 287. The Atta-Boys hold high singles, 1135; and high series, 3209.

### Monday Mixed...

The Monday Mixed League saw the Free Spirits slip from first to third place with the Four Eagles and 3 Tall-I Short taking over first and second places. The Pacesetters now have high team game and series with 722/2132. Churchill Moore, Pacesetters, bowled a 255 game recently with a 609 series to lead the men.

### K-25 Wednesday Men's...

The Longshots lead by 2½ points over the Operators in the K-25 Wednesday Men's League. Weekly prizes went to the Destroyers for their 1058/3054 high handicap game and series. Those scores put them into third for the season. Burl White, Demons, won high scratch series rolling a 584. Ellis Kerns, Protectors, rolled a 245 scratch game and a 640 high handicap series.

### UCC Mixed...

The Split Images have a two point lead over the Alley Wreckers in the UCC Mixed League. The Safeguards took first place for team high handicap series, rolling a 2469. The Squeakers are in first place for the season high handicap game with an 899. Vicky Steward, Alley Cats, holds the individual season high handicap series of 676. Eileen Hyland, Alley Wreckers, holds the individual season high handicap game rolling a 258.



**HOT SPARKS**—Winners in the Carbon Softball League, West Division, with a record of 15 wins, no losses, were the Sparks. On the front row, from left, are Don Weiger, Pam Thomas, John May, Sherri Stiltz and Mavis Stapp. In the rear are Charles Nichols, Jim Hickey, Jim Foster, Wayne Rivers, Randy Burnett and Steve Floyd.

### Hi Power Rifle...

The first, second and third place winners in the scratch division of the 1980 High Power Rifle League are Frank Barnes, Larry Weston and Don Kiplinger respectively. Similarly, handicap winners are Roger Wiegand, Paul Glover and M. A. "Bud" Baker.

### Table Tennis...

A Union Carbide Table Tennis Club is now being formed. It will meet Tuesdays from 6 to 10 p.m. at the Jaycees' Clubhouse.

More information may be obtained from Bill Capshaw, extension 6-2597.

### From DOE...

## Winter tips for saving energy

The following energy-saving tips, provided by DOE, are recommended for all homes, no matter what type of heating system is used.

*Insulate* your attic and exterior walls to levels recommended for your area.

*Caulk and weatherstrip* cracks around doors and windows.

*Install storm windows* or cover windows with a sheet of clear plastic.

*Close off* unoccupied rooms.

Use kitchen, bath and other ventilating fans *sparingly*.

*Reduce the temperature* setting on your hot water heater to the lowest effective temperature.

### Savings Plan-Personal Investment Account

	Fixed Income Fund	UCC Stock	Equity Investment Fund
December 76	13.0553	59.2723	8.8166
December 77	14.2017	40.9096	8.0427
June 80	17.6596	43.4691	10.7992
July 80	17.7883	44.7291	11.4957
August 80	17.8746	46.0592	11.5199
September 80	18.0487	46.4911	11.7894

Note: Fixed Income Fund unit values reflect interest additions to achieve the guaranteed effective annual interest rate of 9.1% for 1980. Union Carbide stock values are the average cost of stock purchased during the month. Equity Investment Fund unit values represent the month-end market value of securities held by the Fund. The price of each unit is determined by dividing the total value of the securities by the number of units in the Fund.



**CAST FROM HIT**—Members of the cast of "You Can't Take It With You" include John McBride, from left, Libbie Landers, Charles Crume and Murray Hanig. The comedy may still be seen this weekend, October 31 and November 1, at 8:20 p.m. at the Oak Ridge Playhouse. Season subscriptions are also available at the box office during the run of the current comedy.



**GOLF CHAMPS**—Dead Horse Lake Golf League champs line up for trophies, from left, Bill Butterini, Joe Pryson, Harold Alvey and Mac Wright.



## Kentucky's contribution to abdominal surgery

by T. A. Lincoln, M.D.

On Christmas Day, 1809, Dr. Ephraim McDowell successfully removed a 22-pound ovarian tumor from the abdomen of Jane Todd Crawford. Those who continue to be awed by great medical centers and universities should remember that abdominal surgery originated in a humble second-story bedroom in Danville, Ky. The surgeon has received abundant recognition, but the woman patient in the case has largely been ignored. Without their combined determination to attempt the impossible, abdominal surgery might have been delayed for another 25 to 50 years.

Dr. McDowell received an excellent education, probably because his father was an educated man and respected judge. After completing private school at age 19, he took an apprenticeship in medicine under a successful practitioner in Staunton, Va. At age 22, he traveled to the University of Edinburgh in Scotland, where he attended lectures, studied anatomy and absorbed the intellectual stimulation of one of Europe's foremost medical centers. He did not obtain a Doctor of Medicine degree.

When only 24, he returned to Danville and joined the practice of a local physician. He rapidly developed a reputation as a skillful and humane physician with special talents in surgery.

### Came from pioneer family

Jane Todd Crawford, the patient, did not marry until she was 30. She had come from a pioneer family and lived with her husband and three children in a log cabin some 60 miles from Danville. Early in 1809, when she was 46, she began to develop a progressive enlargement of her abdomen. It was assumed that she was pregnant. She developed pains similar to labor pains, and two physicians assumed that difficult labor was about to occur. They therefore asked Dr. McDowell for a consultation. He rode to her home on horseback, arriving on December 13. He examined his patient carefully (something the local physicians obviously had not done) and realized immediately that she was not pregnant and probably had a large ovarian tumor or cyst.

Dr. McDowell told her that she would die. "Having never seen so large a substance extracted, nor heard of an attempt, or success attending any operation, such as this required, I gave to the unhappy woman information of her dangerous situation. She appeared willing

to undergo an experiment, which I promised to perform if she would come to Danville..."

There was no way to get to Danville except on horseback, and, in Dr. McDowell's own words, "This appeared almost impracticable by any, even the most favorable conveyance." Nevertheless, she arrived in Danville a few days later with her abdomen badly bruised from the tumor banging against the abdominal wall, which rested on the saddle horn during the trip.

General anesthesia was unheard of, so only laudanum (a crude extract of opium) could be used. It could only be given by mouth, since the hypodermic needle and syringe had not been invented. The total operation took 25 minutes.

### Traveled on horseback

Mrs. Crawford was up making her bed within 5 days and returned to her home on horseback in the dead of winter 20 days later. Her tumor was a pseudomucinous cystadenoma (a benign cystic tumor of the ovary). She lived until she was 78. She and her husband were people of substance and were actively involved in the affairs of the community and church. Their youngest son, who saw his mother ride away to almost certain death when he was six, eventually became mayor of Louisville.

Dr. McDowell's success was not a miracle. He repeated the operation on 13 patients with 8 cures, 4 deaths and 1 failure, the latter due to adhesions. His first paper, "Three Cases of Extirpation of Diseased Ovaries," appeared in the October 1816 Philadelphia Eclectic Repertory and Review. A second article was published in 1819.

When one considers that anesthesia, hypodermic medications, antiseptics, most surgical tools and antibiotics were unknown, Dr. McDowell's courage is impressive. His understanding of anatomy and surgery and his willingness to break with tradition were many years ahead of his contemporaries. He was intelligent, aggressive and courageous. He became a pillar of his community and was active in the founding of Centre College in his home town.

We should not forget, however, the remarkable woman who allowed him to become the father of abdominal surgery. Her intelligent analysis of her desperate predicament and her courage certainly qualify her to be called the "mother" of abdominal surgery.

## News About People



Dr. Haschek

Dr. Witschi

Wanda M. Haschek and Hanspeter Witschi, researchers in ORNL's Biology Division, have been certified in general toxicology by the American Board of Toxicology, Inc. (ABT). Their certification was based on passing all three parts of the ABT's first certification examination, administered in August.

Both Dr. Haschek and Dr. Witschi are currently involved in studies of the toxic effects of chemicals, with particular attention to pulmonary fibrosis, the formation of excess fibrous tissue in the lungs.

Dr. Haschek, who joined the Biology Division in 1978, received the

BVSc degree from Sydney University, Australia, and worked in Australia for two years in veterinary practice before coming to this country in 1974. She received the PhD degree in veterinary pathology from Cornell University and was a post-doctoral fellow for one year in the Pathology Department of the University's New York State Veterinary College.

She and her husband, Vincent F. Hock, live on Tanglewood Drive in Harriman.

Dr. Witschi joined the Biology Division in 1977 after eight years on the faculty of medicine at the University of Montreal, Canada. He received the MD degree from the University of Berne in 1960. Dr. Witschi came to the United States in 1967 as a research associate in the University of Cincinnati's Department of Environmental Health and spent the next two years as a research associate in the University of Pittsburgh's Department of Pathology.

He and his wife, Christine, and their two sons live at 1022 West Outer Drive, Oak Ridge.

## Anniversaries

### Y-12 PLANT

#### 30 YEARS

Stanford G. Hull, Advance Systems — Preproduction; Tripp S. Swindle, A Wing, H 2 and F Area; J. P. Ross Jr., Research Services; Newton E. Hamby, Alpha 5 North Shop; Elias W. Whitfield Jr., Production Radiation Testing; John R. Johnston, Electrical and Electronics; James A. Coleman, Alpha 5 Processing.

#### 25 YEARS

Carroll C. Price, William J. Grubb and Tommy R. Justice.

#### 20 YEARS

George R. Bright, Leeman E. Underwood, Billy R. Sparks, Leslie R. Shular, John E. Acuff Jr. and Gordon L. Rule.

### ORNL

#### 30 YEARS

Neil M. Atchley, Metals and Ceramics.

80-3670



**SAFE GROUP**—The second shift of Mechanical Services in the Maintenance Division at ORGDP recently passed a two-year mark without a first-aid injury. Many employees have gone much longer than this. An impressive factor involved is that the job assignments include running a 75-ton crane after dark as well as the operation of the railroad. From left are Clarence M. Smith, C. Dale Knox, Glenn J. Brown, Charles D. Wright, Billy J. Ratliff, Robert L. Huebner, Boyd L. Fain, Boone G. Preece and Steven L. Mullins. Not pictured is William E. Elliott.

# Gas centrifuge program

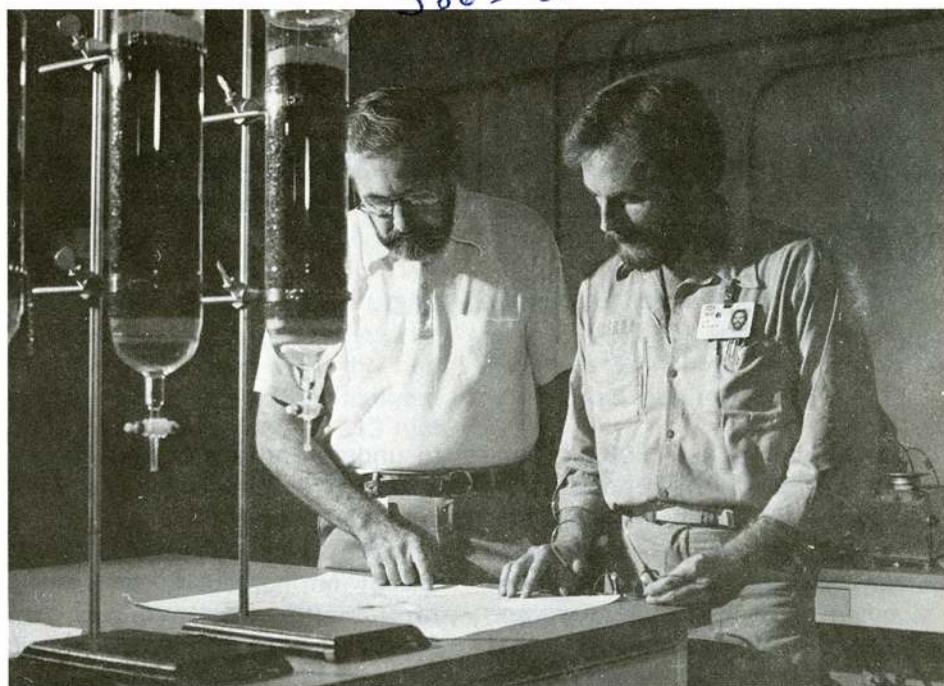
(Continued from Page 5)

demonstration and assessment of the gas centrifuge by several industrial and academic contractors, including the University of Virginia, AiResearch Manufacturing Company (a division of the Garrett Corporation) and Union Carbide's Nuclear Division, which had been heavily involved since the 1940's in the development of other uranium enrichment processes. By the end of the 1960's, results from the U.S. centrifuge program had established the potential attractiveness of uranium enrichment via the gas centrifuge process.

Since then, the scope of the program has been expanded and directed toward the construction and operation of a full-size centrifuge production facility. The major areas of the current centrifuge program include:

- basic studies in centrifuge theory;
- development of centrifuges with improved separative capacity, safety and efficiency;
- reliability studies;
- development of methods for manufacturing high-capacity, high-reliability machines at low cost;
- demonstration of the operation of the centrifuge process on a significant scale;
- development of fabrication and construction methods for a full-size plant; and
- preparation of plant criteria and detailed design.

(Next issue: Nuclear Division development facilities, OCPO and GCEP.)



**FAMILY DAY REPRESENTATIVE David Cox, left, and Henry Wilson, both of ORNL's Environmental Sciences Division, discuss plans for the November 8 event in the ESD Coal Conversion Laboratory.**

## Save Energy/Share the Ride

### ORNL

**RIDE NEEDED** from Oak Ridge Highway between Karns and Solway to East Portal, 8:15-4:45. Peterson, plant phone 4-4483; home phone 690-3989.

**JOIN VAN POOL** from West Knoxville, Walker Springs, Cedar Bluff area, to West or South Portal, 8-4:30 shift. Mike Caldwell, plant phone 4-4885, home phone Knoxville 691-4194.

**ONE or TWO CARPOOL MEMBERS** from within or near the area bounded by Pennsylvania, West Outer, Highland and Hillside Avenues 8:15-4:45 shift, East Portal. T. J. Burnett, 4-6683, or Pat Roberts, 4-6744.

### Y-12 PLANT

**JOIN OR FORM CARPOOL** from Solway area to Bear Creek Portal, 8-

4:30. M. D. Whitson, plant phone 4-2678.

**JOIN or FORM CAR POOL** from Karns, Emory Road sections, to North or East Portal, 8-4:30 shift. David Thompson, plant phone 4-9069, home phone Knoxville 947-8772.

**Remember  
to vote  
Tuesday,  
November 4**

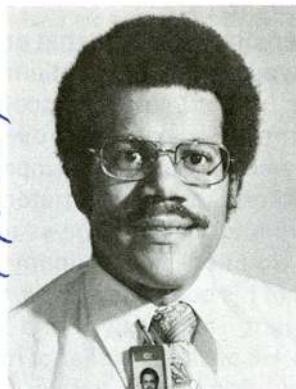
## ORNL Family Day '80

(Continued from Page 1)

- A special "Laurel and Hardy" safety film
  - The ELMO Bumpy Torus (EBT), a fusion device that uses microwave heating to produce and maintain a steady-state hot plasma
- ORNL highlights will include:
- Blood pressure checks for visitors
  - Demonstrations of a computer-controlled centrifugal fast analyzer, which performs clinical analysis of blood samples for disease diagnosis
  - Demonstrations of makeup, photocomposition and word processing equipment
  - Tic-tac-toe computer games and free computer artwork to take home
  - Tours of the photography studios and darkrooms
  - Demonstrations of the newly-remodeled Central Research

- Library's computerized information retrieval systems
- Demonstrations of a cigarette smoking machine
  - A multimedia show highlighting the Environmental Sciences Division's research activities in the National Environmental Research Park (NERP)
  - Tours of the Walker Branch Watershed and outdoor ponds
  - Demonstrations of laser systems used for chemical physics research
  - A "baby" electrostatic accelerator
  - Displays of work involving the development of new radiopharmaceuticals and biomedical radioisotope technology applicable to diagnostic and therapeutic problems in medicine

## George N. Cobham appointed department head at Y-12 Plant



**Cobham**

George N. Cobham has been named superintendent of the Fire, Guard and Fire Protection Engineering Departments at Y-12, according to George W. Evans, superintendent of Security, Plant Protection and Utilities. Cobham replaces J. Robert DeMonbrun who has assumed new

responsibilities in ORGDP's Engineering.

Cobham, a native of Savannah, Ga., has a BS from Savannah State College and has attended the University of Tennessee. He joined Union Carbide in 1970.

Active in civic affairs, he is a member of the Oak Ridge Personnel Advisory Board, has served on the Oak Ridge Financial Assistance Committee, the Mayor's Committee on Bikeways and the Scarborough Community Center Restoration Committee. He is a past vice chairman of the Oak Ridge Community Relations Council and served on Oak Ridge's Precinct Reapportionment Committee.

He and his wife, Evelyn, live at 103 Davidson Lane. They have two sons, Kenneth and Shawn, and a daughter, Lynn.

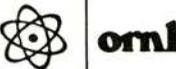


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