

# Nuclear Division News



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

Vol. 8/No. 19 September 29, 1977

## Care of a reactor more than routine maintenance

To reactor controllers like Jerry Cotter and Jack Whaley of ORNL's Operations Division, a nuclear reactor is a familiar, almost routine sight. Not routine by any standards, however, are the day-to-day responsibilities and training one must have in order to be a reactor controller.

Whether it be a nuclear power station, a small university training reactor, or an elaborate research complex, the safe operation of a nuclear reactor requires intelligent, qualified personnel, who not only must meet academic standards, but must also be able to handle the physical demands of the job.

### Training program

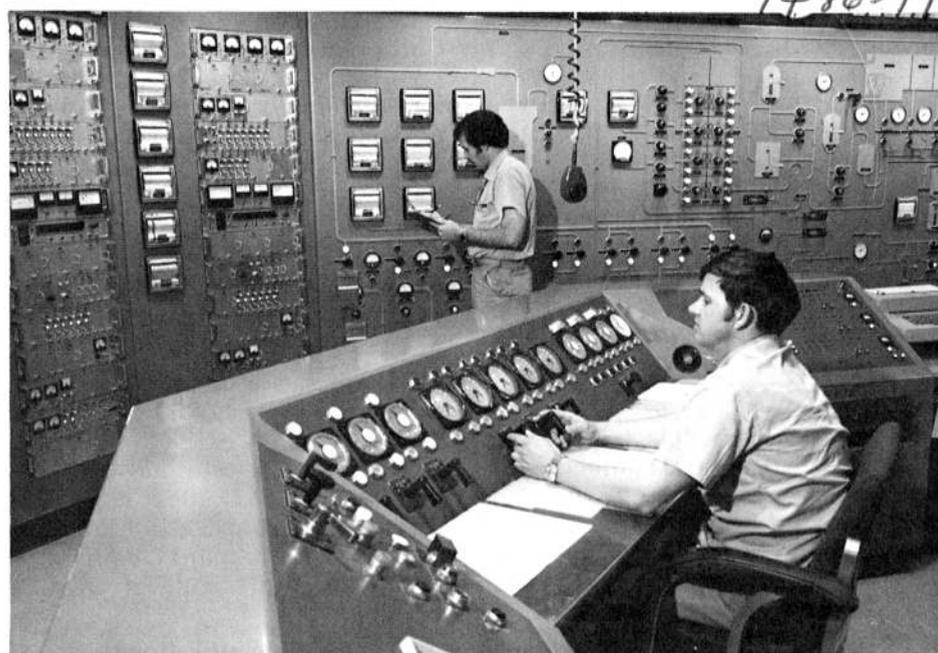
The training program for reactor controllers at ORNL involves study and on-the-job training, as well as written and oral examinations. Bill Culbert, reactor day shift engineer and examiner, explains that trainees study basic math, heat theory and fluid flow, instrumentation, reactor physics, radiation safety as well as the descriptive and procedural manuals for the reactor.

"On-the-job training is an important part of the total program. The trainees observe experienced controllers working in the reactor area and in the control room, as well as participate, themselves, in the loading of fuel carriers and routine equipment checks," Culbert said.

### Testing

During the training period, written quizzes are given to monitor the trainee's progress in understanding the required material. When he is ready to be certified, the trainee is given a three-part examination which includes a six-to-seven hour written test and a three-hour oral exam. Finally, he must actually manipulate the controls at the reactor console during a reactor startup.

"If the person is considered satisfactory in the three phases of the examination, the examiner will recommend that he be certified," Culbert said. "Then the recommendation is submitted for approval to Reuben McCord, head of the Reactor Operations Department, and then to James Cox, Operations



AT THE HELM—Jack Whaley, seated, and Jerry Cotter, standing, "fine tune" the High Flux Isotope Reactor from the control room, located high above the reactor bay area.

Division Director, for final confirmation."

### HFIR

As reactor controllers at the High Flux Isotope Reactor (HFIR), Cotter and Whaley's primary responsibility is to actually operate the 100-megawatt reactor. HFIR, one of the most sophisticated research reactors in the world, produces transuranium elements (man-made elements heavier than uranium) and provides special research facilities for ORNL scientists.

The reactor itself is located in a rectangular pool inside a large room with an 86 foot high ceiling. The room, called the reactor bay area, can be viewed from a glass-enclosed observation gallery adjacent to the reactor control room on the second floor.

In addition to housing the reactor vessel in one end, the pool provides

storage for spent fuel elements and special underwater work platforms. The pool contains about 204,000 gallons of very pure recirculating water, part of which serves as a radiation shield and coolant for the reactor.

A very important operation at the HFIR is refueling. The reactor is powered by a fuel element which contains about 20 pounds of enriched uranium (uranium-235). After it has operated for about 23 days, the depleted fuel element must be removed from the reactor vessel and replaced with a new one.

### Refueling operation

Since the element is highly radioactive, this operation must be done remotely, under water, using very large tools—some are 40 feet long. Two overhead cranes are also

(Please see page 8)

## Named affirmative action coordinator at Y-12 Plant

The appointment of George N. Cobham as affirmative action coordinator for Y-12 has been announced by Jack M. Case, plant manager.

In his new position, Cobham will be assigned to the Employee Relations Division and will have the responsibility for coordinating, planning, monitoring and reporting progress in all matters pertaining to the affirmative action program. "I would like to reaffirm my belief, both personal and professional, that equal employment opportunities should be provided for all people," Case stated in his announcement.

Cobham joined the Nuclear Division in 1970 as a project engineer in Y-12's Product Engineering and Scheduling Division. A native of Savannah, Ga., he has a B.S. degree in mechanical engineering from Savannah State College and recently participated in an engineering science course offered by the University of Tennessee.

He was assistant affirmative action coordinator for Product Engineering and Scheduling Division.

Cobham is a member of the Oak Ridge Personnel Advisory Board, the Oak Ridge Financial Assistance Committee and the Scarboro



George N. Cobham

Community Center Restoration Committee. He is a past vice chairman of the Oak Ridge Community Relations Council and served on Oak Ridge's 1974 Precinct Reapportionment Committee and the Mayor's Committee on Bikeways.

Cobham and his wife, Evelyn, who works in the Engineering Division at ORNL, live at 125 West Lincoln Road, Oak Ridge. They have two sons, Kenneth and Shawn.

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SAY AHH!—This Florida cottonmouth is just one of the leading characters in Jerry Klein's "Different Drummer" on snakes. That's not a tongue depressor in his mouth; it's the handle of some snake tongs. See story on page 6.

# Culler named head of EPRI; Lincoln to Corporate staff

Two veteran Nuclear Division staff members have accepted other positions: Thomas A. Lincoln has been named associate medical director of Union Carbide Corporation; and Floyd L. Culler Jr. has been named president and chief executive officer of the Electric Power Research Institute.

Culler will succeed Chauncey Starr, the founding president of EPRI and one of the nation's most distinguished leaders in energy development.

### Oak Ridge pioneer

Culler came to Oak Ridge in 1943 as an engineer at the Y-12 Plant. He was a section chief and then director of the Laboratory's Chemical Technology Division from 1953 to 1964 before being appointed assistant director of Nuclear Technology. He became deputy director of ORNL in 1950 and, during 1973, served as acting director of the Laboratory.

In 1974, he was elected to the National Academy of Engineering in recognition of his role in the development of nuclear power in the United States, particularly chemical engineering contributions to the establishment of the nuclear fuel cycle.

Culler also is a fellow of the American Nuclear Society and the American Institute of Chemists. He is a recipient of the E. O. Lawrence Memorial Award (1965), the Atoms for Peace Award (1969), and the Robert E. Wilson Award of the American Institute of Chemical Engineers (1972).

### ANS special award

In June, he was honored by the American Nuclear Society, along with colleagues at ORNL, with the ANS Special Award for outstanding contributions to the nuclear fuel cycle.

This year, he was a member of the Energy Research and Development Administration's Liquid Metal Fast Breeder Review Committee. He also has served as deputy chairman of the panel on energy supply delivery for

the National Academy of Sciences—National Research Council—National Academy of Engineering Committee on Nuclear and Alternative Energy Systems (CONAES).

Culler is a native of Frederick, Md., and received the B.S. degree in chemical engineering from The Johns Hopkins University. He and his wife, the former Della Hopper, have one son, Floyd III.

### Effective December 1

Dr. Lincoln will work with the Corporation's medical director, John J. Welsh, M.D. He will be responsible for the medical services for the Agricultural Products Division and will assist in the overall operation of the Medical Department, including a study of its reorganization. His appointment is effective December 1.

Dr. Lincoln joined the ORNL staff in 1951 and was named medical director in 1953.

Dr. Lincoln is a native of Fergus Falls, Minn., and holds degrees from Macalester College and the University of Minnesota, where he received his M.D. degree in 1950. After private practice in Minnesota, he began in-plant training in occupational medicine at ORNL in 1951.

### Multiple affiliations

He was founder and served as the first president of the Tennessee Industrial Medical Association. He was also responsible, in 1961, for the establishment of an industrial hygiene department as part of the ORNL Health Division.

He became a diplomate of the American Board of Preventive Medicine in 1963 with a subspecialty in occupational medicine. Among his other professional affiliations are the Industrial Medical Association, American Academy of Occupational Medicine, American Medical Association, Health Physics Society, American College of Preventive Medicine and the American Industrial Hygiene Association.

He is past president of the Roane-Anderson County Medical Society, past treasurer of the board of the Oak Ridge Mental Health Center, a lecturer in biomedical sciences at the University of Tennessee and a former member of the advisory committee to the Atomic Energy Commission's Division of Biomedical and Environmental Research.

Dr. Lincoln is widely known for a continuing series of popular-level articles on health education that have appeared in *Nuclear Division News* and *Union Carbide World*, as well as newspapers in the southeast.

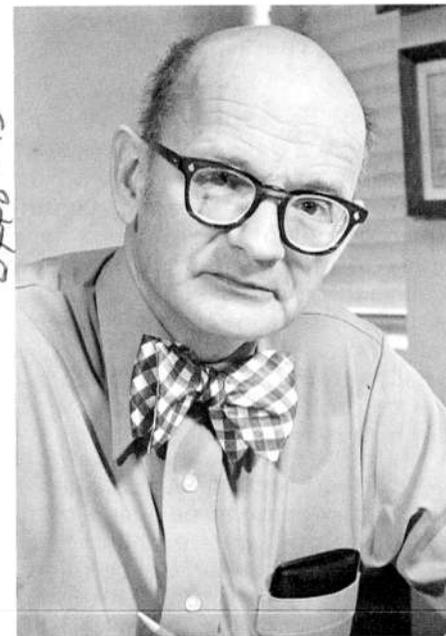
Dr. Lincoln, his wife, Pat, and daughters, Cindy and Karen, live at 878 West Outer Drive, Oak Ridge.

## safe thinking . . .

WHEEL STOP — Carry a brick in the trunk of your car as insurance in the case of flat tires. It makes a good wheel chock, when used along with the hand brake, while you're changing a tire.



Floyd L. Culler Jr.



Thomas A. Lincoln, M.D.

## Corporate world of Union Carbide . . .

A NEW SILANE coupling agents plant will be built by Union Carbide Corporation in Europe, the site to be determined later this year. The plant will be designed to provide a variety of high performance products in support of European markets. It will be built and operated by Union Carbide Europe.

The Corporation pioneered the commercial development of silane coupling agents in the 1950's in the U.S. These materials have found large uses in glass-reinforced laminates, foundry resins, insulation wool, elastomers and many other applications. The Corporation's silanes plant in Sistersville, W. Va. is undergoing a doubling of its capacity which will ensure that sufficient supplies are available in Europe prior to the start-up of the new facility.

## Carbide bowling . . .

The Carbide family Mixed Bowling League ended summer play recently, declaring season winners. The Oops team took top honors, consisting of Tillie Plaza, Edith Duckworth, Charles Lively and Elmer Johnson. Charlie Hinton posted the high handicap game of 684. . . Winnie Woody scored a 711. High games went to Tom Snyder, 267; and Carol Lenoir, 251. Most improved bowlers were Elmer Johnson and Roberta Kirkpatrick.

## anniversaries . . .

### PADUCAH

25 YEARS

Robert L. Echols, Waltham H. Clayton, Wilfred H. Brandon, Billie Dunn, Robert H. Spiceland, Lanis C. Cunningham, Hardy J. Pottinger, Kenneth A. Ross, James R. Story, Dave A. Green and Gilbert Perdue Jr.

20 YEARS

Vernon Brown Jr.

### Y-12 PLANT

30 YEARS

Harold V. Craft, Electrical and Electronics; William E. Barker, Utilities Administration; William G. Delones, General Shops; and William P. Mattingly, Electrical and Electronics.

25 YEARS

Tom R. Clotfelter, Ralph E. Reynolds, William G. Butturini, James E. Lovelace, Kenneth A. McTeer, Earl L. Walker and Herman K. Alverson.

20 YEARS

John O. Evans, Jack Cooper, Arch L. Walker, John R. Baker, Donna S. Ferguson, James T. Forrester and Bobby L. Fritts.

### ORGDP

30 YEARS

Doris Y. Shell, Central Employment; Harold F. Cornett, Engineering Division; Edward L. Maples, U-235 Separation Department; and Roy C. Scruggs, Machine Shop Department.

25 YEARS

Helman C. Smith, Charles P. Hammett, Stanley J. Finch, Forrest Dudenbostel, James R. Manis, William E. Rooks, James W. Kingsley, Robert L. Phillips, Richard H. Holbrook, Alexander Marion and Noah D. Byrd.

20 YEARS

James A. Walsh.

### ORNL

30 YEARS

Myrlene W. Davis, Instrumentation and Controls; James H. Groover, Chemical Technology; Donna C. Michelson, Information; Elmo D. Hillon, Finance and Materials; Benjamin M. Beeler Jr., Laboratory Protection; Jo G. Sharp, Information; Thomas L. Tuck Jr., Health; Jack D. Hill, Health; Samuel W. Nichols, Applied Health Physics; and Herman F. Soard, Chemical Technology.

25 YEARS

Newell E. Bolton, Loretta L. Fitzpatrick, Harrison H. Tuck, Robert H. Seals, Henry N. Elmore, Theodore T. Odell Jr., Clarence W. Blue, James V. Winchester, William L. Pattison and William M. Woods Jr.

20 YEARS

Harold C. Sanderson, Elizabeth L. Phipps, Glen E. Moore, Rufard G. Alsmiller Jr. and Mary S. Guy.

**Nuclear Division News**

UNION CARBIDE CORPORATION  
NUCLEAR DIVISION  
Office  
Post Office Box Y  
Oak Ridge, Tenn. 37830

**EDITOR**  
James A. Young, Ext. 3-7100

**ASSOCIATE EDITOR**  
Karen L. Cromer, Ext. 3-6266

**ORGDP**  
Doug Carter, Ext. 3-3434

**PADUCAH**  
Keith Bryant, Bell 369

Member,  
INTERNATIONAL  
ASSOCIATION  
OF BUSINESS  
COMMUNICATORS

## 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.

### Life expectancy?

**QUESTION:** A recurring rumor we all hear is that Nuclear Division retirees on the average draw only 18 months of retirement pay. Have actuarial studies been done? And, if so, is the rumor correct?

**ANSWER:** An actuarial study is not necessary to determine that this type of rumor is not true. More than two-thirds of all employees who have retired at age 65 in the past 30 years are still living (1105 out of 1522).

The average age of the 1105 living retirees at the present time is 71 years 8 months. According to tables published by the U.S. Department of Health, Education and Welfare, the average life expectancy of this group, based on their current ages, should be 10 years 10 months.

### Inadequate phone service

**QUESTION:** Is there anything that can be done about the 483-8611 operators? Sometimes they don't answer at all. Are there not enough operators?

**ANSWER:** The telephone system is an old one and, based on the present level of usage, is overloaded. When the number of calls exceeds the system's capacity, all of them cannot be answered immediately. When such an overload condition exists, priority is given to handling incoming long distance calls rather than answering local calls.

To help relieve the problem to the extent practical, the number of switchboard positions was recently increased from 8 to 10. Significant relief will not be forthcoming until

the new electronic switching system is installed in 1978 or 1979. In the meantime, better service will result if all employees: 1) refrain from making nonessential personal calls, and 2) utilize FTS for inter-city long distance business calls (including off-net ones).

### Job bid manipulation?

**QUESTION:** Is the job bidding system manipulated? I know of one case where a secretary was told she "had the job" before she bid on it, if she wanted. In other cases, people were told to bid on certain openings.

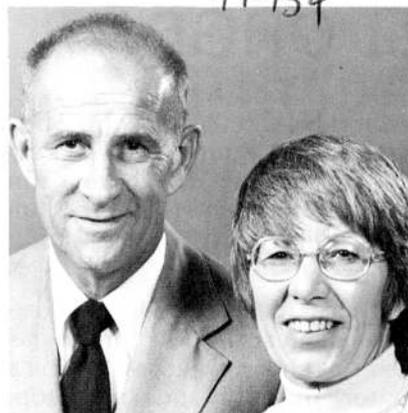
**ANSWER:** The Job Opportunity System is intended to provide qualified candidates on the payroll a chance to bid on job openings as they occur. The intent is to operate the system without manipulation. It is monitored and periodically changes have been made to improve it and to keep it honest. Employees are encouraged to bid and supervisors are expected to assist and encourage such efforts. Pre-selection before consideration of all bidders is not proper and, if this is established, corrective action would be taken.

### New vs. old salaries

**QUESTION:** Why does management feel that new inexperienced salaried personnel should have larger percent merit increases than the older personnel who have the task of instructing, assisting, correcting, and reinstructing these new people?

Merit means to deserve or earn. The Company is not rewarding many older company-service people fairly.

## retirements...



**James C. Thompson Jr.**  
Y-12 Mechanical Inspection  
29 years service

**Mary G. Thompson**  
Y-12 Assembly Division  
15 years service



**Jay Cee Pigg**  
Solid State, ORNL  
29 years service



**Clarence G. Christiansen**  
Y-12 Rolling Mill  
30 years service



**Arthur E. Hall**  
ORGDP Technical Services  
23 years service



**Clarence E. Legg**  
Y-12 Laboratory  
27 years service



**Chester I. Sweeney**  
Y-12 Utilities  
31 years service

**ANSWER:** An experienced employee performing the full job as expected is normally paid in the job rate zone (area around midpoint) for his/her salary range. The lower end of the rate range is considered a developmental area for inexperienced employees. The salary program is designed to move the developing employee to the job rate in a reasonable period of time.

Since the salary ranges are not static but increase annually, it requires a percentage increase larger than the

(Please see page 8)

## SDI at your service

Nuclear Division employees who file a profile of their subject interest with the ORNL Main Library can automatically receive notices of new publications within these interest areas every two weeks. This service is called Selective Dissemination of Information (SDI).

A "profile" is a combination of words, subject categories, authors' names or whatever code in the data base that best expresses the user's interest. The resulting profiles are no better than the search terms and the added indexing.

The primary advantage of the SDI system is that it saves leg work: the individual search profile is mailed to the employee. Currently, 300-400 users are on SDI file. Although the service is now free, next year the library will begin to charge divisions for computer time—anywhere from \$30-\$100 per search.

Data bases available for SDI search include: Biological Abstracts, Chemical Abstracts, Engineering Index, National Agricultural Library, ERDA Energy Information Data Base and Government Reports Announcements of NTIS (National Technical Information Service).

Principal searchers are Information Division's Don Wilkes, whose emphasis is on energy and environmental sciences, and Herb Pomerance. For more information, contact Pomerance at 3-1324.

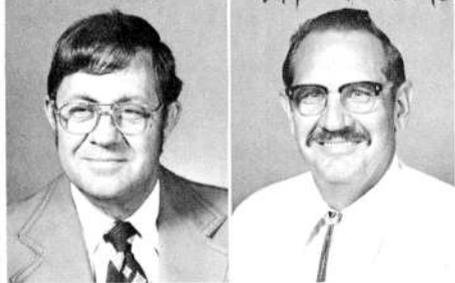


**FIRE PREVENTION COMMITTEE**—Fire prevention activities are highlighted during the first two weeks of October, commemorating the Chicago fire. ORGDP fire prevention efforts will be coordinated by the committee seen above. Seated, from left, are T. L. Moore, N. E. Sparks, Marvin S. McCarthy, John D. Hoogesteger, chairman; James R. Hutton, co-chairman; Guy V. Tucker and Bettye B. Cummings. Standing are Paul R. Reeverts, Robert L. Payne, Bill I. Wyatt, T. A. Bowers, B. N. "Buzz" Strunk, Fred B. Tredinnick, Evelyn G. Cole, H. E. Alexander, A. R. Young, C. L. Bailey and J. D. Lovette. Not present were J. T. Blackmon Jr., Faye B. Duncan, Richard D. Hobson and Ridley W. Ray.

## next issue...

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

# Miller, Phillips promoted at ORGDP



Miller

Phillips

He and his wife, Joyce (who works in Y-12), live at Route 1, Town Creek Road, Lenoir City. They have a son, Lee, and two daughters, Sherry Long (employed at ORNL's Credit Union) and Barbara.

Miller, a native of Middlesboro, Ky., has been at ORGDP for the past six years. He has worked as a chemical operator in Y-12 and in Isotope Research at ORNL. He joined Union Carbide in 1953.

Miller attended the University of Tennessee.

Married to the former Nita Beeler, he lives at 699 Robertsville Road, Oak Ridge. The couple has two daughters, Deborah Highers and Darlene Collins, and a son, Mike.

Paul E. Miller has been named a pilot plant supervisor in Separations, and Howard A. Phillips has been made supervisor of Timekeeping at ORGDP.

Phillips was born in Knox County and grew up in Lenoir City. He formerly worked in Y-12 in Engineering Services and Records and in Timekeeping. He has been with Union Carbide 25 years.

# Named security assistant at Y-12



Tuggle

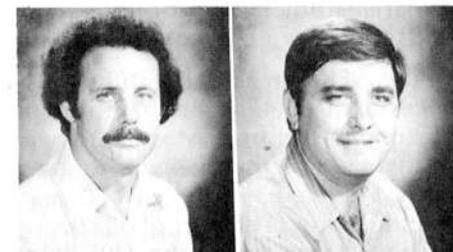
Joyce E. Tuggle has been named a technical assistant in Y-12's Security Department. A native of Chattanooga, she was with the Memphis Police Department before joining Union Carbide.

She has a BSED from Memphis State University and an MSED majoring in sociology and law enforcement. She also attended the Memphis Police Department Academy.

Tuggle lives at 100 Bailey Road, Kingston.

# Three Paducah promotions

Three promotions are announced at the Paducah plant: Paul C. Coltharp and Ronald M. Emery are named maintenance supervisors; and Robby G. Weatherford has been named a safety analyst.

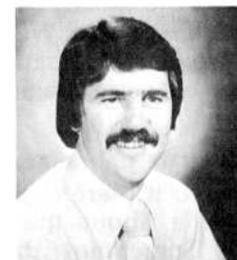


Coltharp

Emery

Coltharp has a B.S. degree in construction technology from Murray State University, and joined Union Carbide in August of last year. He was formerly with the Tennessee Valley Authority and Ladt Engineering. Coltharp is married to the former Shawn Gilbert, and the couple lives on Forrest Avenue, Paducah.

Emery, a native of Colorado Springs, Colo., joined Union Carbide in 1975. Before then, he was service manager for Driver Motor Company. He attended Murray State University. He and his wife, Janice, live on South 6th Street, Mayfield, with their children, Amanda and Tommy.



Weatherford

Weatherford has a B.S. in industrial technology from Memphis State University. He taught in Lexington, Tenn., school system before joining Union Carbide in 1972. A native of Jackson, Tenn., he is a member of the American Society of Certified

Engineering Technicians. Weatherford and his wife, Brend, live on Maywood Drive, Paducah. They have two children, Douglas and Sara.

# about people...



McElroy



Canonico



Inouye

Domenic A. Canonico, Henry Inouye and David L. McElroy have been elected fellows of the American Society for Metals (ASM) by the Board of Directors. The awards will be presented at the October ASM Annual Meeting in Cleveland.

Canonico's citation is for his "experimental and analytical contributions to materials science and engineering and for his outstanding leadership and management in the field of engineering materials." He received his B.S. degree in metallurgical engineering from Michigan College of Mining and Technology in 1951, and his M.S. and Ph.D. degrees from Lehigh University. Since joining the Laboratory's Metals and Ceramics Division in 1965, he worked as a research engineer in the welding and brazing group, and has been group leader for Heavy Section Steel Technology since 1974. He aided in the establishment of ASME codes and standards.

Inouye's citation is "for advancing basic understanding of materials behavior through fundamental research, and for his innovative solutions to complex metallurgical problems encountered in the successful development of radioisotope thermoelectric generators to provide auxiliary power aboard spacecraft." Inouye received his B.S. degree in metallurgical engineering from Colorado School of Mines in 1943, M.S. degree in materials science from Massachusetts Institute of Technology in 1952, with graduate studies at the Universities of Utah, Tennessee and Texas. He received the AEC-SNS Viking Mission Pin in recognition of contributions to the Viking Mars Lander Mission, and the 1974 NASA Pioneer/Jupiter Award as a member of the Pioneer 10 Radioisotope Thermoelectric Generator Contractor Team, which received this Public Service Group Achievement Award.

McElroy was cited "for advancing the art and science of physical property measurement, particularly for his experimental and analytical contributions to the determination and understanding of heat transport phenomena in metals, alloys, and cermets." McElroy received B.S. and M.S. degrees in metallurgy from the University of Alabama in 1951 and 1953, respectively, and the Ph.D. degree in metallurgy from the University of Tennessee in 1957. For the past 18 years, he has worked in the Metals and Ceramics Division as group leader for physical properties. He received the International Thermal Conductivity Conference Award for Outstanding Contributions in 1971.

Editor's note: In "about people," September 15th issue, R. Keith Kibbe was recognized for receiving "certification in nuclear engineering by the state of California." This was his second California certification; Kibbe was awarded his license in mechanical engineering in 1967.

# wanted...

## ORGDP

JOIN CAR POOL from Northshore Drive, Kingston Pike area of West Knoxville to Portal 2 or 4, 7:45 to 4:15. Betty Kaminski, plant phone 3-9528.

## ORNL

RIDERS from Louisiana Avenue, Robertsville Road area, Oak Ridge, to West Portal, 8-4:30. Bill Martin, plant phone 3-1491, home phone 483-1164.

CAR POOL MEMBER from Cedar Lane, Inskip Road area of North Knoxville, 8:15 to 4:45. Bill Clark, plant phone 3-1421, home phone in Knoxville 687-6419.

CAR POOL MEMBER from areas of West Outer, Waddell, Pennsylvania or Hillside, Oak Ridge, to East Portal, 8:15 to 4:45. Tom Burnett, plant phone 3-6939, home phone 483-1975.

## Y-12

RIDE OR RIDE SHARING from Halls area, Knoxville, to Central or North Portal, straight day (preferably from 7:30 a.m.-5 p.m.). H. L. Bailey, plant phone 3-2177, home phone 922-1480.

VAN POOL RIDERS from Norwood area, Knoxville, through Cumberland Estates Shopping Center, to any portal, straight day. Larry Bohanan, plant phone 3-5101, home phone Knoxville 637-9874.

# Bloodmobile to visit October 12, 13

The American Red Cross Bloodmobile will be stationed at the Oak Ridge Civic Center on October 12, 3-9 p.m., and 13, 12-6 p.m.

This Anderson County program covers dependent children, parents and grandparents even though they live outside the Oak Ridge area.

Persons aged 17 to 65 may give blood every eight weeks, but not more than five times a year. If younger than 17, a parental consent form must be signed; after age 66, written consent from a doctor is required two weeks before the donation.

From registration through the required rest period, donation takes less than 45 minutes. Less than a pint of blood is drawn—a process which takes about seven minutes. A person need not know his blood type to donate. Rare types are accepted as well.

# Firewood cutting

The next public firewood cutting on the Oak Ridge reservation will be Friday and Saturday, October 14 and 15. For additional information contact Dennis Bradburn, 3-1266 or Public Relations Department, 3-6421.

# Paducah photographs: worth a thousand words. . .



**'Morning visions'**

by J. D. Goforth



**'Off the beaten path'**

by Larry Heavrin

If a picture's worth a thousand words, the Paducah plant photo contest could have been a novel—and a best seller at that!

Approximately 170 top quality photographs were entered in the annual exhibit and contest for PGDP employees. Photos were judged in a total of eight categories which were divided into large and small format divisions.

A team of four judges made up of professionals and amateurs evaluated each entry on its own merit with a numerical score. An average was then taken and winners were ranked. Three places and an honorable mention were awarded in each category. In addition, three leather camera bags were given as prizes in a drawing of non-winning entrants.

The exhibit remained on view in the plant cafeteria for two weeks. The winners were later displayed at Central Photo and People's Bank in Paducah.

Top honors in each category were:

### LARGE FORMAT

	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>Honorable Mention</b>
PEOPLE:	Larry Hoover	Larry Heavrin	J. R. Story	Larry Hoover
PLACES:	Larry Heavrin	J. D. Goforth	Larry Heavrin	Phil Paschal
THINGS:	Harry Goforth	Larry Heavrin	Larry Hoover	J. R. Story
ANIMALS:	Larry Heavrin	Bill Fisher	Larry Heavrin	Larry Hoover
OPEN:	Larry Hoover	Larry Hoover	J. R. Story	Phil Paschal

### SMALL FORMAT

	<b>1st</b>	<b>2nd</b>	<b>3rd</b>	<b>Honorable Mention</b>
PEOPLE:	Ron Charlton	J. R. Story	Dianne Bennett	Manley Fortune
PLACES:	J. R. Story	Dave Stuber	Dennis Frazee	Larry Hoover
THINGS:	Dave Stuber	Bob Riepe	Dianne Bennett	Dennis Frazee



**"EYE-CATCHING"**—The colorful collection of people, places and things in the Paducah photography exhibit caught the eye of all passers-by, such as Kenny Thomas, Electrical Department. Some 170 entries made up this year's annual exhibit and contest for PGDP employees.

### Paducah dance. . .

Plant employees at Paducah can boogie to the beat of the "Bootleggers" from Fulton, Tenn., at the upcoming Fall Festival. The dance is set from 9 p.m. to 1 a.m., October 14, at the St. Mary High School Common. Tickets, \$7 a couple, are on sale this week. Dress is casual (sport coat, pantsuit or dress).

### patents granted. . .

To Starling E. Shumate II, ORNL, for "Filter Type Rotor for Multistation Photometer."

To David G. Thomas and John D. Sheppard, both of ORNL, for "Water Softening Process."

To Othar K. Tallent, ORNL, for "Method for dissolving Plutonium Dioxide."

### safety scoreboard

Time worked without a lost-time accident through September 22:

Paducah . . . . .	61 Days	827,077 Man-Hours
ORGDG . . . . .	141 Days	4,892,000 Man-Hours
Y-12 Plant . . . . .	219 Days	6,618,000 Man-Hours
ORNL . . . . .	149 Days	3,265,878 Man-Hours

Animals I have known. . .**Snakes: 10-inch cornsnakes to 6-foot Burmese pythons**

Jerry A. Klein, ORNL developmental staff member, has been in the Chemical Technology Division since joining Carbide in 1972. He is a member of the Herpetologist League, Society for the Study of Amphibians and Reptiles, and the New York Herpetological Society, Inc.

Klein, his wife, Janet, and sons, Tim and Geoff, live at 104 Meade Lane, Oak Ridge.

Editor's Note—"Animals I have known" is yet another "Different Drummer"—a feature story written by Nuclear Division employees about their hobbies. Do you (or a friend) have an interesting pastime? If so, share it with us by contacting the News representative at your plant.

**By Jerry A. Klein**

The temperature had dropped quite low. My thermometer indicated 55 degrees Fahrenheit at 10 p.m.—hardly what one would expect for a June night in Florida. It was far too cool for any snakes to be abroad, yet. . . there it was! A large diamondback rattlesnake, massive as only a diamondback can be. I estimated its length at about 5-1/2 feet. Although not overly large for an eastern diamondback, it was still the largest poisonous snake I had ever seen in the wild. A most dangerous sight; but the very thing I had come to Florida to find.

*"the largest poisonous snake I had ever seen in the wild."*

Not having brought along the snake tongs and still wanting to transport the snake back to our campsite for photographing, I decided that I would have to pin the animal. Luckily, the snake was still quite torpid from the cool air,



**Timber rattler**

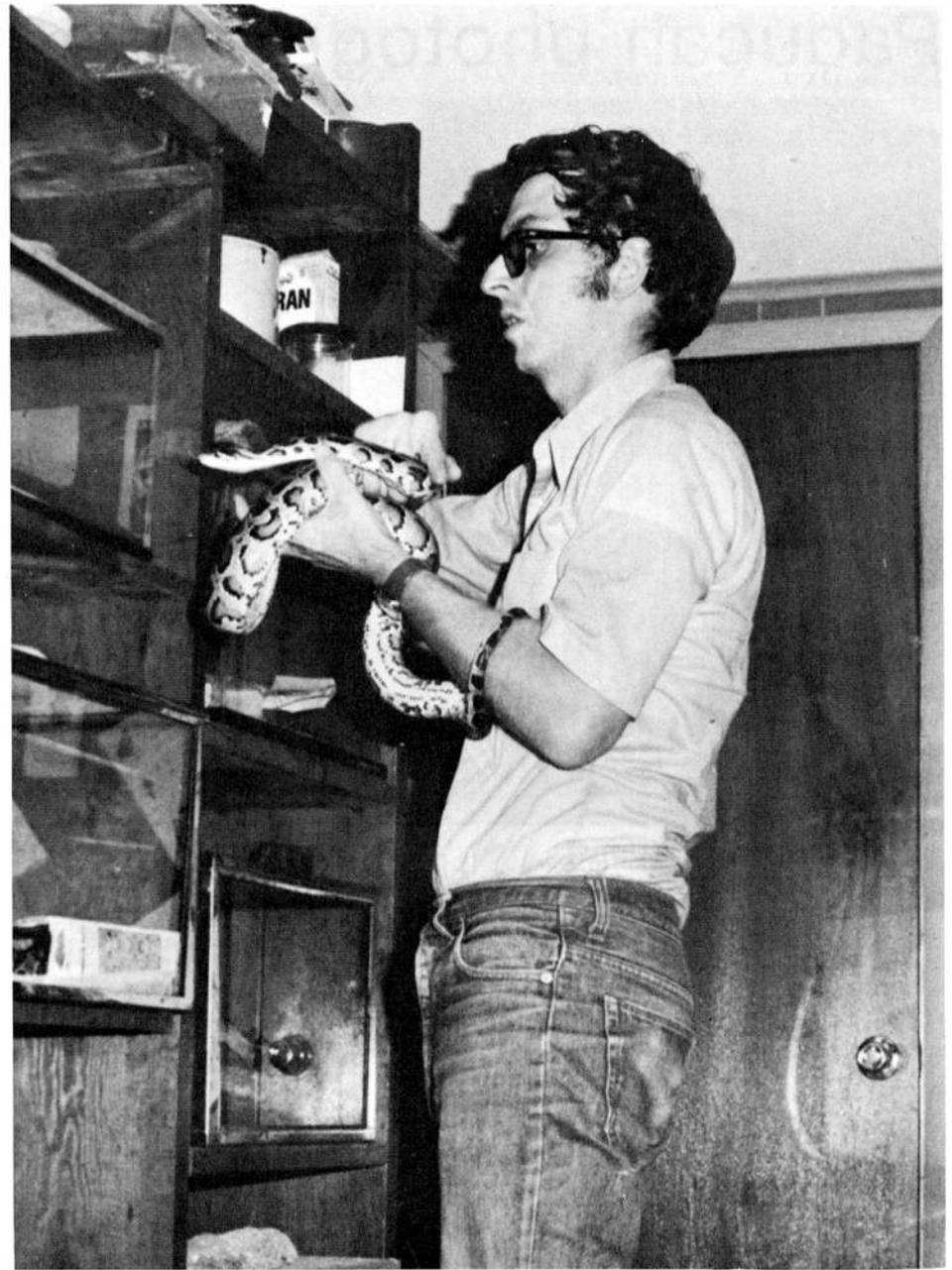
enabling me to easily pin its neck down with my snake hook. Even then, after grasping it immediately behind the head and obtaining a good hold on its body, it still took my

*"Does this guy really go out of his way to look for the very thing most people avoid like the plague?"*

companions—John Byrd of Oak Ridge and Terry Hibbits of Brownsboro, Texas—some 10 minutes to stuff its large bulk into one of the cloth snake bags we were carrying.

This episode took place this June on one of my annual snake-hunting trips to Florida. On that trip alone, we caught some 70 snakes in one week. Even among experienced field collectors, that still is a good number.

By now I suppose you are wondering, "Does this guy really go out of his way to look for the very



**Not your regular bookshelf**

thing most people avoid like the plague?" Yes, indeed. For the last 10 years, I have taken numerous trips to Florida—as well as North Carolina, Alabama and Texas—just to look for and collect snakes. Most of the thousand or so snakes that I have caught to date have been released where they were found; a few given to various friends and institutions (University of Tennessee, Knoxville Zoo, etc.); and I have kept a few for my private collection.

I have from 40 to 50 nonpoisonous snakes in my home ranging in size from a 10-inch hatchling corn snake to a 6-foot Burmese python. I keep these animals for a variety of purposes such as breeding for research or for identifying local snakes in my informal talks to schools, churches and scout groups. In addition, there is a sizable number that I keep because of their individual habits, docile manners, or because they remind me of a particularly eventful field trip.

*"Forty snakes sounds like a lot of snakes to maintain in a home. . ."*

Forty snakes sounds like a lot of snakes to maintain in a home, and I guess that maybe it is. But snakes have advantages over your average dog or cat pet. For example, they take up very little room. Several moderate-sized individuals (three to four feet) or one large snake (over five feet) can live comfortably in a 10-gallon aquarium. In addition, they require

food only about once every few weeks since their metabolism is so low. The low metabolic rate also makes cleaning their cages an infrequent chore. And the best advantage of all. . .they don't even bark!

*"the best advantage of all. . .they don't even bark!"*

Why am I interested in snakes? There's a variety of reasons: They are a part of our wildlife that's a little more unusual than most. They come in a variety of patterns, colors and life styles that contradict their uniformity of shape. And although relatively easy to catch (as compared to birds and mammals), they are a challenge to try to maintain in a healthy condition. That this can be done successfully is evidenced by the many snakes that I have kept for up to eight years, and by the numerous young that I have raised from eggs, or live birth, as the case may be.

#### Tips on local snakes

Over the years I have gathered various pieces of useful information on local snakes:

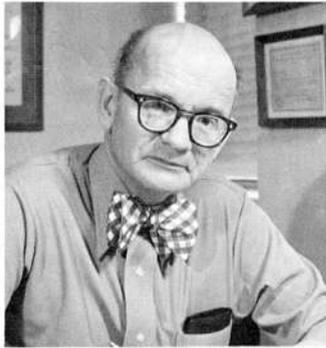
The most likely months to find snakes appear to be April and May with the secondary maximum in October. Copperheads, however, seem to be more common in August and September.

Although copperheads abound in the area and a few rattlesnakes can be found, there are no records of cottonmouth moccasins or coral snakes.

(Please see page 8)



SNAKE WRESTLING?—"It took my companions and me some 10 minutes to stuff its large bulk into one of the cloth snake bags," said Klein, center. At left, John Byrd of Oak Ridge; at right, Terry Hibbits of Brownsboro, Tex.



## Saccharin controversy

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.)

Although the proposed ban on the use of saccharin in foods has been postponed, much criticism of the original ruling by the Food and Drug Administration is still being heard. Such comments are common: "The rats used in the Canadian experiment were each fed the equivalent in saccharin content of 800 cans of 12-ounce diet soda each day!" or "A few cancers were found, but extending that meager information to human beings is ridiculous! Humans aren't rats!"

Now that the heat of the controversy has subsided a bit, this is a good time to review some of the pertinent facts. To help you, the following list has been prepared. It is not complete. The April 15, 1977, proposed rule-making alone took 15 pages of small print in the Federal Register and cited 20 references from the literature! The selection inevitably reflects my bias. My purpose is only to help broaden the base of information you use to make up your own mind.

- It is routine in toxicological testing to give large dosages of test substances to experimental animals. If large doses cause cancer in an animal with a short life span, much smaller dosages given over the long human life span may cause similar effects. Cancer induction in humans frequently requires 20 to 40 years of exposure to extremely small quantities of a material.

- The Canadian animal study which caused the proposed ban provided only "persuasive evidence" (a term used in an editorial in the *New England Journal of Medicine*) that male rats, born of mothers fed a diet containing five percent saccharin and then continued on the same diet, developed an excess of bladder cancer. Animals fed the same diet—but who came from mothers on a normal diet—didn't develop cancer.

- Just because experimental animals develop cancers after being exposed to a substance, does not mean that humans will do the same when exposed at the same, or much lower, level for a much longer time. Nevertheless, almost all agents which are known to cause cancer in humans readily cause cancer in animals.

- Although it is generally accepted that there is a threshold of effect for most toxic substances, this has not been proven conclusively for exposures to carcinogens. A "threshold" means a level below which essentially no risk occurs. The difficulty is the incredible cost of doing the definitive study. Thousands, perhaps hundreds of thousands, of experimental animals would be required at a cost of many millions of dollars.

- Whether or not a person eventually develops a cancer after prolonged low level or short high level exposure to a carcinogen may depend entirely on a myriad of exposures to other substances or experiences with other diseases. For example: almost all uranium miners

who have developed lung cancer—presumably from exposure to radiation from radon in the mines—smoked cigarettes. Their lung cancer rate was much higher than for non-miners who smoked, so there had to be some type of combined effect.

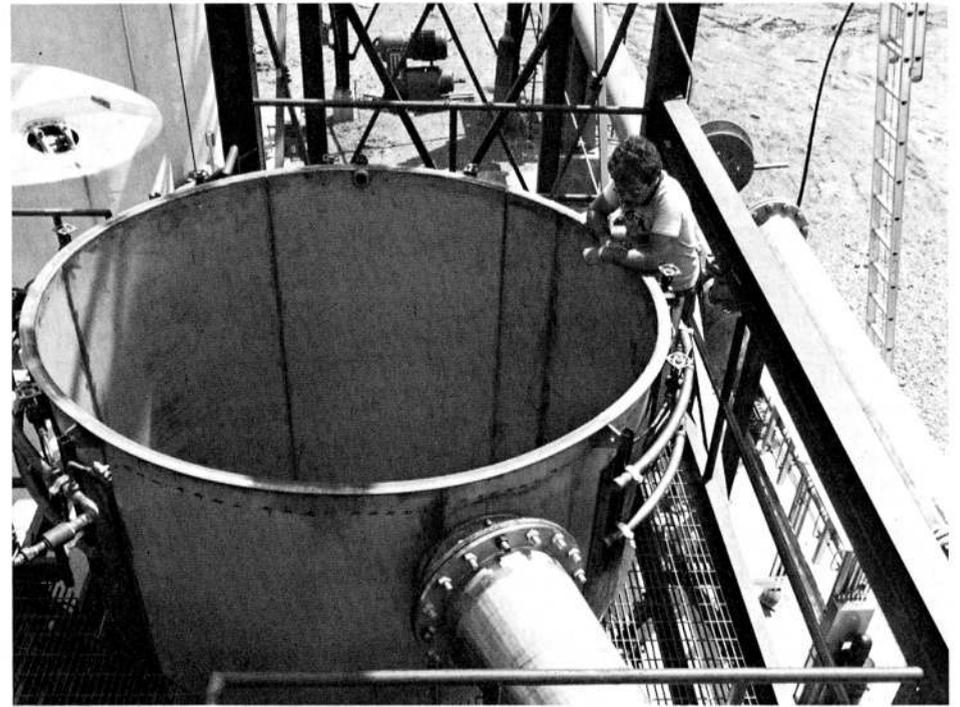
- Cigarette smokers already have an increased incidence of bladder cancer.

- In 1976, 4,200,000 pounds of saccharin were consumed in foods and beverages in the USA. Of this amount, 74 percent—or 3,108,000 pounds—were consumed in diet soda drinks; 12 percent in table top or liquid sugar substitutes; and 14 percent in miscellaneous diet foods.

- A five percent dietary intake of saccharin (the amount used in the Canadian rat study) is equivalent to 2,500 milligrams per kilogram of body weight per day for a human. Sixty kilogram humans (132 pounds) who consumed 1/1000 of the rat dose would eat 150 milligrams per day (the equivalent of one 12-ounce diet drink) over a lifetime. If the tumor incidence were proportionately the same as in the rats, then humans would get 1/1000 of the tumors. The rats had a 36 percent incidence of tumors, and by linear extrapolation, 1/1000 would yield an incidence of 0.036 percent. The risk of bladder cancer in a lifetime is 1.5 percent, so the new risk from consuming 150 milligrams of saccharin each day would be about 1.54 percent. Not much, even if true, but cause for some uneasiness.

- In 1976 an average of 4938-ounce servings of carbonated beverages were consumed for every man, woman and child in the USA. Ten percent were diet drinks, a percentage which is rapidly rising.

- The major consumers of diet drinks are young women. Since the effect in the rats occurred in the offspring of the mothers who consumed saccharin, the one group



**FISH TANK**—Sam Suffern, one of the developers of the "power plant simulator," examines the 4,000-gallon tank which will contain aquatic organisms before and after they are exposed to entrainment. The experimental apparatus, supported by a 40-foot-high steel structure, also includes 144 small aquariums and an 8,000-gallon reserve tank.

## ESD power plant simulator to study effects on aquatic life

A unique research tool to evaluate one of the major impacts of electric power production on aquatic life has been developed by ORNL scientists Robert Kedl, Engineering Technology Division; and Charles

*Editor's note—With the recent appearance of his medical column in Union Carbide World, Health Division Director T. A. Lincoln now has a readership exceeding 100,000.*

who should probably avoid it are women who may become pregnant. Some overweight women (and men) may consume as much as four to eight 12-ounce cans or portions each day.

- Saccharin is of limited value in diabetes control or treatment of obesity. It may be nice, but it clearly is not necessary.

- Other sugar substitutes are available or will be developed. They are expensive now and will require much development work.

- Seven epidemiological studies of the incidence of bladder cancer in diabetics have shown no increase in bladder cancer, even though they had used saccharin regularly for several years. One recent study suggested such an association.

Is some caution prudent? You be the judge.

Coutant and Sam Suffern, both of Environmental Sciences Division.

The device, called a "power plant simulator," will reproduce conditions that occur when fish or other organisms are pulled (entrained) through a power plant along with the waters used to cool and condense steam and carry away excess heat.

Damage to small fish and larvae caused by entrainment is one of the major environmental impacts of electric power plants. Studies show that mortality rates vary among species, and from facility to facility, but can be quite high. Knowledge of this effect on aquatic organisms has caused delays in power plant licensing and alterations in siting and mode of operation.

The simulator will be used to examine stresses associated with all components of an operating electric power plant. Since vacuum is expected to be one of the more critical components of entrainment, the system was designed to allow several degrees of vacuum exposure to be studied.

Several different organisms that have been identified as commonly entrained species through monitoring at operating power plants will be used in the experiments, which are expected to begin next month. Both fresh water and marine species will be studied.

### Savings Plan—Personal Investment Account

	Fixed Income Fund	UCC Stock	Equity Investment Fund
December 75	11.9880	58.7886	7.8231
December 76	13.0554	59.2723	8.8167
June 77	13.6164	50.6769	8.2772
July 77	13.7097	48.7163	8.1436
August 77	13.8178	46.5880	8.0671

Note: Fixed Income Fund unit values reflect interest additions to achieve the guaranteed effective annual interest rate of 8.70% for 1977. Union Carbide stock values are the average cost of stock purchases during the month plus brokerage charges. Equity Investment Fund unit values represent the month-end market value of securities held by the Fund. The price for each unit is determined by dividing the total value of the securities by the number of units in the Fund.

## question box

(Continued from page 3)

annual change in rate range to move a person's position in the rate range forward. Once an employee reaches the job rate zone and maintains fully satisfactory performance, the percentage salary increase tends to be about the same as the annual change in rate range, and the employee continues to be paid the job rate for his/her particular job.

### Mileage allowance

**QUESTION:** According to a survey I just saw, operating costs for an automobile were 20.2 cents per mile in May, 1977. Present costs are running almost 21 cents. Our travel allowance for personal vehicles is 15 cents per mile. Is any adjustment planned on this?

**ANSWER:** Different surveys arrive at different estimates for the cost of operating an automobile.

Other large employers in East Tennessee are now paying 12 cents to 15.5 cents per mile. Other large ERDA contractors are now paying 13 cents to 15 cents per mile. The Internal Revenue Service continues to regard 15 cents per mile as a reasonable deduction for persons who are not reimbursed for the business use of a personal automobile.

While this allowance will be reviewed from time to time, no adjustment is planned at present.

## Snake tips. . .

(Continued from page 6)

The scarlet snake, scarlet kingsnake and pine snake are among the rarest.

The plentiful, common watersnake is often confused with the cottonmouth, while the strikingly patterned scarlet and scarlet kingsnakes are easily mistaken for the coral snake.

The worm snake, black racer and copperhead are the three most abundant snakes of the area—together comprising about half of all the specimens found.

As a closing word, let me put in a plea for conservation when it comes to snakes. Many of the snakes that are turned in to me for identification have had their heads removed or are otherwise mutilated. When asked if they killed the snake because they thought it was poisonous, people often reply no, but thought it was best to destroy it anyway.

Snakes do have their place in the environment. While I can't object to the removal of venomous species around human habitation, the senseless slaughter of snakes, including some of the extremely beneficial rodent-eating varieties, is not to be condoned.

## Volleyball leagues. . . .

The Recreation Department has sent out a call for volleyball players for the winter season. There will be three leagues. . .one for competitive teams, average teams and one of mixed teams.

Deadline for entry is October 7, so act now.

# Care of reactor more than routine

(Continued from page 1)

used by the controllers who perform their work from a mobile bridge located over the reactor pool.

It is interesting to observe the refueling operation because the characteristic "blue glow" (Cerenkov radiation) from the depleted fuel element is most intense when the element is first removed from the reactor vessel. "The blue glow is the result of electrons moving in water faster than the speed of light," Cotter said. "Both the reactor and the stored fuel elements look quite impressive when the lights in the bay area are dimmed."

### Reactor control room

Another very important work area is the reactor control room. At least one controller must be present in the control room whenever the reactor is in operation. His duties are to manipulate the reactor controls and monitor instrumentation readouts to ensure that all systems are performing properly.

The individual in the control room must be aware of all the other activities occurring in the reactor complex; for example, the various maintenance work scheduled for the day. "We also must be able to recognize a potentially unsafe condition and perform the action necessary to correct it, even if this means shutting down the reactor," Cotter said.

### Job requirements

As evidenced by the amount of precision work involved, the reactor controller has a demanding job. According to Culbert, in order to become a reactor controller, one should have high aptitude in mathematics, mechanics and writing, as well as a positive attitude toward safety. A controller also must be in good physical and mental health.

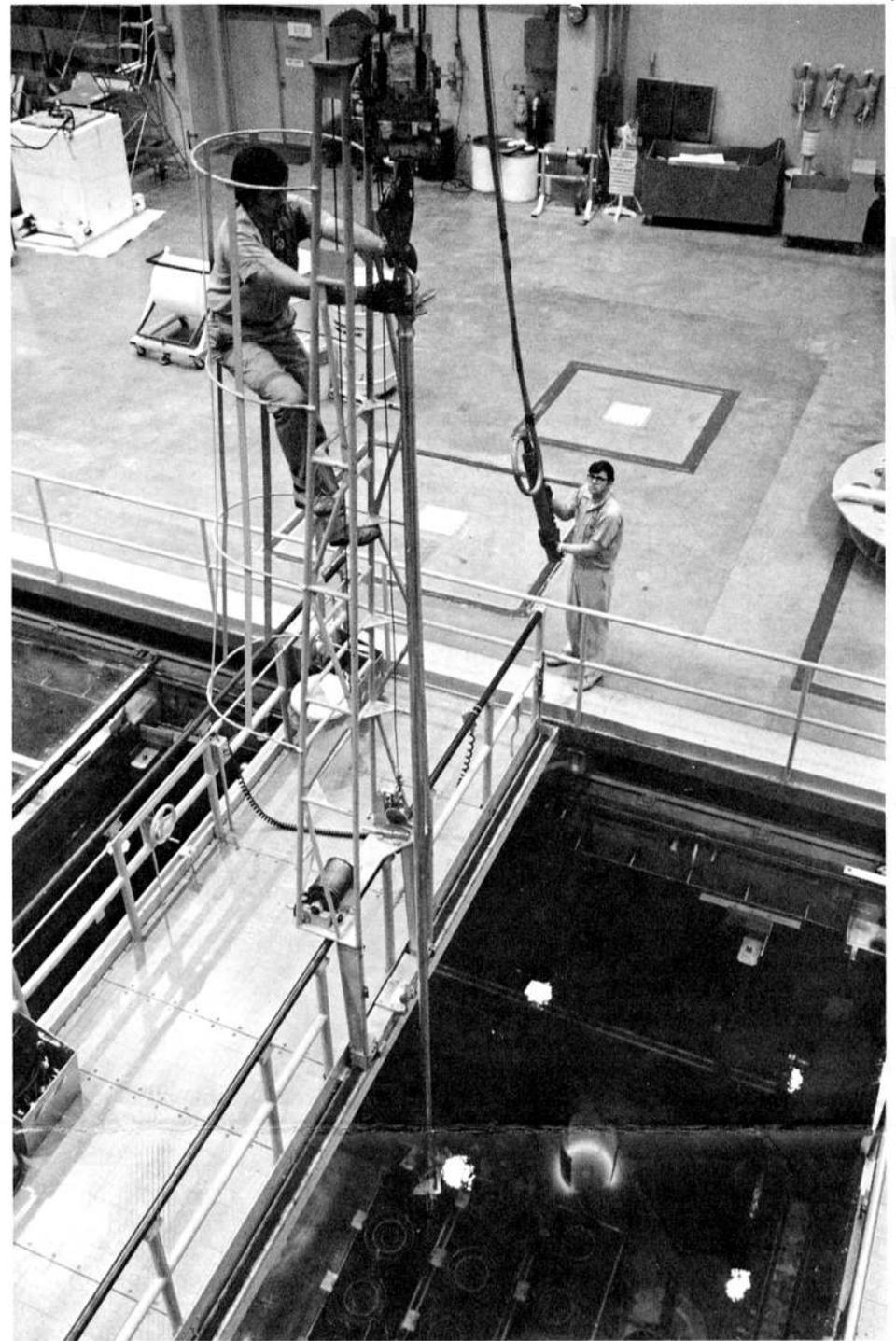
Even after they are certified, reactor controllers' studies are far from over. In order to remain certified, they are required to take written examinations every two months for the rest of their careers to ensure that they continue to be familiar with operating procedures and technological advancements.

## Kickoff launches United Way drive

More than 650 Nuclear Division employees gathered at the Oak Ridge Civic Center Friday morning, September 23, for the Division's 1977 United Way kickoff meeting. The employees—campaign workers and solicitors—heard remarks by Herman Snyder, United Way general chairman; Paul R. Vanstrum, Division vice president for engineering and development; and Sandra Harner, communications vice president for United Way of America.

Participants then spent about 45 minutes visiting agency exhibits and talking with agency representatives.

Photos from the kickoff, along with a report of progress to date towards this year's campaign goal of \$605,000, will appear in the October 13 issue of *Nuclear Division News*.



**CLIMBING**—Reactor controllers Jerry Cotter, climbing tower, and Jack Whaley, standing below, are trained personnel experienced in reactor maintenance, demonstrated here.

The months of training and the continual study and testing program enable controllers, like Cotter and Whaley, to become highly skilled in the operation of a nuclear reactor. "The work is difficult at times and

taking written exams as often as we do is almost like being in college," Cotter said. "However, being a reactor controller is challenging and we are aware of what is required of us to ensure safe operating practices."



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