



# NUCLEAR DIVISION NEWS

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

Vol 4 - No. 4

Thursday, February 15, 1973

## QUESTION BOX

If you have questions on company policies, benefits, etc. or any other problems with which we might help, just let us know. Drop your inquiry to the Editor, Nuclear Division News. (Or telephone it to your plant news representative; see page 7). You may or may not sign your name. It will not be used in the paper if you so desire.

Questions are referred to the proper authorities for accurate answers. Each query is given serious consideration for publication.

Answers may be given to employees personally if they so desire.

**QUESTION:** Does an annuity pension plan ever increase after death of the former retired employee to help that widow meet the higher cost of today's living expenses? If not, why not?

**ANSWER:** The latest information we have on the subject of pension benefits as they relate to the cost of living is a study published by Bankers Trust Company of New York in 1970. This study covered 201 industrial pension plans including Union Carbide Corporation.

The results show that none of the plans had an automatic cost of living provision for benefits paid to retirees or widows of retirees.

The study did show, however, that during the five-year period 1965-1970, 25 companies, including Union Carbide, did voluntarily increase pension benefits for retirees and widows of retirees, at the same time changes were approved for active employees.

Pension benefits for Carbide's retirees and eligible widows were increased July 1, 1969 by five per cent, subject to a minimum and a maximum figure.

**QUESTION:** My question to you concerns safety. Why does our employer (Union Carbide) spend an enormous amount of money for mandatory safety meetings, newsletters, safety awards and hang safety posters and safety creeds on every wall in the plants? A condition is allowed to exist in our plant areas and parking lots that is nothing less than negligence. I am speaking of the ice and snow that have caused numerous falls and injuries! Salt, sand, gravel and other measures would seem quite inexpensive indeed, when compared to a broken limb or perhaps a concussion. Could the reason for this negligence be that people are expendable off the job when they are not participating in an effort to gain national recognition as a leader in industrial safety? I cannot help but see our Company as hypocritical in this matter. Would you care to comment (1) on the number of reported falls, (2) related injuries, (3) give an educated guess as to the number of unreported accidents, (4) the possibil-

ity of serious injury or even death, when this frequency of accidents is present?

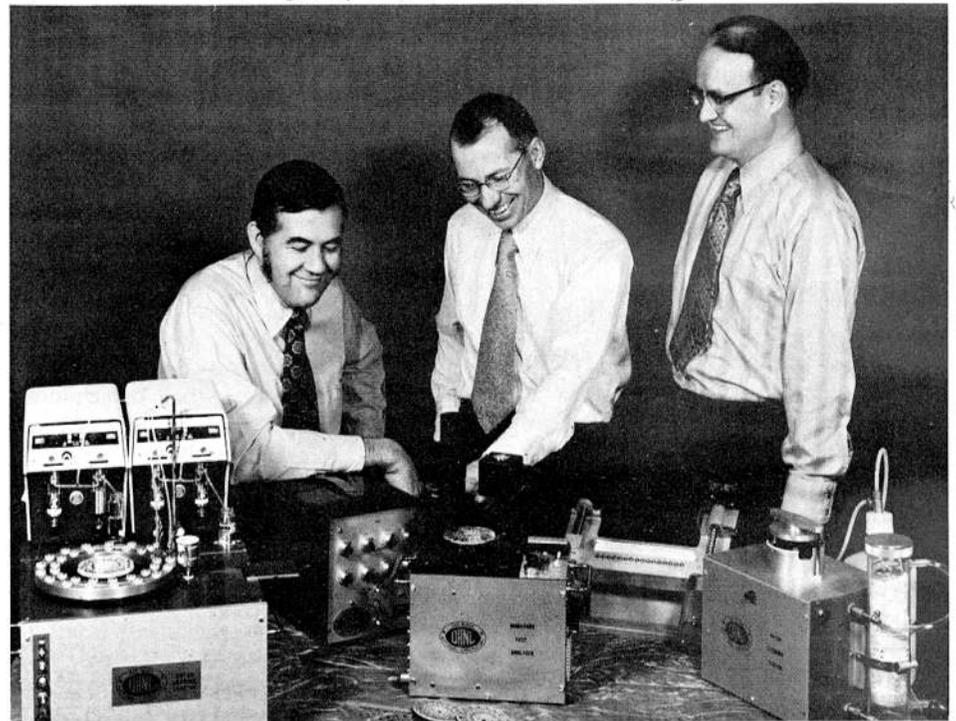
**ANSWER:** First, to respond to your concluding questions: (1) and (2), six accidents were reported in the Y-12 area, including two fractures; 19, including four fractures, in the ORNL area; and nine accidents, including one fracture, were reported at the ORGDP; (3) we have no "educated guess" concerning the number of unreported accidents; (4) of course, any fall can result in a serious injury or even death.

Union Carbide does spend an enormous amount of money to incorporate safety features in the design, construction, and maintenance of facilities to provide a safe place to work; as well as for safety meetings, signs, awards, and publications to encourage employees to follow safe practices.

While reducing costs due to accidents is part of our motivation, our primary concern is for the welfare and safety of our employees. We are interested in preventing accidents away from work as well as accidents on the job. A serious accident off the job, incidentally, costs the Company about as much as on-the-job ones, since the absent employee normally receives pay in both instances while he performs no work.

Now to the parking lot situation during the early January snow storm, it was the heaviest snow in this area in the past ten years. Partial thawing and refreezing produced slippery conditions during an extended period. Many man-hours (approximately 3,000) were directed toward the removal of snow and application of salt and/or chips during the period. Through safety meetings and other means, employees have been encouraged to exercise special care to avoid falls when footing is insecure. However, judging from the number of injuries reported, apparently we and our employees did not successfully cope with the situation. When the next heavy snow flies, we will try to do better.

A detailed story on the hazards of snow can be found on page four of this issue of Nuclear Division News.



GRAVITY-ZERO-GeMSAEC - Principal developers of the MAN Program's gravity-zero GeMSAEC fast analyzer are, from left, Carl A. Burtis, MAN Program; Wayne F. Johnson, Instrumentation and Controls Division; and James C. Mailen, Chemical Technology Division, all of ORNL. The hardware includes, from left, the automatic loader, the analyzer's data processing system, the newly miniaturized GeMSAEC itself, another data processing unit, and a small station for cleaning the rotor. The system is automated, and is currently being checked out at the Manned Space Flight Center, Houston, for evaluation in space applications.

## Miniature GeMSAEC designed for zero-gravity environment

Oak Ridge National Laboratory's Molecular Anatomy (MAN) Program has succeeded in producing a fast analyzer that can be used for immediate evaluation of biological changes taking place in members of a flight crew. The miniaturized fast analyzer GeMSAEC, a system

adapted for use in the space program, was turned over to the National Aeronautics and Space Administration this month.

Designed to occupy one cubic foot of space, as well as to be independent of the pull of gravity, the little GeMSAEC achieves its speed of analysis by transmitting and processing information through a small computer.

Earlier this month, Carl Burtis and Wayne Johnson took the device to the Manned Space Flight Center in Houston. There, the system, which includes four support devices, was checked out in a land-based operation, preparatory for use in space. Charles D. Scott, director of the Body Fluids Analysis Section of the MAN Program, joined Burtis and Johnson in Houston. The other member of the staff primarily involved in the development of the system is James Mailen.

## Union Carbide sells Ocean Systems holdings

Union Carbide Corporation and The Singer Company have sold their interests in Ocean Systems, Inc. to Samson Cordage Works of Boston.

Organized in 1965, Ocean Systems was owned approximately 72 percent by Union Carbide and 28 percent by Singer. Ocean Systems provides worldwide commercial diving services to the off-shore petroleum industry; marine surveying expertise; and the design and development of marine oriented equipment such as oil containment, collection systems, and mooring winches.

Ocean Systems has headquarters in Reston, Va., with facilities in Louisiana, Texas, California, Australia, England and Norway.

### DIVIDEND DECLARED

The board of directors of Union Carbide has declared the corporation's 223rd consecutive dividend. The amount of fifty cents a share on the outstanding capital stock is payable March 1, to stockholders of record at the close of business February 9, 1973.

# A 'period of adjustment' for visitors to the U.S.

In looking around the Oak Ridge National Laboratory and its facilities at Y-12, one notices many new people wearing white badges instead of the usual green ones. Who are these people? Where do they come from? What problems have they encountered in adjusting to living in the United States?

It may surprise you to know that there are over 170 foreign visitors on assignment at ORNL, working in various divisions and on numerous projects. They come from over 40 different countries, representing six of the seven continents. The duration of their assignments ranges from two months to intermittent to permanent.

### Language a problem

Carmen and Ignacio Alvarez of Mexico have been working in the Thermonuclear Division for about nine months. They are both on assignment from the University of Mexico. Mrs. Alvarez still has some trouble expressing herself in English, but does not feel the U.S. is foreign to her since Mexico is not so far away. She visited California and New York City previously, and still recalls "with wonder" her first sight of New York. Mrs. Alvarez enjoys shopping in Oak Ridge and thinks self-service stores are great.

Language is a problem to many visitors. Luis A. Remez brought his wife and infant daughter from Argentina last December. Neither he nor his wife speak very good English, but they are slowly adjusting. They have been impressed with the friendliness and willingness to help which Oak Ridgers have shown them. Remez has found his work in Neutron Physics to be very similar to what he did in Argentina, but things here are done on a much larger scale.



CARMEN ALVAREZ  
THE UNIVERSITY OF MEXICO

Zaka L.T. Lukuba is from Tanzania, a small country in East Africa. He came to the United States about six years ago to study at Knoxville College. He is now completing the requirements for a graduate degree at The University of Tennessee. His assignment is for one year in the Physics Division. Lukuba pointed out two aspects of life in the U.S. which seem to differ from life in his country. In Tanzania, value is placed more on the dignity of the individual than on his material possessions. There is also a stronger sense of responsibility to the members of one's

family. Lubuka, who is unmarried, plans to return to Tanzania next summer.

### Misses city lights

Heidrun Barnert-Wiemer, a very attractive young woman, has worked in the Chemical Technology Division since last April. Mrs. Barnert-Wiemer visited the United States previously to be with her husband who works at The University of Tennessee Space Center in Tullahoma. The biggest problem she has encountered has been buying clothes for herself and her husband. She does not find enough variety in the styles. Clothes for women are fashioned either for the very young or for the middle-aged woman. She is basically a "big city girl" and misses the concerts, theaters and cafes of Julich and Munich, Germany.

Gudrun and Kenny Hagemann, Denmark, have been in this country about six months. With them are their two children and a Danish baby-sitter. The Hagemanns found it easier to get settled than most people visiting another country. The main reason is that they made an "across the board" trade with ORNL's Jim B. Ball and his family. The trade includes houses, cars, jobs, and even friends. The Hagemanns, who are on assignment from the Niels Bohr Institute in Denmark, are working in the Physics Division. Hagemann makes motion pictures as a hobby, and has already filmed his first in Oak Ridge. Both he and Mrs. Hagemann enjoy the Oak Ridge Playhouse productions and other activities in Oak Ridge.

### Adjustment comes easy

Sumer Sahin, a bachelor from Turkey, is working in the Instrumentation and Controls Division. Although this is his first visit to the U.S., he had very little trouble adjusting to life here. He attributes this partly to the fact that he is a veteran at traveling. He has visited several other countries and has been exposed to many different ways of life.

Living in the United States is not a completely new experience for Brian T. McGregor of Australia. He had a similar assignment at Argonne National Laboratory in 1962. During that time he spent one day in Oak Ridge, but his memory of that day is vague. He lives with his wife and four children on West Outer Drive in Oak Ridge. The biggest adjustment they had to make was in their eating habits. The difference in the quality of foods, especially meat, was confusing at first. McGregor works in the Neutron Physics Division.

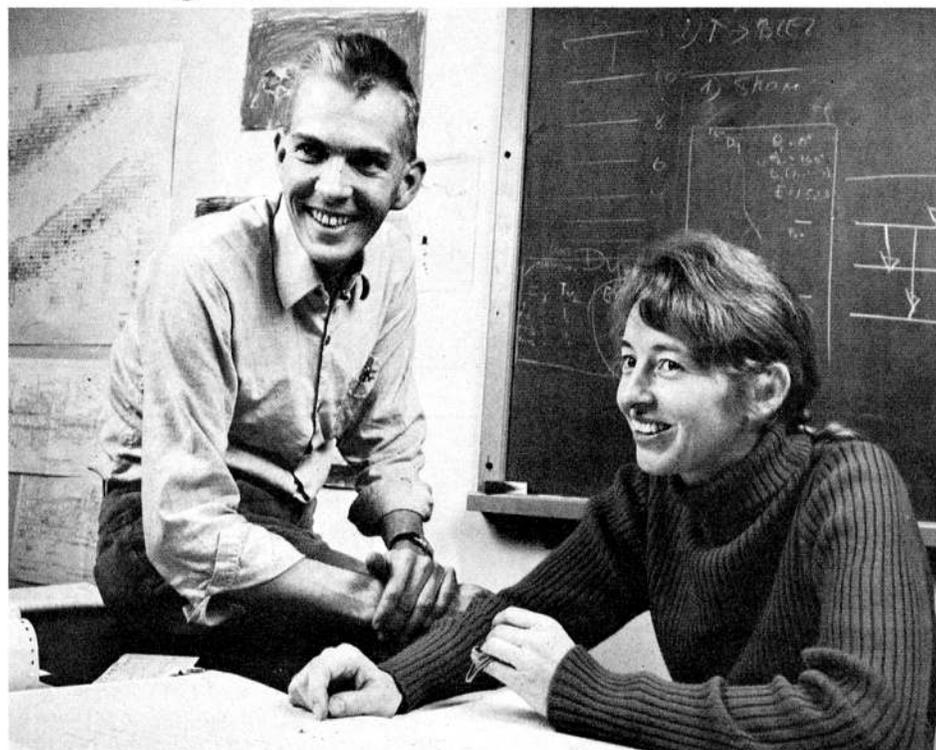
### Netherlands, Romania

Jan Dijk lives with his wife and son on California Avenue in Oak Ridge. The Dijks are from Groningen in The Netherlands, and have been in the U.S. for about 15 months. Dijk, a NATO Fellow, is assigned to the Biology Division. The Dijks do not find that much difference in life here, compared to The Netherlands. He expressed surprise at the scarcity of good foreign restaurants in this area.

Liana Deleanu is on a one-year assignment in the Health Physics Division. She is from Bucharest, Romania, but has been in the U.S. since 1970. Miss Deleanu has a brother who lives in Knoxville. She has

### ADDRESS CHANGE?

Have you moved? Make sure Personnel Records has your correct address.



KENNY AND GUDRUN HAGEMANN, NIELS BOHR INSTITUTE, DENMARK  
'ACROSS THE BOARD' TRADE

completed course requirements for her M.S. degree at The University of Tennessee. In her opinion, people in this area are very friendly and helpful, but her lack of knowledge of English was a big problem at first. She still finds it difficult to participate in the fads that are common in the U.S. She attributes this to the conservatism of her country - "people in Romania would just laugh at you."

country, as well as of the U.S. and its people. R.M.

## Navy's research topic at Metals society meet

Ronald D. Vardiman, transformation and kinetics branch of the Naval Research Laboratory in Washington, D.C., will be guest speaker at the February 22 meeting of the Oak Ridge Chapter of the American Society for Metals. Vardiman received his B.S. and M.S. degrees in physics and Ph.D. degree in metallurgy from Notre Dame University. He will review the phenomenon of super-conductivity and discuss the Naval Research Laboratory's interest in high frequency super-conductivity communications devices.

The meeting will be held at the Sheraton Motor Inn, I-40 and Cedar Bluff Road, in Knoxville. The program includes a social hour at 6:15 p.m., dinner at 7 p.m., and Vardiman's talk at 8 p.m. Non-members of ASM are welcome. For dinner reservations, call Conner Matthews, 3-1762, before February 21.



JAN DIJK  
GRONINGEN, THE NETHERLANDS

### Common problems

Christian Michel, Switzerland, has worked in the Biology Division since last August. He lives with his wife and son on West Outer Drive in Oak Ridge. Michel finds living in the U.S. similar to living in Switzerland. He is really impressed by the Oak Ridge Civic Center, especially the library and swimming pool. The Michels had a few problems with the language at first, not because they do not know English, but because of the various accents of people in this area. Michel enjoys the "team work" atmosphere at the Laboratory. He considers the free exchange of information, inside ORNL and with other laboratories, to be very beneficial.

The following points were generally agreed on by everyone interviewed: more international news would be welcomed; the lack of a public transit system creates problems for people living in Oak Ridge, if they have no or only one car; and living in the United States has given them a better understanding of their own

## NUCLEAR DIVISION NEWS



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# Cates named superintendent of ORGDP's operations planning



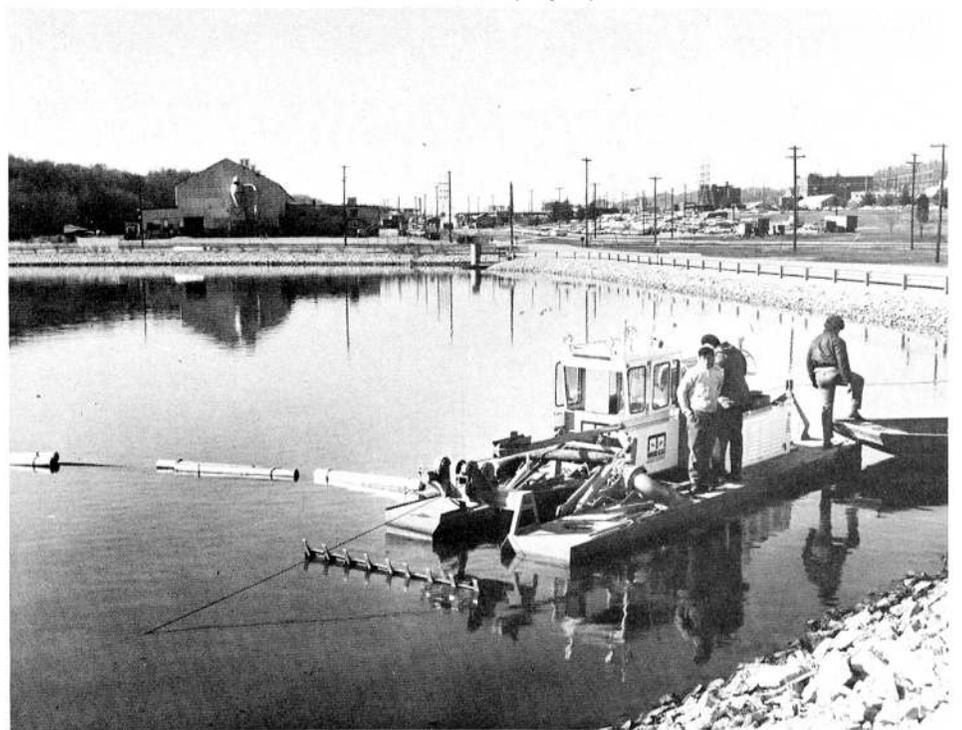
Phillip S. Cates

Phillip Stephen Cates has been promoted at the Oak Ridge Gaseous Diffusion Plant. He has been named superintendent of the Operations Planning Department of the Operations Division, according to an announcement from A.J. Legeay, division superintendent.

Cates, a native of Blount County, is a graduate of The University of Tennessee, receiving a B.S. in mechanical engineering in 1959 and an M.E. in 1966. He joined Union Carbide in 1959 and earned his graduate degree under the Carbide Educational Assistance Program.

Mrs. Cates is the former Shirley Davis. The couple lives at 106 Davis Lane, Oak Ridge. They have four children, Diane, Debra, Donna and Phil.

A member of the American Society of Mechanical Engineers, Cates likes spectator sports, and coaches little league basketball and softball in his spare time.



MUD CAT AT WORK — Employees of the Marcol Dredging Company, Hanahan, S.C., set up their equipment to remove thousands of cubic yards of silt from the holding pond at East Portal, Y-12. The sludge will be pumped by the "Mud Cat" to an empty basin prepared to receive the material.

# W-4 forms determine withholding amounts

Since the new Federal withholding system went into effect last year, many employees have failed to file new Forms W-4, and as a result are having too much tax withheld from their wages.

A new W-4 may be filed at any time, and should be filed if your number of allowances either increase or decrease when: your marital status changes; a dependent is born or dies; you begin to stop supporting a dependent; you become 65 years old; or your eligibility for additional withholding allowances changes.

To avoid owing Federal income tax at the end of the year, you may increase the amount to be withheld by claiming fewer or zero allowances, or by entering into an

agreement with the Company to have more withheld, or both.

W-4 forms are available from the Time-keeping Department in any of the four Nuclear Division Plants.

## WASHINGTON'S BIRTHDAY

Monday, February 19, is an official holiday for Oak Ridge employees of the Nuclear Division. February 19 is one of the newly designated federal holidays, marking the birthday of George Washington.

No employee in Oak Ridge will be required to be at work, unless his presence is required by security or continuous operations at the plants.

# Mud - Cat to remove silt from ORGDP, Y-12 ponds

The New Hope Pond, a five-acre body of water which serves as a holding and settling basin for the water effluent from the Oak Ridge Y-12 Plant, is being cleaned of sedimentation which has accumulated since the pond's construction in 1963.

The cleaning operation, being performed by the Marcol Dredging Company of Hanahan, S.C., under a \$47,633 contract, is expected to continue for about six to eight weeks.

M.G. Solomon Jr., president of the dredging firm, is supervising the operation. He estimates that the operation will remove over 20,000 cubic yards of material from the basin and will deepen the pond from its present 0-3 foot level up to a depth of nine feet at the deepest point.

## Water returns to pond

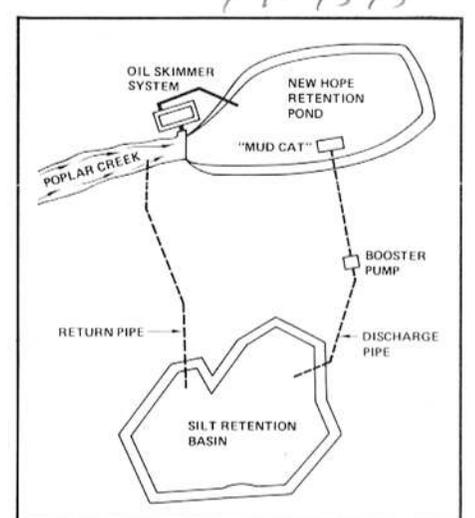
The removal of the sedimentation is being performed by the "Mud Cat" system, which consists of a floatation barge, pump, auger, booster pump and necessary pipes for the transfer of the silt to a disposal area. As the auger cuts the sludge and sedimentation from the bottom of the basin, the waste material is sucked into a tube attached to the auger and forced out through the discharge pipes. A booster pump located along the length of pipe, about 100 yards from the pond, assists in moving the slurry to its destination, an empty basin, located south of the pond, with a 38,000 cubic yard capacity prepared in anticipation of the dredging operation.

After the slurry reaches the disposal basin, the water returns by gravity through another outlet to the head of the effluent stream which flows from the Y-12 Plant. The solid material remains in the disposal basin.

The Y-12 project engineer for the job is Dewey W. Young of the Engineering Division. Also involved in the work is Merwyn Sanders, Y-12 Environmental supervisor.

## Similar ORGDP plan

Sanders explained that the New Hope Pond was built about 10 years ago to



RETENTION POND — This schematic shows how the water and sludge flows from the retention pond into the previously prepared basin, located a few hundred yards from the pond. Water from the slurry flows downhill from the silt basin into the effluent stream from the Y-12 Plant.

serve as a mixing and settling pond for the water effluent from the Y-12 Plant. The holdup of the water in the pond for a period of time permits an equalization of the pH factor. Over the years, however, the storage capacity and the effectiveness of the pond was lessened by the gradual accumulation of sedimentation, just as any farm pond or large lake eventually fills with silt.

A similar project is proposed at the Oak Ridge Gaseous Diffusion Plant's K-1407B holding pond. William C. Hartman, Shift Operations, states that approximately 6,000 cubic yards of silt will be removed from the pond into a retention pond, and then the water will be recycled back into the holding pond, removing about 90 percent of the sludge from the body of water. The ORGDP project will take about 10 days, Hartman estimates.

Marcol Dredging Company will do the dredging at the ORGDP site, after the New Hope Pond job is completed.



RUST-FREE FOR 20 YEARS — G.H. Cartledge, consultant to ORNL's Chemistry Division, views the successful rust-inhibiting effect of the fission product, technetium. In his hand are the two bottles shown in the inset, one containing rusty water, the other a solution of potassium pertechnetate in which a small section of carbon steel was placed in 1953. Twenty years later, there is no change in the Tc-submerged metal, while the water in the other bottle has succeeded in rusting the second chip in the same length of time. The rust-inhibiting properties of technetium were discovered by Cartledge, and commercial use of the material is limited to situations where the element's slight radioactivity is not a problem. Cartledge retired in 1961.

# January's heavy snow brought alien hazards to all of us

The heavy snow early in January in Oak Ridge and Paducah proved one thing—Nuclear Division employees are not very safe on their feet!

While snow may provide us with that winter wonderland of song and folklore, it also brings dangers to us all. The National Safety Council calls it "decorative -- but dangerous," and advises:

1. Slippery snow is a major cause of bad falls, which runs second to motor vehicle mishaps in number of accidental deaths in the nation.

2. Life and health insurance records show that shoveling sidewalks, pushing stalled autos and other snow-caused exertions inevitably raise annual heart attack and injury tolls.

3. Fires increase in winter, with defective and overworked heating plants the major causes. Snow and ice hamper firemen, boosting losses.

4. Compared to windstorms, snow is a minor hazard to roofs, but it can be costly if it merely approaches the world's record fall for 24 hours - 76 inches at Silver Lake, Colo., in 1921.

5. Heavy snow piles up insurance claims for minor damages and towing costs, but spotty ice and snow cause more serious auto accidents.



OVEREXERTION, TOO, MAY KILL

6. Claims under liability insurance on commercial properties reflect a high number of falls caused by snow being tracked into buildings.

7. Psychologists say human efficiency decreases in the winter. At the same time, hazards to worker safety are multiplied by bad weather.

8. Ice storms have thrown cities into darkness and silenced phones over a wide area. Telephone company engineers say five states are all that are free of this dreaded hazard. (Tennessee is not one of them! Nor is Kentucky.)

9. Snow-laden trees, a major danger to utility lines, also annually damages homes, autos.

10. Perishables en route to market are a likely loss if a sudden storm strikes, but can be safely insured. Theft of insured goods in transit during storms is reported to be low.

11. Flood-induced landslides trapped trains in Washington early last winter, but blizzards are even more feared, have necessitated dramatic helicopter, ski team rescue efforts.

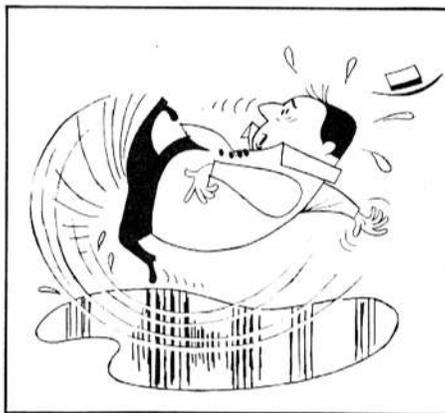
12. Storm-closed airports mean not only sizable snow removal expenses and canceled flights, but important indirect losses from business passenger delay, overdue freight and mail.

13. Snow is a million-dollar threat to ranchers, farmers, and in the past has led to airlifting feed to keep animals alive during severe storms.

You probably haven't been coached in walking since you toddled across the living room, at age two. But believe it or not, winter walking is an art and requires instruction to be done properly.

The deadliest time for winter walkers is at twilight. There is enough light to make car headlights ineffective but not enough to silhouette figures clearly.

It's possible that we may not have another snow like the January one for some time. But, in case there comes another one, don't be a fall guy... watch your step.



FALLS — ENEMY NUMBER ONE

## 'SECRETARY IN THE KNOW'

Rebecca Rickman, ORNL's Neutron Physics Division, recently participated in a panel, "Speak Out... Be in the Know," at the Sixth Annual Secretarial Seminar in Cleveland, Tenn. Miss Rickman, a certified professional secretary, is president of the Oak Ridge Chapter of the National Secretaries Association.

## COMPANY SERVICE —20-25-30—

### Y-12 PLANT 25 YEARS

James R. Helton.

William H. Park and Carl W. Frazier.

### 20 YEARS

John W. Minchey, Bruce T. Fox, William C. Pullen, Clarence G. Hyde, Henry L. Hamilton, James M. Seivers Jr., Lonnie L. Bailey, Stephen J. Sargent, H.L. Morgan and Edward W. Cook.

George W. McGown, A.D. Justus, John A. McKenzie, Milo A. Horton, Calvin G. Johnson, Royce L. Vanderpool, Joseph E. White and Patsy J. Stallard.

### ORNL 25 YEARS

Ada E. Carter, Meyer B. Herskovitz, Ernest D. Lance and William H. Tabor.

### 20 YEARS

Calvin L. Julian, Paul H. Stelson, Robert L. Nelson, Richard J. Braatz and Lloyd G. Alexander.

### PADUCAH 20 YEARS

Wilton G. Higgins, Julius M. Sparkman, Daris B. Charlton, Anna Rose Davis, William G. Taylor, Charles Kuppart Jr., Robert M. Spiceland, Joseph T. Englert, James R. Austin, Charles H. Biggart, John W. Hornsby and Raymond F. Hunt.

### ORGDP 25 YEARS

Helen M. Truett and Robert N. Rice.

### 20 YEARS

Ben F. Johnson.



WINTER WEATHER CUTS VISIBILITY

## Walking on snow or ice requires skill; ability to fall also helps

Walking on uneven, snowy or icy surfaces, is a special hazard reserved for these winter months. A few tips may keep you from a painful fall.

- Be sure to use proper footwear for winter. Two strips of abrasive or adhesive tape placed criss-cross on the soles of the footwear will help.
- Watch carefully where you place your feet when walking.
- Watch carefully where you place your feet when alighting from cars.
- Walk "loose," in other words, don't walk stiff-jointed.
- Take short to medium steps, not long, extended ones.
- When real slippery spots can't be avoided it's best to sort of "shuffle along" keeping both feet on the ground.
- A good general rule for winter is to hold handrails on steps and wherever they are provided. Using available supports where footing is uncertain is good safety sense.
- Avoid carrying large or heavy things - avoid carrying anything if possible.

If you do fall, try to fall relaxed like a football player does. If you fall in a stiff posture, the chances of injury and broken bones are greater. This is particularly true when your arms are rigid and you land on them forcefully.

## Division deaths



Mr. Silvey

Walter C. Silvey, a pipefitter in ORNL's Plant and Equipment Division, died January 26 at his home. He had been ill since last September.

Mr. Silvey came to work for Union Carbide on November 8, 1945. He was originally from Culberson, N.C.

Survivors include his wife, Mrs. Jessie Pope Silvey, 471 Oak Ridge Turnpike, Oak Ridge; a son, Jimmy; two daughters, Mrs. Helen Stalnaker and Mrs. Carolyn Lambert; two brothers; six sisters and seven grandchildren.

Funeral services were held at Weatherford Chapel, Oak Ridge, with the Rev. James Ross officiating. Burial was in Highland Memorial Cemetery, Knoxville.

## Nuclear Division deaths

Carl B. Lawson, Dimensional Inspection, died at his Route 2, Kingston home, January 28.

A native of Hancock County, Mr. Lawson joined Union Carbide in 1957. He was a member of the Optimist Club and served as a coach with several youth league teams.



Mr. Lawson

Prior to coming to Y-12, he worked for Clark Center, in Kingston.

Survivors include his wife, Mrs. Aileen Moore Lawson; two daughters, Sharon Melissa and Karen Melinda; a son, Stephen M.; his mother, Mrs. Tillman Lawson; three sisters, and three brothers.

Funeral services were held at the Kyker Funeral Chapel with the Rev. Dewey Roberts officiating. Burial followed in the Calvary Baptist Church Cemetery.

Samuel L. Gallman, Y-12's Dimensional Inspection, died January 28, at his 111 South Hollywood Circle, Oak Ridge, home.

He came with Union Carbide in 1951, after working with the Cone Mills, Pineville, N.C. He was a veteran of the U.S. Army, serving from 1937 until 1942.



Mr. Gallman

Survivors include his wife, Mrs. Jackie Gallman; son, Richard; daughters, Patricia G. Lankford and Rose Marie Gallman; mother, Mrs. Jessie K. Gallman; and two grandchildren.

Funeral services were held at Weatherford Chapel with the Rev. Buford Reneau and the Rev. H.P. Alexander officiating. Interment was in Oak Ridge Memorial Park.

Richard M. Mustin, Y-12's Beta Two Chemistry in the Metal Preparation Division, died February 4 at the Oak Ridge Hospital.

Mr. Mustin, a native of Rogersville, came with Union Carbide in 1945. He had previously worked with the Holston Ordinance Works, Kingsport.



Mr. Mustin

Survivors include his wife, Mrs. Norma Mustin, 422 Jefferson Avenue, Oak Ridge; sons, Charles, Robert and Gerald Mustin; a daughter, Mrs. Jeanie Kiser; sisters, Mrs. Ella Brooks, Mrs. J.J. Carpenter and Mrs. Hubert Brooks; brother, Ernest Mustin; and eight grandchildren.

Funeral services were held at Faith Lutheran Church with the Rev. James Evers officiating. Burial followed at Mustin Cemetery in Rogersville, after services at the Pleasant Hill Baptist Church there.

William W. Warford, a guard in the Paducah Gaseous Diffusion Plant's Plant Protection Department, died in an automobile accident January 27. A native of Drakesboro, Ky., Mr. Warford came with Union Carbide in 1972.



Mr. Warford

He is survived by his parents, the Rev. and Mrs. Roland Warford.

Funeral service and burial were held in Drakesboro.

### RETIRED Y-12ER DIES

Donovan Griffies, who retired from Y-12 in 1965, died January 27 at his Oak Ridge home. He was a native of Villa Rica, Ga. Mr. Griffies worked more than 14 years before retiring. Funeral services and burial were held in Oak Ridge.

## Woman-of-Year award honors Melinda Tilley, Data Processing

Melinda Tilley, Y-12's Data Processing Department, was recently named the "Outstanding Young Woman of the Year" for her achievements, leadership and service to Oak Ridge last year. She was sponsored by the Daughters of the American Revolution.

A native of Oak Ridge, Mrs. Tilley graduated from Oak Ridge High School and attended The University of Tennessee. She joined Union Carbide in 1969. An active member of the DAR, she is corresponding secretary and was nominated for the State's "Outstanding Junior Member" award by the Clinch Bend Chapter last year.

In the local Jaycettes, Mrs. Tilley serves as chairman of the Americanism Projects which include Prisoners of War, Missing in Action, Books to Veterans Hospitals and Christmas gifts and cards to area overseas servicemen. She is also currently editing a monthly newsletter and was chairman of the underprivileged children's Christmas party.

She served as a volunteer worker in the 1972 Jerry Lewis Muscular Dystrophy



Mrs. Melinda Tilley

Telethon, American Cancer Society, Walk for Mankind, and the Downtown Business Council's "Back to School Celebration." With all these activities, she still finds time to serve as a Pink Lady at the Oak Ridge Hospital.

Mrs. Tilley and her husband, Ed, in Y-12's Dispatching Department, live at 121 East Vanderbilt Drive, Oak Ridge. Her father, James W. Gregory, is superintendent of the Civil and Structural Engineering Department at the Oak Ridge Gaseous Diffusion Plant.

## CPS exam course begins February 20

A five-week course in business law and public policy, to be held on Tuesdays 6:30 to 8:30 p.m. will start February 20 at the Oak Ridge High School.

This is the fifth course offered in the series programmed to assist individuals preparing for the Certified Professional Secretary examination and others who are interested in improvement in business subjects. The course will be taught by M.L. Townsend from The University of Tennessee.

Information on registration, textbook and schedule can be obtained by contacting Bettye Burns, extension 3-1306, chairman of CPS service and education, Oak Ridge Chapter of the National Secretaries Association.

### MEETING SET FOR INVESTORS

The East Tennessee Chapter of the National Association of Investment Clubs will meet next week. Eugene Stephens will speak on "No-Load Mutual Funds - Their Use and Retirement Programs." The meeting will be held at 7:30 p.m., February 20, at the Knoxville State Area Vocational School, 1100 Liberty Street, Knoxville.



WORLD PRESS FELLOWS - Visiting facilities in the Oak Ridge area recently were Fellows from the World Press Institute, using Macalester College as their "social laboratory." The journalists, from 17 countries, toured the south during January. In the front row, from left, are Nicola Crocetti, Italy; Luz Noli, Panama; Gautam Vohra, India; Naoaki Usui, Japan; Ove Johansson, Sweden; Sharon Churcher, United Kingdom; and Kyung-Moon Lee, Korea. In the back row are Joseph Nunoo, Ghana; Howard Everidge, student assistant from Macalester College; Peter Tickner, United Kingdom; Lev Yelisseyev, U.S.S.R.; Jose Ulloa, Ecuador; Ney Curvo, Brazil; Mark H. Stedman, Program Director for WPI, Jacque Voss and Steve Grochala, Macalester College; and Razi Guterman, Israel.



THERMONUCLEAR FUSION DISCUSSED - Herman Postma, director of the Thermonuclear Division of ORNL, discusses fusion as a possible solution to the world's energy crisis to the Fellows of World Press Institute. Union Carbide is one of the major United States corporations who sponsor the Institute. WPI seeks "to provide the journalists with an open and unfettered view of American society at every level so that they may return home with new-found ability to report and interpret U.S. affairs more accurately and with deeper understanding."

ORNL 0928-72



MIXED DOUBLES WINNERS — Mary "Mutt" and Benny Smith swept last year's All Carbide Tournament in Mixed Doubles competition. Smith does not work at Carbide but his wife does, making him eligible to enroll in the competition. Mrs. Smith works at ORNL.

## ORNL's Mary Ellen Smith cops top honors in women's bowling

Mary Ellen "Mutt" Smith, ORNL Technical Information Division, was declared champion in the recent Oak Ridge Women's Bowling Tournament. The annual event, the silver anniversary for female bowlers in the Oak Ridge area, was the largest and liveliest in history, according to bowlers.

### SKEET TOURNAMENT

Skeet firing in January saw Bill Brundage assume first place, with 49.116; H.P. Prewett, 48.575, in second place; and Leon Bray, in third place, with 48.429. Under penalty were Bob Allstun and Perry Bullard.



### Y-12 PLANT

CAR POOL members wanted from Norwood section, Knoxville, to any Portal, straight day. D.L. Frazier, plant phone 3-5139, home phone Knoxville 689-5589.

RIDE from vicinity of Essex Lane, Oak Ridge, to Central Portal, straight day shift, wish to leave home before 7 a.m. H.L. Huff, home phone Oak Ridge 483-1683.

### ORNL

RIDE or join car pool from Kingston to any portal at ORNL, 8:15 a.m. shift. Glenda Parks, plant phone 3-1119, home phone Kingston 376-7402.

### ORGDP

RIDE from Pleasant Ridge, Merchants Road, Knoxville, to Portal Five, 8 to 4:30 shift. Mike Willard, plant phone 3-3341, home phone Knoxville 523-5371.

Mutt rolled a series of 568 in her team event rolling with the Live Wires. Her games were 194, 192 and 182. Rolling doubles with Dorothy Margrave, from Clinton, Mutt posted scores of 192, 179 and 162 for a series of 533.

Her singles were 142 ("I almost blew it right there!"), 162, and 211 ("I made a fast recovery there!")... for a total of 515.

Her scratch all events score of 1616 earned her the crown, the best female bowler in town.

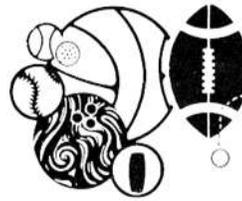
### CARBIDE BASKETBALL

The GBU's continue their relentless march in the Atomic League, their latest victim being the Isomets who fell 74 to 45. Larry McDonald continues to dominate the fast-breaking action in the team's ruling hand in league action.

Team	W	L
GBU's	8	0
CC 69ers	6	1
Pistols	5	2
Springers	6	3
Sharpshooters	2	4
K-25 Trojans	3	5
Bottlenecks	2	5
A-5 Bucks	1	6
Isomets	0	7

The Aardvarks, with seven wins, outdistance the TAT Playmakers by two games. The Playmakers have suffered only one loss, as have the Aardvarks.

Team	W	L
Aardvarks	7	1
TAT Playmakers	5	1
Bombers	5	2
Grundy Express	5	3
Environmental Sciences	3	3
X-10 Cafeteria	3	4
Abends	3	4
Biology	1	5
Butterfingers	1	8



## RECREATION NOTES

### ALL-CARBIDE BOWLING TOURNAMENT SET MARCH 31, APRIL 1, 7, and 8

The All-Carbide Bowling Tournament, set for Oak Ridge March 31, April 1 and 7 and 8, is beginning to shape up. Rules and entries are in the hands of all league secretaries, or may be picked up at the Recreation Office (extension 3-5833).

A new rule is being tried this year. Bowlers may, on their own option, bowl their singles and dougles together, as has been done, or they may separate them. This gives older bowlers a "breather" and eliminates the break-neck speed sometimes associated with these events.

### CARBIDE VOLLEYBALL

Four teams still maintain perfect records in the Volleyball League, with The Hawks in front due to their multiple wins. The Pack, Committee and Gang also stand undefeated:

League standings follow:

Team	W	L
The Hawks	15	0
The Pack	12	0
The Committee	9	0
The Gang	9	0
Taxi Squad	10	2
Y-12 Old Men	10	2
Electric Bananas	8	4
Benthics	5	4
Anti-Quarks	8	7
Jokers	8	7
Radphys	6	9
Old Men	3	6
Bombers	4	8
Raiders	4	11
Playmakers	3	9
Quarks	3	9
Spikers	3	9
Over-the-Hill Gang	2	7
Bawlers	3	12
Sloths	1	8
Phoenix	0	12

### Y-12 BOWLING

The Mini Strikes grab an early, rather substantial lead in the C Bowling League, with no losses through January. Travis Craig, Big Five, rolled hot recently, with a 246 game to his credit; Bill Ladd, Rollmasters, rolled a 684 scratch series!

The Bumpers barged out in front of the Classic League, with a two-point lead over the Eightballs and Rojo's. The Screwballs rolled a 3112 handicap series early this year. Don Forrester, Rojo's, rolled a 255 game... pushed to a 292 handicap single.

The Alley Cats stand high in Mixed League bowling, three and one-half points away from the Splinters. Walt Joest rolled a 233 game last week to pace the men bowlers. Wanda Sewell, Rollers, holds high game for women, a 211.

### ORGDP BOWLING

The Wednesday League puts the Mix-Ups up front a mere couple of points ahead of the Pirates. Charley Johnson holds high handicap series... with a high 702 posted recently.

In Tuesday League standings the All Stars are still all alone out front, miles ahead of the City Slickers and Double X team. J.V. Green recently posted a 232 scratch game; P.E. Clabough a 556 series.

In the ORGDP Women's Bowling League, the Pay-Offs pin a seven-point lead on the boards, ahead of the Spotters. The Pin-Ups and Up-Towners are tied for third place. Sue Davis recently rolled a 514 scratch series, a 625 handicap tally.

### ORNL BOWLING

The Mousechasers took an early lead in the ORNL Ladies Bowling League recently with Georgia Guinn rolling a 551 scratch series. Sally Stockstill, Pick-Ups, posted a 232 high single scratch game during the new second half.

A League leaders feature the Eagle Eyes a bare step ahead of the second-place team. ORAU's Carlton holds a 204 high thus far, with the Half Frames' Thomas one pin behind him.

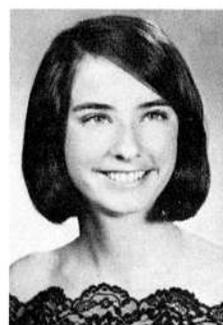
The Damagers are miles ahead of everyone in the C League. The Remkeys' Burch recently rolled a 231 scratch game to lead bowlers for the season.

The Woodchoppers and Gutterfinks are tied in first place in the E League. The Guttersnipes' Farrelly recently rolled a 219 to pace his team.

### ALL CARBIDE BOWLING

Team Number Two is currently number one in the Carbide Family Mixed League, rolling every Friday night in Oak Ridge. Charley Thompson recently rolled a 565 scratch series; Tillie Plaza a 503 to pace men and women bowlers.

## Jenkins daughter UT honor scholar



Miss Jenkins

Patricia Susan Jenkins, daughter of Claude Jenkins of ORNL's Plant and Equipment Division, finished the fall quarter at the University of Tennessee with a 4.0 average. Patricia, who is a math and speech therapy major, carried 18 credit hours during the quarter. She worked last summer in ORNL's Security Office. The Jenkins home is at 116 Nesper Road, Oak Ridge.

## Zinc --- the pleasure metal

(Editor's Note: Dr. Lincoln alternates his regular column with "The Medicine Chest," where he answers questions from employees concerning their 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, or call the news editor in your plant, and give him your question on the telephone.)

By T. A. Lincoln, M.D.

The story of zinc is fascinating because it is associated with the pleasures of sex, smell, and taste. Some readers may consider the designation "pleasure metal" a gimmick, but before you make such a judgment read the facts and then decide.

Although a 155 lb. man or woman contains only one to two grams of zinc and the usual daily dietary intake is only about 10 to 15 milligrams, this element

plays a key role in growth and development as well as in adult health.

Zinc deficiency in humans is rare because most diets seem to have the small amount required. Nevertheless, young people with zinc deficiencies



have been found and the effect on their growth and development is impressive. In parts of Iran where poverty is severe and the diet poor, children and adults eat clay. Clay eating by children or pregnant women is not unheard of in the U.S.A. Clay acts as a chelating agent which binds metals, particularly zinc and iron, which otherwise would be found in their primarily cereal diet, and prevents them from being absorbed.

### No sexual maturity

These zinc deficient adolescents show severe growth retardation and are almost dwarfs. They have a chronic anemia and do not mature sexually. Their puberty either is grossly delayed or does not occur.

Zinc deficiency sometimes occurs with intestinal diseases which interfere with the normal absorption of trace metals from the intestine. Dr. W.J. Darby and his associates at Vanderbilt University in Nashville have treated several cases of malabsorption with zinc. One boy 20 years old who had not experienced puberty has responded remarkably.

The pictures of the changes which occurred in the Iranian boys after zinc treatment and improved diet are remarkable. One 20-year-old boy was only three feet eight inches tall and had not entered puberty. Two years after treatment he had grown five inches and was fully sexually developed.

### The role of zinc

The role of zinc in sexual function after maturity has been reached and diet is adequate is undetermined. However, tissue concentrations in the prostate and testes remain constant throughout life, implying the need for a regular dietary supply. (If you feel your potency is fading, don't rush out and eat zinc! Too much will cause nausea, vomiting, diarrhea, and fever.)

Dr. Robert Henkin and his associates at the National Institutes of Health have treated patients who have deficient taste

ability, hypogeusia (hi-po-gu' ze-ah), or perverted taste, dysgeusia, and deficient smell acuity, hyposmia, or perverted smell, dysosmia, with zinc sulfate. Many have shown considerable improvement.

Most of these patients complained of the inability to taste their food or of bizarre and unpleasant tastes and odors from foods which other people found normal.

### Affects taste, smell

One pizza maker had noted the sudden onset of the inability to taste and smell after a severe upper respiratory infection. After he returned to work, the foods he prepared had an overpoweringly obnoxious odor. The foods tasted and smelled rotten, like manure or garbage. Many other foods and odors from soaps, shaving lotions, and tobacco were obnoxious. He had limited his diet to lettuce, rice, bland cheeses and apples and had lost 15 pounds in weight.

Apparently zinc plays a role in smell and taste reception and anything which disturbs its normal metabolism or incorporation into enzyme systems may affect these senses. There is now underway an attempt to evaluate the role of zinc in treating the extreme aversion to food which is often characteristic of some terminal malignancies. Decreased plasma zinc concentrations have been found in some patients with cancer. Even though zinc would not change the course of the disease, being able to eat and maintain minimum nutrition would make the terminal illness much less difficult for the patient and his family.

### Importance recognized

Zinc apparently influences wound healing and patients who have large open wounds are sometimes helped with it. Here the help is apparently related to the existence of a deficiency, perhaps related to the disease or injury. Zinc does not accelerate healing in normal laboratory animals.

Zinc is an important part of several metalloenzyme systems. The removal of zinc from the molecule results in loss of enzymatic activity. The role of zinc in diabetes mellitus is unclear, but most insulin preparations are zinc insulin suspensions. Rats fed a zinc deficient diet exhibit an increased sensitivity to insulin.

Now, was the designation of zinc as the "pleasure" metal unreasonable? Perhaps, but its importance in growth and development will surely be conceded. How its functions in the pleasures of tasting and smelling is still to be determined, but appears important.

## Next Issue

The next issue will be dated Mar. 1.  
The deadline is Feb. 21.

## Gala banquet set February 19 to highlight engineers week

Engineers Week, February 18-24, will be highlighted in the East Tennessee area with a banquet, February 19.

The Tennessee Society of Professional Engineers has chosen "Engineering... a Better Environment through Technology" as its theme. The Oak Ridge section, under the general chairmanship of Myer Bender, director of general engineering at ORNL, has joined with Knoxville engineering societies to sponsor the banquet set at Knoxville's Hyatt House.

Coordinating Knoxville activities with Bender is Manuel Milligan, professor of mechanical engineering at The University of Tennessee. Program chairman is Robert Collignon, civil engineer, and director-elect of the TSPE.



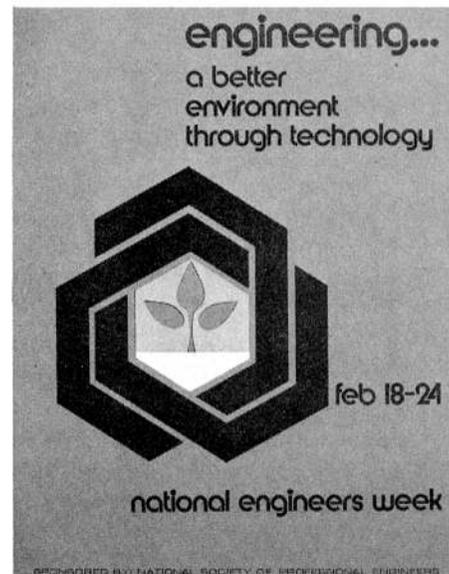
Sen. Howard H. Baker Jr.

Senator Howard H. Baker Jr., Tennessee's senior senator, will discuss "The Role of Engineers in Today's Society."

In addition to the TSPE banquet, many Oak Ridge technical societies will observe the special week by presenting local displays and providing professional speakers for schools and civic clubs. Those wishing special speakers should contact Charles B. Pollock, extension 3-1505.

### Committees listed

Assisting Bender with TSPE activities are Sam Thompson, treasurer, ORGDP; Clifford Burchsted, banquet arrangements, ORNL; Joe Anderson, ticket sales



coordinator; George C. Banick, publicity, General Electric Company; John Schacter, speaker contact, AECOP; James Hylton, displays, Y-12; Rolf Rosvinge, TSPE president; ORGDP; Thomas Pickel, awards, ORNL.

Participating societies with their representatives are TSPE, Bender; Society of Manufacturing Engineers, Boyer; Instrument Society of America, Hylton; American Society of Mechanical Engineers, Phillip Hallouk; Institute of Electrical and Electronic Engineers, Frank Manning; American Society of Certified Engineering Technicians, Arthur Marquardt; American Institute of Chemical Engineers, Pickel; American Society of Non-destructive Testing, Fred Tredinnick; and American Society for Metals, Pollock.

Traditionally, Engineers Week is always observed during the week in which George Washington's birthday falls. The Revolutionary War general and first president of the United States, was a surveyor, or civil engineer, by trade.



RECENT WEDDING — Wedding bells chimed for Brenda Joyce Hickman and John A. Mayo recently at Mount Zion Baptist Church in Dayton, Tenn. Brenda is a nurse in ORNL's Health Division and John is a project engineer for Rust Engineering at Y-12. The wedding trip was to Kingston, Jamaica. The Mayos reside at 202 Alder Lane, Oak Ridge.



**CREDIT UNION OFFICIALS AT ORGDP** — The Oak Ridge Gaseous Diffusion Plant Credit Union recently named its 1973 officers at the annual meeting. Seated from left, are Charles Goodman, Bert Kelley, board of directors; Evelyn Cole, board member and secretary; V.O. Maggart, board member and president; and Mel Strickland, member of the credit committee. Standing are Herman Mims, manager; John Shumpert, Doug Carter, both board members; Ewell Thompson, member of the board and treasurer; Louis Atherton, assistant manager; Harold Gunter and Hershel E. Williams, members of the credit committee.

## Nuclear Division credit unions break many records in meetings

Record attendance at annual meetings, record assets, and you name it, records were broken in all four of the Nuclear Division credit union meetings held last month.

With assets in excess of \$30,000,000 the credit organizations from each of the four plants met to elect new officers, give annual reports, declare dividends and interest refunds, and close out the books for 1972.

### Refunds to Paducahans

From the Paducah Plant the credit union there reports more than 400 members attending the annual meeting held on a Sunday afternoon. Incumbents Charles Burdette, Billy W. Etter and Robert E. Ligon were re-elected to the board of directors and Paul Bielefeld was renamed to the credit committee.

The Paducah Plant's credit union announced a five and one-half percent dividend on savings declared on a semi-annual basis, with a 25 percent refund on all interest paid by members in 1972. With assets now beyond the \$3,000,000 mark, Paducahans saw a 10 percent increase in volume of business last year. More than 96 percent of the plant's population belong to the credit union, and average more than \$1,147 in shares of savings per member.

James R. Champion walked away with the \$100 door prize, and 20 other employees won \$20 each.

Y-12 credit union held its 23rd annual meeting January 25 with the largest crowd in its history attending.

### New interest rates

Paul Blakely, president, stated that the interest on first financing of new automobiles, real estate, and share secured loans of \$500 or more, would be decreased February 1, to three-quarters of one percent per month on the unpaid balance. Education loans remain at the same interest rate. Members were notified of another five and one-half percent per annum dividend posted quarterly.

Blakely and Tom Stephens were re-elected to the board on three year terms. Mary Frances Bailey was elected to the credit committee on a three year term.

A total of 26 door prizes were awarded, the main one being a microwave oven, won by Jack C. Thompson.

The ORNL credit union reported a record-breaking crowd of more than 700 members. It was pointed out that a total of 6,495 loans were made last year in excess of \$8,000,000. Assets in the 25-year-old credit union (ORNL boasts the oldest credit union of the four) now stand in excess of \$14,000,000.

### ORNL officers named

Re-elected to two year terms on the board were Julian Gissel, and Martha Davis. Nominated from the floor and elected was Karl Notz. Arnold Harrod was named for the uncontested one year term on the board. John Dougherty, Devon Brogan, Paul Hill and Henry Klemiski were named to the credit committee.

The fourth quarter dividend was declared at six percent per annum compounded quarterly. The board also announced a five percent interest refund for borrowers during the last quarter of 1972.

The ORNL credit organization also opened a Knoxville office, located at 5833 Clinton Highway, during 1972.

A total of 21 door prizes, plus 15 hams were awarded members at the annual meeting.

### ORGDP reports success

The ORGDP credit union also ended the year on a successful note. Another five and one-half percent dividend, compounded quarterly, was declared to members attending the annual meeting.

J.A. Frits, Ed Bordes, Jim Winninger and C.R. McKelney won hams at the annual meeting; while George Miller, Mrs. Charley Hale, Rex Cole and Geneva Gilliland won radios.

Assets in the ORGDP credit union are now in excess of \$3,500,000.

# CALENDAR of EVENTS

## TECHNICAL

February 16

Reactor Division Seminar: "Size Effects and Pressure Vessels," R.W. Derby. Large Conference Room, Building 9204-1, Y-12 Plant, 3 p.m.

February 21

Chemical Technology Division Seminar: "Scrubbing Radioiodine from Process Off-Gases with Concentrated Nitric Acid (Iodex Process)," G.I. Cathers and W.S. Groenier. Central Auditorium, Building 4500N, ORNL, 3 p.m.

February 27

University of Tennessee Department of Chemistry Seminar: "Gas Phase Intramolecular Reactions of Carbenes," Prof. Maitland Jones Jr., Princeton University. 414 Buehler Hall, UT Campus, 4 p.m.

## RETIRED ORNL CUSTODIAN

Charles R. Lovelace, retired ORNL custodian, died January 25 in a Knoxville hospital. Mr. Lovelace worked in the Operations Division from 1951 until his retirement in 1965. He and his wife, Callie, operated the Epicurean shop in Oak Ridge. His son, Roy C. Lovelace, works in the Chemical Technology Division at ORNL. Funeral services were held at Click's Funeral Home in Lenoir City. Burial followed in Mount Pleasant Baptist Church cemetery.

February 28

Chemical Technology Division Seminar: Volatilization of Iodine from Nitric Acid Solutions," G.I. Cathers; "Scrubbing Radioiodine from Process Off-Gases with Mercuric Nitrate Solutions," D.J. Crouse. Central Auditorium, Building 4500N, 3 p.m.

## COMMUNITY

February 16

The Oak Ridge Civic Music Association presents the Bartok String Quartet in concert. Oak Ridge Community Playhouse, 8:15 p.m.

## RETIRED Y-12ER DIES

Edmond Roberts, former Y-12er, died January 31, in Rockwood. He retired in 1970, after working there more than 23 years. He is survived by his son Edmond "Eddie" Roberts, Y-12's Radiation Safety, his wife, daughter and two additional sons.

## FORMER ORGDP MAN DIES

Mack Crabtree, 320 East Fairview Road, Oak Ridge, died January 31 at the Oak Ridge Hospital. He retired from ORGDP four years ago, after more than 17 years company service. Survivors include his wife, a daughter, a brother and three sisters. Funeral services and burial were held in Oak Ridge.

## NUCLEAR DIVISION SAFETY SCOREBOARD

Time worked without a lost-time accident through February 8:

Paducah .....	122 Days	766,000 Man-Hours
ORGDP .....	30 Days	451,000 Man-Hours
ORNL .....	59 Days	1,039,456 Man-Hours
Y-12 .....	21 Days	798,000 Man-Hours

**Safety is everyone's concern!**



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