



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.

Foul drinking water

QUESTION: The drinking water in the Oak Ridge plants tastes bad enough when chilled with the chlorine added in quantity. Is there much energy being saved because the chillers have been cut off?

ANSWER: One drinking fountain just like one light bulb does not use a lot of energy. When a large number of these and other users of electricity are turned off, the savings does become worthwhile. The understanding and cooperation of all employees in putting up with a few inconveniences during this period of emergency is appreciated.

Improper dress

QUESTION: Why do persons wear Company-supplied coveralls unbuttoned down to the waist and worse? It is disgusting to have to put up with these exhibitionists within the plant. Why doesn't the Company require at least Company-supplied overalls to be worn in a prescribed manner—namely properly buttoned up?

ANSWER: To the extent that it does not interfere with an employee performing his/her work safely or detract other employees from their work, we try not to impose a dress code. We do agree that every employee should wear appropriate clothing in an inoffensive way. This applies to personal as well as Company-issued clothing.

In some jobs, unbuttoned clothing might not adequately protect the skin from the work environment. In other cases, unbuttoned clothing may distract other employees. If you observe such a situation, why not call it to the attention of the employee involved or his/her supervisor.

Weather-related tardiness

QUESTION: What is the Company policy for weather-related tardiness and/or absenteeism for weekly salaried employees? There seems to be a different interpretation among divisions. It seems that some supervisors allow "personal leave, with pay" for tardiness while others allow "personal leave, without pay." It is our understanding that for a full day missed, the employee has the choice of either "vacation" or "personal leave, without pay."

ANSWER: Employees should plan ahead when bad weather conditions are expected and should arrange to leave home early if necessary to get to work on time. If a weekly salaried employee has made a reasonable effort and still reports to work late due to traffic or road conditions, such time will normally be considered as "personal leave, with pay." If such an employee has made little or no attempt to get to work on time, the tardiness will normally be considered "personal leave, without pay." If an employee does not report to work at all, the general rule will be to consider that absence as "personal leave, without pay." It can, as you suggest, be counted as a vacation day if the employee obtains his supervisor's approval as soon as possible on the day in question.

Wage comments

QUESTION: Is it Company policy for a facility head to tell people "if you don't like it, quit or bid out," when discussing yearly wage reviews?

ANSWER: It is not Company policy for any supervisor to make such statements. It is not possible for us to comment further without knowing the particulars of your situation.

(Please turn to page 8)

Heart disease study

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GRANT RECIPIENT—Nathaniel Revis studies the cross section of a pigeon aorta under a microscope to determine the severity of deposit buildup. Revis has been awarded a four-year EPA grant to conduct research on the effects of drinking water quality on the development of the cardiovascular disease, atherosclerosis.

A four-year, \$570,000 grant funding research on the effects of drinking water quality on the development and progression of the cardiovascular disease atherosclerosis has been awarded to a biologist at ORNL by the Water Quality Division of the Environmental Protection Agency.

Nathaniel Revis, recipient of the grant, said his interest in the research was prompted by epidemiological surveys during the past 10 years indicating that persons living in soft water areas appear to be more susceptible to atherosclerosis than do those living in hard water areas. Revis is on the staff of the University of Tennessee-Oak Ridge Graduate School of Biomedical Sciences.

Atherosclerosis is a form of arteriosclerosis (thickening of the arterial walls) characterized by deposits of material containing water-insoluble fats called lipids. These deposits obstruct the flow of arterial blood, which can cause

destruction of heart tissue and consequent heart attack.

The study will assess the metabolism of lipids in pigeons placed on regimens of drinking water containing varying amounts of calcium, magnesium, lead and cadmium. Calcium and magnesium are consistently found in high concentrations in hard water. Soft water, which contains lower levels of calcium and magnesium, is high in lead and cadmium, believed to derive from the pipes used to transport the water.

About 1,500 Carneau pigeons have been raised specifically for the study, probably the largest colony in the world, Revis said. Carneau pigeons, a separate species from that familiar in this country, will be used because they are one of only three species—the other two being the squirrel monkey and man—known to develop coronary atherosclerosis resulting in heart attacks.

Corporate world of Union Carbide...

A NATIONAL DISTRIBUTION CENTER for the pulmonary care medical products business of the Linde Division has been opened in Memphis. The facility, consolidating the activities of five operations around the country, will be the center for the refurbishing, repair and shipping of Linde Oxygen Walkers and pulmonary care equipment nationally and internationally. All orders and billing activities will also be handled at the center.

Linde manufactures the walkers that provide a portable oxygen supply to give mobility to sufferers of chronic obstructive pulmonary diseases, such as emphysema. Other medical services include providing oxygen and equipment for home patients suffering from pulmonary disease. The use of the walkers and other pulmonary care equipment has grown rapidly since the business' inception and is expected to double by 1982.

In this issue...

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- 'Thou shalt not steal' page 8



For frustrated flyers whose budgets won't cover the purchase of a Lear jet, but whose longing for the wild blue yonder remains, the world of model flying is an interesting alternative. Ed Parham, PGDP, explains the "ups and downs" of scale plane modeling in this issue's "different drummer" on page 2.

A different drummer...

Small-scale flying requires patience, skill says PGDP 'aerial' veteran

by Darlene MacPherson

It's been a long haul from rubber bands to radio transmitters and from flipper-powered air speed to calculated aerodynamics. In fact, this small scale aviator has been at it for 40 years, ever climbing to new heights of model airplane refinement.

Ed Parham, an operator in Paducah's Power, Utilities and Chemicals Division, spends his spare time up in the air, but with his feet on the ground. His hobby? Building and flying model airplanes.

He has handcrafted as many as 150 model planes, but only five are in commission at present. Average construction time for planes can range from 50 to 60 hours and costs may go as high as \$800.

Parham's acrobatic hobby planes usually weigh 6 1/2 to 10 pounds with a wingspan of 5 to 8 feet. What is considered a large engine of 60 to 70 cubic centimeters, has a top RPM of 16,000 developing from 1 2/10 to 1 7/10 horsepower.

The planes are generally constructed of balsa, fiber glass or foam and metal and held together with various glues. The basic design consists of the body, wings, rudder and stabilizer. Some new aircraft

models even come equipped with retractable landing gear, firing rockets and dropping parachutes.

Parham's planes are controlled by a radio frequency emitted from a ground transmitter. The transmitter has an encoding device which sends a signal to the receiver in the airplane. The receiver's decoder interprets the signal and transfers it to the proper control.

'Planes are controlled by radio frequency from ground transmitter.'

The ground pilot holds the transmitter in both hands and manipulates two levers to control the plane. The left lever, moved vertically, controls the engine speed and, moved horizontally, controls the rudder and nosewheel. The right lever, when moved vertically transmits altitude information; horizontal movement controls the plane's ailerons which force the plane left or right during flight.

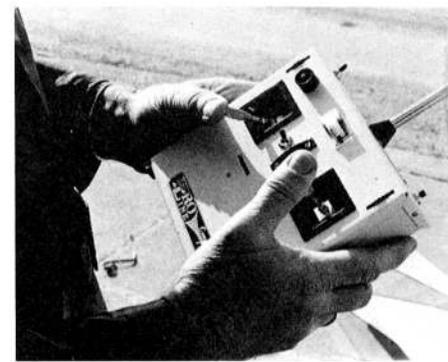
"Present equipment is nearly infallible," Parham commented. "The planes are more perfected and the engines are improved. But it still takes patience and a lot of practice," he added.

Parham admits to at least 50-60 crashes in his time. "The usual cause is radio failure," he related, "but that isn't common. My past mistakes have included inadequate altitude on a windy day or miscalculation of control surface movement," he added. Most aircraft at full throttle near 70 to 80 mph; landing and take-off speeds are generally 20-30 mph.

Parham's greatest aviation aptitude lies in his execution of precision maneuvers. The American Modelers Association sanctions a series of 11 consecutive acrobatic maneuvers which are standards in nationwide competition. In order they are take-off, figure M, Cuban 8, double Innelman, 2 point roll, 3 outside hoops, slow roll, 3 inside loops, 3 horizontal rolls, 3 turn spin and landing.

'...mistakes include inadequate altitude or miscalculation of control surface movement'

In competition, each transmitter is initially impounded and color coded for a particular frequency by attaching a ribbon to the radio antenna. There are 12 or 15 frequencies available and only one airplane per frequency can be in the air receiving the signal.



'Parham's aptitude lies in execution of precision maneuvers.'

Four judges in each flight line score the flyers on a point scale of 1 to 10. When the ground pilot is called to the flight line, he has two minutes to start his engine and get his plane in the air. He then announces each maneuver prior to its execution.

The plane takes off into the wind, makes a 90 degree turn, then levels off. All maneuvers are done perpendicular to the judges so their view will be at a 45 degree angle and at a reasonably low altitude of around 200 or 300 feet. Lateral range is approximately 3/4 of a mile in each direction.

Judges look for peculiarities in each performance as well as precision maneuvers and flight ability. Points are accumulated at each competition and modelers subsequently progress through four classifications: novice, advanced, expert and master.

"A flyer may choose to compete above his level, but once he has done so, he cannot return to a lower class," Parham noted. "But it's very friendly competition," he added. "There may be as few as 5 or as many as 25 in your class. And depending on the number of participants, you may fly only once or several times at a particular contest."

Parham has witnessed a virtual boom in this high-flying hobby during the past 10 years. It seems more and more people are taking to the air. He also notes a proliferation of dentists in model competition around the country. "I don't know what the attraction is. Maybe it's just a hobby they can really sink their teeth into."

'Experienced virtual boom in high-flying hobby'

Parham is presently preparing for an AMA contest in May at the Rough River Dam State Park west of Louisville, Ky. This "Annual Mint Julep Affair" is one of the year's first events and usually attracts a minimum of 50 to 75 contestants from far and wide. Parham tentatively plans to enter at least eight competitions in 1978 including a one- or two-day outing in Pensacola, Fla.

If anyone is interested in more information on this skylining skill or in joining a modeler's club, you can contact Parham in Bldg. C-300.



"DIRTY BIRDI"—Model flyer Ed Parham of PGDP's Power, Utilities and Chemicals Division, built this 11-pound pattern plane with retractable landing gear about three years ago. The fuselage is 3-1/2 feet long with a wingspan of six feet and the 60 cubic centimeter engine develops a horsepower of 1-7/10. Parham emphasizes speed and symmetry when building scale model planes. Any inconsistency, he says, will require manual compensation at the controls resulting in unnecessary time and effort.



PARHAM ORIGINAL—Parham built this colorful bi-plane "from the ground up" using his own original designs. He spent about a hundred hours in construction, but with one slight mistake "it takes only 30 seconds to destroy," he said. The wings reach 54 inches and the plane weighs about 6-1/2 pounds.

safety scoreboard

Time worked without a lost-time accident through March 9:

Paducah.....	230 Days	2,865,000 Man-Hours
ORGDG.....	9 Days	307,600 Man-Hours
Y-12 Plant.....	20 Days	559,000 Man-Hours
ORNL.....	53 Days	1,790,367 Man-Hours

anniversaries...

ORGDP

30 YEARS

James R. Carden, Isotope Analysis Department; Bill Carruth, Central Reproduction; Ray V. Thatcher, Computer Sciences Division; and Joshua B. Harvey.

25 YEARS

Harry L. Bradley, Violet G. Holt, Paul E. Hudson, Viola W. Potts, Jessie H. (Ruth) Rayburn, James W. Smith and Edward V. Blankinship.

PADUCAH

25 YEARS

Henry H. Renfroe Jr., William P. Whalen, Lawrence E. Hayden, Joseph E. Russell and Cloyse W. Parker.

Y-12 PLANT

30 YEARS

Clifford W. Taylor, Materials and Services Division; Varnard F. Carr, Research Services; Oliver Smelcher, Fabrication Division Engineering; and Ery M. Spencer, General Machine Shops.

25 YEARS

Walker K. Fulbright, Floy A. Wells Jr., Robert E. Baker, Donald E. Bell, Jerome Cogswell, John F. Terrell, William C. Ward, Johnnie L. Riddle, Brandt Kuperstock and Clarence R. Eichelberger.

ORNL

30 YEARS

Frank V. Williams Jr., Operations Division; Liane B. Russell, Biology Division; and Arthur D. Horton, Analytical Chemistry Division.

25 YEARS

G. Wilbur Allin, Carl W. Martin and Jasper B. French.

20 YEARS

William C. Hawkins.

PADUCAH

SURVEY FOR IN-PLANT

ART EXHIBIT

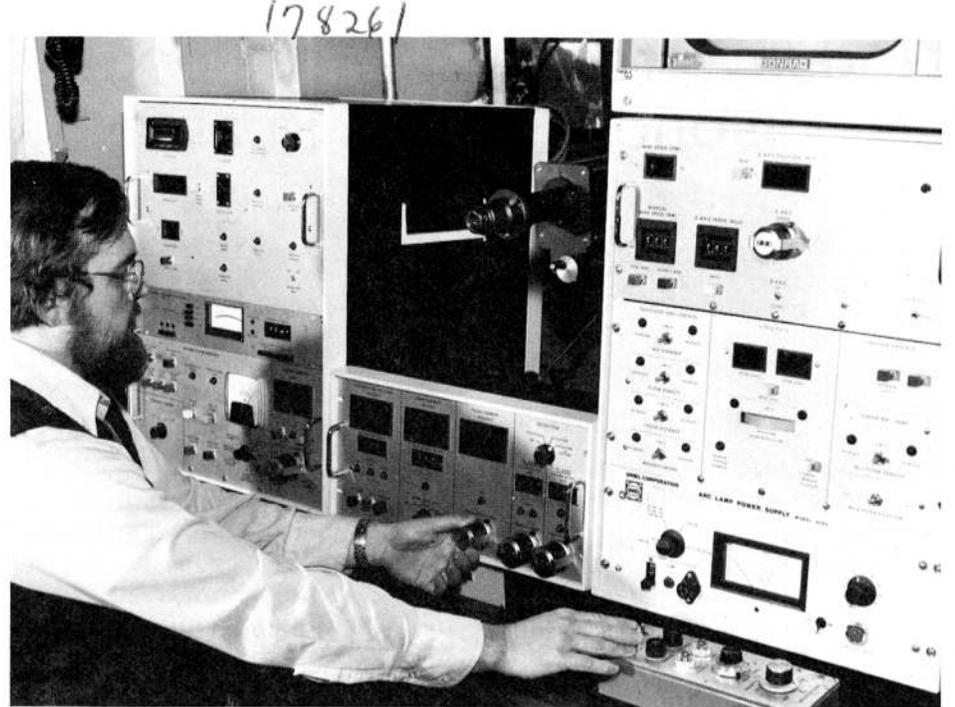
OF EMPLOYEE & SPOUSE

WORKS IN:



- PAINTING
- WATER COLOR
- PRINTS
- DRAWINGS
- CHARCOAL
- INK • PASTEL

IF INTERESTED, CONTACT RECREATION DEPARTMENT



Paul Turner, Development Division, operates the controls of a new, automated electron beam welder system at the Y-12 Plant. The telescope at his right provides a view into a vacuum chamber where two metal parts are being welded by an intense beam of electrons.

Automated electron-beam welding unit made at Y-12

An advanced, computer-automated, electron-beam welding unit has been designed and constructed by Nuclear Division personnel at the Oak Ridge Y-12 Plant.

The new unit will make very closely controlled, precisely placed welds on round or cylindrical parts with an accuracy and repeatability which heretofore had been impossible. The unit will be used in the normal welding research and development programs at Y-12.

The Y-12 development team was headed by Albert E. Stephens of the Development Division and George W. Brandon of the Assembly Division. Other members of the design engineering team included James H. Burkhardt Jr., Gary L. Bowers, Clyde

M. Davenport, and Paul C. Turner, Development; and Larry M. Greene, Assembly.

Y-12 Maintenance Division personnel fabricated the unit, starting from a completely stripped-down shell of an older welding machine.

Like older welding units of its kind, the weld results from focusing a very intense beam of electrons onto the seam between two parts, causing them to melt and fuse together. (Enough energy to supply a small house is concentrated onto a spot about the size of the head of a pin.) Unlike older welding units, however, the new system includes a computer and other instrumentation to turn the beam on and off, to control its intensity and to provide automatic positioning of the beam onto the seam which is to be welded.

retirements...



Verda J. Meece
Fusion, ORNL
26 years service



William L. Sharp
Y-12 Chemical Services
31 years service



George H. Scott
Plant and Equipment
ORNL
32 years service



Claude F. Keck
Chemical Technology
ORNL
34 years service



Samuel C. Siler
ORGDP Maintenance
32 years service



Frank A. Heilman
Gaseous Diffusion
Development, ORGDG
32 years service



Alfred W. Meyers
Instrument Shop,
ORGDP
33 years service



Odis Cate
General Accounting
26 years service



Millard C. Hanshaw
ORGDP Maintenance
30 years service



Charles T. Carney
Instrumentation and
Controls, ORNL
32 years service



Charles A. Collier
Power, Utilities &
Chemicals, Paducah
25 years service



Hollis E. Hughes
Paducah
Plant Services
24 years service



George L. Slack
Paducah
Guard Department
26 years service



Roscoe M. Spiceland
Paducah
Mechanical Inspection
25 years service



Bailey M. Britton
Maintenance, ORGDG
30 years service



Philip B. King
Power, Utilities &
Chemicals, Paducah
26 years service

Lindsey prepares safety book on poisonous plants in area

"Everyone enjoys beautiful, sweet-smelling flowers and attractive ornamental shrubbery. However, all too few people realize that many of these small plants which give so much pleasure to them are also quite toxic," according to a booklet prepared by Joe Lindsey, Paducah Safety Department, entitled, "Poisonous Plants."

Little known facts

The U. S. Public Health Service reports that hundreds of children eat some part of a potentially toxic plant annually. A recent study conducted in Seattle showed that of 100 child poisoning cases, approximately 10 percent were due to the ingestion of poisonous plants. The children's parents had no idea the plants were

hazardous.

The week of March 19 has been designated National Poison Prevention Week and the dangers of plant poisoning is an area which is gaining added recognition. The toxicity of many common plants is often overlooked by unsuspecting persons and the results can be fatal. The Paducah Safety Department's "Poisonous Plants" booklet is designed to provide information on some of the little known facts about toxic plants.

Ate Jimson weed

The poison potential of many familiar plants can be deceiving. One part may be edible while another is poisonous. For example, twigs from cherry trees release cyanide when eaten. Peach tree leaves do likewise.

"One of the most dangerous of all the plants in our vegetable gardens is rhubarb," the booklet cites. The stalk, which is often used in pies and sauces, is not toxic, but the leaves contain oxalic acid which crystalizes in the kidneys, producing severe damage. Although the concentration of the poison is only about one percent, fatalities from eating rhubarb are well documented.

Other examples include the rhododendron, which contains a toxic substance discovered in the honey from bees. The berries of mistletoe have been fatal for adults who used them to make a "medicinal" tea. The Christmas poinsetta contains a corrosive juice so dangerous that one leaf might prove fatal for a child.

Some plants produce unusual symptoms. Thirty boys—between the ages of six and eight—attended a Midwest orphanage outing. Within a

(Please see page 5)



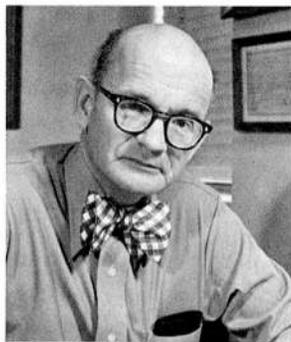
Poison Prevention Week

Twigs of the springtime cherry tree are just one example of common poisonous plants and greenery included in a PGDP booklet exploring this subject.

Understanding nerve impulses or...

The legacy of the Ordeal Bean of Calabar

by T. A. Lincoln, M.D.



(Editor's Note: Dr. Lincoln alternates his regular column with "Medicine Chest," where he answers questions from employees concerning health matters. Questions are handled in strict confidence, as they are handled in our "Question Box." Address your question to "Medicine Chest," Nuclear Division News, Building 9704-2, Mail Stop 20, or call the news editor in your plant.)

The lowly, gray-colored ordeal bean can easily be collected from the streams in West Central Africa. It drops off the vines of the *Physostigma venenosum* plant and floats lazily down to the ocean, occasionally being deposited on the banks. Now nobody pays much attention to it, but 200 years ago it was an essential part of a macabre justice system. Eventually it contributed incalculable benefits to mankind.

Also called the esere nut, this bean is a deadly poison. If only a small quantity is eaten, the effects are so peculiar that it is not surprising that it aroused the intellectual curiosity of early missionaries. When they saw natives using it to torture people, the strange effects so impressed them that they took it back to friends in research laboratories in Scotland. Many years later the struggle to understand how this poison worked led to an understanding of how nerve impulses were transmitted. That discovery paved the way for the development of a large class of modern pesticides.

Used to torture

In the 1600's, the Efik people lived in Calabar on the west coast of Africa near the estuaries of the Niger and Cross Rivers. They became rich and powerful by trading palm oil and slaves with the Portuguese and Dutch. The Calabar society suffered an intense fear of witchcraft. Their leaders were extremely powerful men who had the power to torture or kill anyone they regarded as guilty

of a crime or of being possessed by the devil.

In 1840, a British medical officer first reported the ordeal of the Calabar bean. The king or chiefs comprised a court of justice to which all disputes were brought for adjudication. The crime may have been a capital offense, a suspicion of practicing witchcraft or just disturbing the peace and tranquility of the chiefs. If the defendant were found guilty, he was forced to swallow a milky-white potion made from eight esere beans, which were ground up and added to water. If the victim began to shake, had difficulty breathing and had mucus pour from his nose, he was considered guilty and allowed to die. If the defendant raised his right hand and then violently vomited, he was considered innocent. If he continued to show the effects of the poison, he was given a foul concoction which made him continue to regurgitate. Usually he survived.

John Balfour (1808-1884) was a Scottish botanist and toxicologist who had studied for the ministry

but gave it up for science. Nevertheless, he had a close rapport with missionaries who traveled to West Africa from England and Scotland. Eventually in about 1840, one of them brought him some beans and a description of the ordeal experience in Calabar.

Effects pulse, breathing

Balfour did the basic botanical description and classification, but it was Sir Robert Christison who had the courage to take a small quantity of the poison and describe its effects. He noticed a pronounced effect on the pulse and breathing. It also caused extreme weakness.

In 1862 Thomas Fraser discovered that an extract of the bean affected the pupils of the eye, the central nervous system, the heart, the voluntary muscles and the intestines. Eventually, it was found that this extract, called physostigmine, increased the sensitivity of organs such as the salivary glands and the bladder to electrical stimulation.

In 1921 Otto Loewi, a German pharmacologist, published a four-page paper which has been called one of the most remarkable communications in the history of science. His experiment was simple, yet it proved without a doubt that nerves do not influence the heart or other organs directly. They do so by liberating a chemical substance at the end of nerve terminals.

Nerve impulse experiments

All Loewi did was to dissect the hearts of two live frogs away from surrounding tissue and then enclose them in little sacs. In one, the nerves which control the heart rate were left attached, and in the other, they were completely removed. The vagus nerve—which causes the heart to slow down—was stimulated electrically, and the solution of saline which bathed it was collected and put into the sac around the heart without its nerves. The heart beat slowed dramatically. It was obvious that some chemical substance must have been released into the saline when the first heart had been

electrically stimulated.

Loewi's studies, which led to a Nobel prize in 1936, eventually led to the isolation and identification of the chemical substance released by nerves, and how it is regulated. The chemical was acetyl choline and the regulator was the enzyme, cholinesterase.

The exquisitely sensitive nervous control of many organs depends on the release of minute amounts of acetyl choline and its inactivation by cholinesterase. Substances which interfere with this enzyme are called anticholinesterase compounds.

Forerunner of insecticides

Even though physostigmine from the original Calabar bean was a poor insecticide, the understanding of nerve transmission led to the development of other anticholinesterase compounds. Organo-phosphorous and carbamate compounds were eventually developed which became highly effective insecticides.

The legacy of the ordeal bean of Calabar rests first in the understanding of the transmission of nerve impulses and second in the understanding of basic neurophysiology. This broader knowledge led to the development of many important medicines which affect the central nervous system. The insecticides which later followed have enabled the world to keep ahead of famine. The loss of food due to insect ravages would amount to about 15 percent of world production if uncontrolled. That 15 percent would probably mean starvation to thousands of people.

The ordeal bean of Calabar began as a poison then became a curiosity, later a friend and finally a benefactor.

Lincoln named director

T. A. Lincoln, M.D., has been named medical director for Union Carbide Corporation. He is replacing John J. Welsh, who has recently retired.

Poisonous plants...

(Continued from page 4)

few hours after their return, they began to exhibit strange reactions. Some of the children began to laugh for no apparent reason; some picked imaginary objects from the air; others barked like dogs. A few crawled beneath their beds, crying and moaning. A physician was subsequently contacted and induced vomiting upon diagnosis. Within three days, all of the children were normal. It was then noted that the boys had playfully eaten different amounts of jimson weed.

"The jimson weed is also known as "thorn apple" or "stinkweed" and grows on all kinds of unused land. "It is responsible for more poisonings than any other plant," according to Lindsey's pamphlet.

It reaches a height of two to five feet, has large fan-shaped leaves and white funnel-shaped flowers which resemble morning glories. All parts of this weed are toxic, but the leaves and seeds are especially poisonous.

Attractive berries

Plants bearing small, pretty, toxic berries are the greatest hazards to children. An investigation held in Tacoma, Wash., uncovered the poisoning of a three-year-old girl who died suddenly, after eating the fruit of the deadly nightshade. This is

a vine-type plant which is common throughout the country. It grows along the ground or upright to a height of about two feet and bears clusters of berries. The **unripened** berries are extremely toxic. When they have ripened to a yellow, orange or red color, they are the least poisonous part of the nightshade.

"New toxic plants are constantly being added to the growing list. The seeds of the wisteria, an extremely common vine, were not discovered to be poisonous until 1961," the booklet notes.

'Mr. Yuk'

The National Safety Council recently developed a character called "Mr. Yuk" who makes a bad face to warn children of bad things. They have designed a series of flash cards which relate "Mr. Yuk" to toxic substances. These are used primarily with children below the reading age to develop a strong connection between "Mr. Yuk" and prohibited plants and materials.

Authorities contend that all plants should be kept away from small children and that they should be taught never to eat or put in their mouth any plant or berry not commonly used as food. If some part of a toxic plant is ingested, a physician should be consulted immediately.

Four promoted at Paducah



Cathcart



Kuehn



Stokes



Wilson

The Paducah plant has announced the promotions of four employees. David R. Wilson has been named supervisor in the Cascade Operations Division; Richard G. Kuehn has been promoted to laboratory aide in the Technical Services Division; Weldon Stokes has been named planner estimator in the Maintenance Engineering Department; and Paul F. Cathcart has been promoted to supervisor in the Fabrication and Maintenance machine shops.

Wilson held positions with the Tennessee Valley Authority in Gilbertsville, Ky., and Joseph E. Segrans of Louisville before joining Union Carbide in 1952. He has worked as a cascade operator at the plant. Wilson is a native of Smithland, Ky. He and his wife, Winnie, reside on Donna Lane in Paducah. They have two children, Jenny and Ronald.

Kuehn received his B.S. degree in zoology from Murray State University in 1976 and joined Union Carbide in

June, 1977. He worked with Heil Beauty Supply, Paducah. Kuehn lives on Martin Circle in Paducah.

Stokes is a native of Chicago and came to PGDP in 1972 in the Process Maintenance Department. He received a football scholarship to the University of Tennessee at Martin in 1969. He has also attended Paducah Community College and Murray State University. Stokes and his wife, Rosie, reside on Route 2 in Paducah with their children, Tracie Yvonne and Antonio Ameche.

Cathcart has held previous positions of machinist and senior inspector in his 15 years at PGDP. He earned an associate degree from the Southern Illinois Vocational Technical Institute at Southern Illinois University and is a native of Harrisburg, Ill. He and his wife, Marita, live on Route 1, West Paducah. They have two daughters, Tonya and Trina.



DISCUSS REPAIR MECHANISMS—James D. Regan of ORNL's Biology Division and Galina Dmitrievna Zasukhina, right, deputy director of the Institute of General Genetics at the USSR Academy of Sciences in Moscow, discuss a culture of human cells deficient in DNA repair capability. A long-standing research theme in the Biology Division has centered on the ability of mammalian cells to repair damage done to their DNA by various energy production byproducts—specifically, certain types of radiation and some chemical effluents from coal conversion. This DNA repair capability is of particular interest to researchers because it has been found that its malfunction can result in the development of cancer. Zasukhina, who is in the United States as a guest of the national Institutes of Health, met with Regan to discuss mechanisms of DNA repair, accompanied by NIH interpreter Harris Coulter (center).

wanted...



ORGDP

RIDE or will join two or three-man car pool from Ball Road, Knoxville, to Portal 5, D Shift. Jack McKinney, plant phone 3-3476, home phone Knoxville 690-1888.

RIDE or will join car pool from Almart area, Norwood, to Portal 4, 7:45-4:15 shift. Lisa Ownby, plant phone 3-9331, home phone Knoxville 687-4302.

VAN POOL RIDERS from Karns to any portal, straight day. Tom Lemons, plant phone 3-3291, or 3-3556, home phone Karns 947-8959.

ORNL

RIDE ONLY from South Purdue, west area of Oak Ridge, to North Portal, straight days. Elizabeth Montesa, plant phone 3-6032, home phone 482-5053.

RIDER WANTED from Karns/Ball Camp area, Knoxville, to any portal, 8-4:30. Neil Griffith, plant phone 3-6422, home phone 690-1876.

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

RIDE ONLY from Broadacres, Powell, to East Portal, 8-4:30. Lynn Edwards, plant phone 3-6931, home phone 947-6694.

CAR POOL MEMBERS from Inskip area, Knoxville, to West Portal, 8-4:30. Frank Brinkley, plant phone 3-6804, home phone 687-5129.

Y-12 PLANT

VAN POOL RIDERS from Maryville to Y-12, all portals, 8-4:30. Joel Horton, plant phone 3-2226, home phone 983-9160.

ORGDP

JOIN CAR POOL from Jacksboro, to any portal, B Shift. E. R. Tapp, plant phone 3-9470, home phone Jacksboro 562-9608.



Quality assurance activities are taken very seriously at ORGDP. In fact, copies of the above stick-on symbol are being distributed to every employee at the plant. This stick-on symbol which is green and white can be placed on hard-hats and other prominent locations. Fred Mundt, QA coordinator for the ORGDP facility says the words *Question—Actions* simply stand for "asking questions and taking planned actions to minimize the adverse impact of quality problems." The idea, according to Mundt, is to help all employees in thinking of QA and how it can be of value in their work.

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PADUCAH

Darlene MacPherson, Bell 208

recreationotes . . .



THE DEACONS

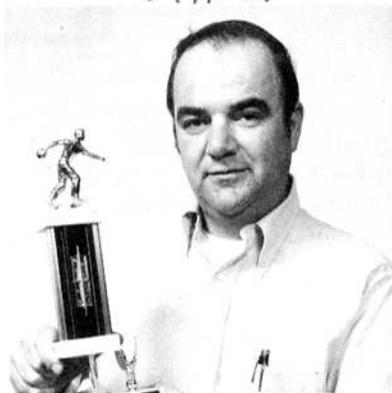
Churchill Moore, Ron Wade, Lester Walton, Alvin Boatwright and Lefty Miller

Pawel, Kent take top honors in Carbide bowling tournament



Brenda Kent
Women's All Events

Richard Pawel and Brenda Kent took the top honors in the All-Carbide Mixed Bowling Tournament recently completed. Richard Pawel rolled an outstanding 1724 scratch/1049 handicap All-Events score for men. Brenda Kent rolled a



Richard E. Pawel
Men's All Events—Scratch

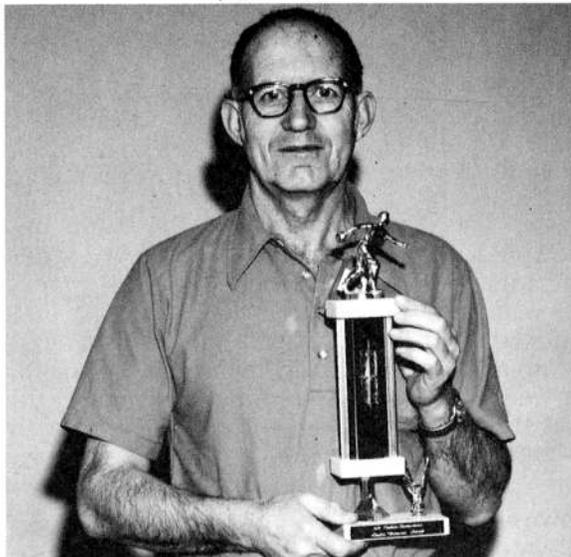
high 1904 handicap score winning All-Events for women. The scratch All-Events trophies were won by Richard Pawel and Nell Jago. Nell rolled a 1620 scratch score. Cecil Higgins won the handicap trophy with a 1933 score.



Susan Fincher
Arnetha Johnson



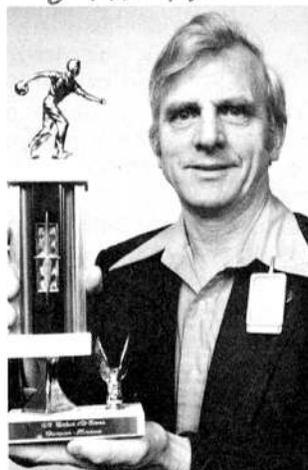
Mary Goldberg—Margaret Duff
Women's Doubles—Scratch



M. J. Gibson
Men's Singles—Scratch



Bob Cantrell
Men's Singles-Handicap



Cecil E. Higgins
Men's All Events



N. O. Case
Men's Doubles-Scratch



Tom Kitchings
Men's Doubles
Scratch

MEN TEAM HONORS

The Deacons won the men's top honors with 2764 scratch/3142 handicap series. They won the scratch trophies and high money. The Deacons are from ORGDP, consisting of Churchill Moore, Alvin Boatwright, Ronald Wade, Glen Miller and Lester Walton. The Woodchoppers, from the ORNL "A" League, won the high handicap trophies with a 3059 series. The Woodchoppers' team is Cecil Higgins, Richard Pawel, Roy Vandermeer, Marvin Wilkerson and Benny Wood.

WOMEN TEAM HONORS

The women team honors went to Bill O'Kain Insurance, from ORGDP, with a 2629 scratch and 2965 handicap series. These ladies are Nell Jago, Jean Ward, Edie Francis, Ruby O'Kain and Tillie Webb. The Lady Bugs, also from ORGDP, consisting of Edith Duckworth, Georgia Gwinn, Edith Baxter, Delores Koons and Tillie Plaza, received the handicap trophies for a 2920 series. The Gutter Hunters won third place, followed by the Wood Bees for fourth.



Al Adams
Women's Singles—Scratch



Jerry and Bonnie Cooper
Mixed Doubles

MEN'S SINGLES AND DOUBLES
Bob Cantrell won the Men's Singles Event rolling 610 scratch series. This was his first 600 series. He had a 712 handicap to win top honors. M. J. Gibson won the scratch trophy with a 629. Sam Babb and Danny Stoetzel put a winning combination together to take the Men's Doubles Event with

a 1297 handicap. N. Case and Tom Kitchings won second place with a 1296 handicap, also winning the scratch trophies with a 1197.

Please see next page →

Quality Assurance division-wide effort to prevent problems

Quality Assurance, a frequently misunderstood but very important activity, is getting increased attention in the Nuclear Division. Part of the reason is the formation just a year ago of the Nuclear Division Office of Quality Assurance (OQA).

Ed Gambill, who heads the OQA, thinks the QA program is not yet generally well understood. "Many people think of QA as just a final inspection to catch errors," he says. "In fact, our QA program is primarily directed at preventing quality problems. And it's important to remember," he adds, "that we're aiming at the big quality problems, the ones that would result in a safety hazard or significantly affect costs or schedules. We want to zero in on the 'vital few' requirements."

For example, there are a lot of things that can go wrong in the design, procurement and installation of new equipment. The QA program helps focus on those things and gives them appropriate attention before they occur. The procedure for doing that, according to Gambill, requires three basic steps on each project; make a special effort beforehand to recognize the significant quality problems that could occur, prepare a plan to prevent those problems, and then follow the plan.

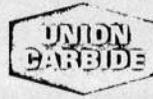
Gambill, who has been in the quality business since he joined the Nuclear Division 24 years ago, attaches a lot of importance to the principle of concentrating on the big quality problems. "Elaborate and costly QA programs may be necessary for such items as space flight hardware, nuclear weapons or reactor components," he says, "but

for much of the Nuclear Division work, a more flexible approach to QA is indicated."

Each of the four plant QA committees is chaired by the plant QA coordinator and includes a representative from each division in the plant. These people are responsible for assuring that QA is understood and accepted. However, most of the QA analysis and decision-making on each project is to be done by the project personnel. Only the people closest to the work will be knowledgeable enough to recognize all of the potential quality problems. "The QA coordinators can construct the skeleton for a good program," says Gambill, "but it takes help from a lot of people to put meat on those bones."

If a project QA assessment reveals there are vital quality requirements, the QA plan may call for some of the following activities to assure quality problems are minimized: independent design review, prototype testing, special evaluation of vendors, vendor surveillance, material certification, special inspection and testing, equipment calibration, personnel certification, special audits, and unusually strict control of specifications, processes, nonconformances and quality history documents.

Gambill said that the overall progress of the QA program has been good. "We have great support from management and in some areas the program is excellent. We do have room for improvement. QA is a lot like safety—you have to keep at it all the time."



UNION CARBIDE CORPORATION
NUCLEAR DIVISION
P. O. BOX 7, OAK RIDGE, TENNESSEE 37830

March 2, 1978

To: All Employees

Subject: Theft or Misappropriation of Government Property and Materials

Almost everything we use in our work, such as supplies, materials, equipment, tools, documents, instruments, clothing, and even scrap, belongs to the United States Government. Except for official uses, no one is privileged to remove such items from the installations operated by us for the Government.

Any employee who is involved in an action contrary to these instructions is subject to termination and prosecution under the Federal law. Similar action must also be expected in cases of theft or misappropriation of property and materials belonging to subcontractors, vendors, or other employees.

I have intentionally made this notice brief and pointed to serve as a serious reminder to all of us. I sincerely hope no incident will occur to cause action under this policy.

Site Manager

Theft of governmental property brings serious results

Purloin. Filch. Appropriate. Steal. Lift. Scrounge. Poach. Pirate. Embezzle. Burglar. Loot. Thieve. Rustle. Swipe. Snatch. Rob. Extort. They all mean the same, and any way you slice it will ultimately get you into serious trouble.

Almost without exception, everything we use in our work, whether it be supplies, materials, equipment, tools, documents, gauges, clothing, machine parts, or even scrap, was purchased at cost to the Government and belongs to the Government.

The theft of Government property from any of the four Nuclear Division installations or unauthorized use of equipment or materials are most serious matters.

In addition to regard for Governmental property, the rights

and belongings of others must also be respected. ANY theft is simple theft and is dealt with immediately, subjecting those involved to termination and prosecution under Federal law.

Taking something that belongs to someone else is simply not worth it. A lifetime career of work and effort goes down the drain. The trauma to yourself and your family is difficult to fathom.

In a bulletin to all employees, installation managers recently pointed out the seriousness of taking something that does not belong to us. It is not only a question of breaking one of the Ten Commandments, it is a question also of paying the price.

The installation bulletins all pointed out, as simply and directly as possible, that the responsibility for complying with the spirit and the letter of the law regarding Government property and the property of others was heavily underscored. A copy of the installation bulletin directed to all employees accompanies this article.

Softball leagues...

The Recreation Office is now calling for softball teams to sign up for the 1978 softball season. Check the area bulletin boards or call the Recreation Office for further information, 3-5833.

WOMEN'S SINGLES AND DOUBLES

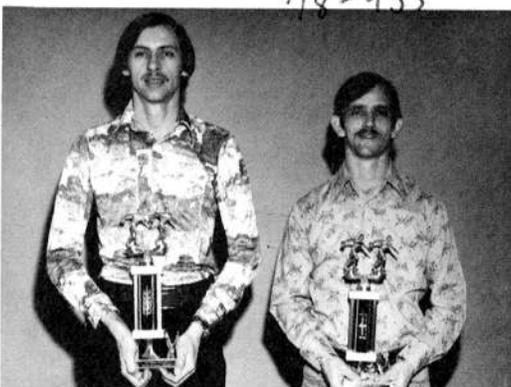
Al Adams rolled 621 scratch/699 handicap series to win the Women's Singles Event. This was also her first 600 series. Emily Hester won the handicap trophy with a 671. Arnetha Johnson and Susan Fincher put it together in the Women's Doubles to win the handicap trophies with a 1219. Margaret Duff and Mary Goldberg won the scratch trophies with a 1046.

GOOD FRIDAY HOLIDAY

Good Friday, March 24, is an official holiday for Nuclear Division employees as Christendom observes the crucifixion of Jesus of Nazareth.

No employee is required to work unless his/her presence is required for plant security or continuous operation.

More recreation...



Sam Babb—Danny Stoetzel
Men's Doubles—Handicap



Emily Hester
Women's Singles
MIXED DOUBLES



Nell Jago
Women's All Events

Bonnie and Jerry Cooper won the Mixed Doubles Event rolling a 1264 handicap score. Norm Teasley and Mary Goldberg placed a close second behind the Cooper's with a 1261. Dot Griffith and Joe E. Morgan won the scratch trophies with a 1148.

Many special thanks go to Mary Ellen Smith, tournament director, and to the tournament committee: Kendall Brooks, Margaret Carmody, and Harold Gunter. Also many thanks to Mabel Tyer, office manager, and the staff of office workers, scorekeepers and other volunteers who helped to make the 1978 All-Carbide Mixed Bowling Tournament successful.

anniversaries...



Hudson



Becker



Ferguson



Skidmore

ORNL

35 YEARS

Milus Skidmore's company service began on March 11, 1943, when he joined a group of scientists and engineers working on the gaseous diffusion process at Columbia University. Skidmore joined the Physical Chemistry Laboratory at ORGDP in November, 1944, where he remained until 1950. During the following 16 years he worked in the ORNL Physics Division and then in the Thermonuclear (now Fusion Energy) Division. In 1966 Skidmore joined the Isotopes (now Operations) Division, where he continues as an engineer in the production of medical radioactive isotopes.

A native of Harlan, Ky., Skidmore received a B.S. in engineering from Western Kentucky State University. He and his wife, Ruth, live at 103 Daniel Lane, Oak Ridge. They have three children: Milus Jr., Mary Margaret and Dwight.

Ed D. Hudson joined the Physics Division as an engineer in 1947, but he actually began working for Tennessee Eastman at Y-12 on March 29, 1943.

A native of Whitwell, Tenn., Hudson attended the University of Tennessee, where he received a B.S. degree. During his sophomore and junior years, he worked as a co-op student in the training program at TVA.

Hudson and his wife, Marjory, live at Rt. 20, Laurel Oak Lane, Knoxville. They have two children, Edwin and Patricia.

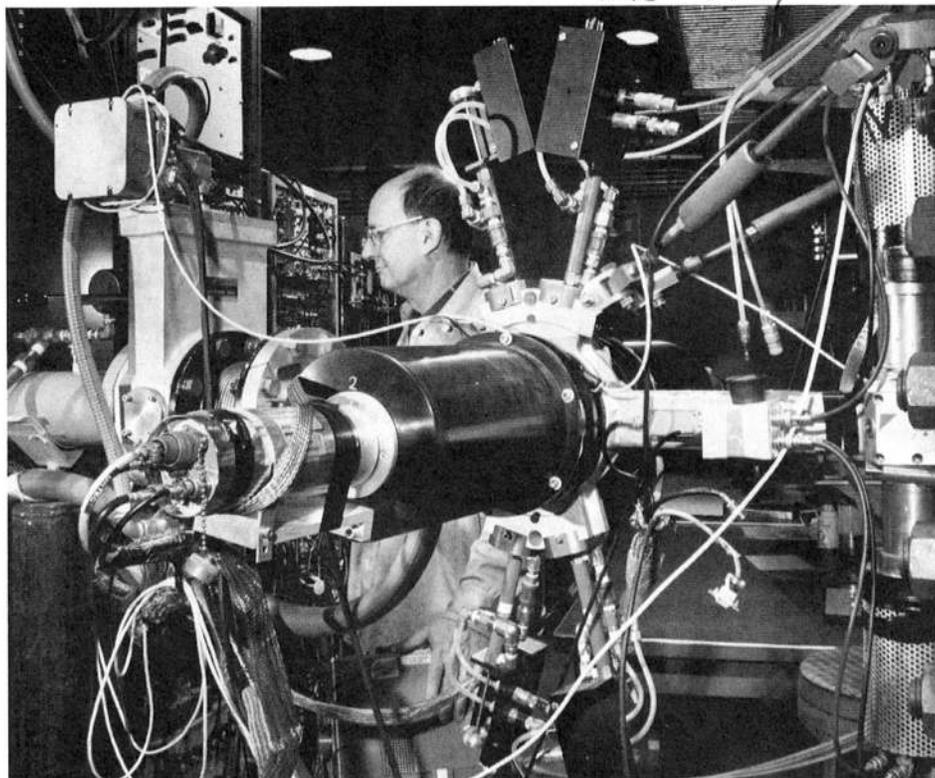
Ernest R. Ferguson, a fire equipment dispatcher in the Laboratory Protection Division, joined the construction project at ORNL in the carpentry shop on March 23, 1943, and later that year began working as a fire fighter, a position he held until 1947 when he assumed his present job.

Ferguson is a Knoxville native and worked for Becker Roofing in Knoxville prior to joining the ORNL construction project. He has completed several technical courses in fire fighting and rescue during his service with the Laboratory Protection Division.

Ferguson and his wife, Margie, live at 2309 Sun Valley Road, Knoxville. They have five children: Ernest Jr., Aloha, Joseph, Robert and Charles.

M. Carl Becker joined the Engineering Division at Y-12 on March 29, 1943, and transferred to the Instrumentation and Controls Division at ORNL in 1954. He has been a development staff member with the Fusion Energy Division since 1958.

Becker is a native of Louisville, Ky., and received a B.S. degree from the University of Louisville. He and his wife, Mary, live at Rt. 15, Knoxville. They have three children: Ann, Janet and Michael.



FROM HERE TO THE STARS: Apparatus used in measuring neutron capture probabilities of isotopes. Such data are used in testing theories of nuclear structure at excitation energies appropriate to nuclear reactors and the cores of stars. The isotopes (and elements) heavier than iron were formed step by step by neutron capture in stars that later blew up. The numerical details help us understand the evolution of the galaxies as well as providing a basis for calculating nuclear power options. The work is being conducted by ORNL's Physics Division.

question box

(Continued from page 1)

Restricted areas

QUESTION: Last summer my wife and I hiked in a beautiful wooded area off the highway between ORNL and Melton Hill Lake, a most peaceful spot with no vehicular traffic. We were very careful not to litter, nor did we see litter. I noted a posted "Government Property, Keep Out" sign has been placed at the off-road parking spot. We are wondering why.

ANSWER: The only parts of the reservation that are open to the public are the main roads: Routes 95, 58, Bethel Valley, Bear Creek, Blair and Scarboro.

Several areas on the reservation are used as "Field Laboratories" by the Environmental Sciences Division, and disturbing the habitat could adversely affect the experiment being conducted.

Bus service cut

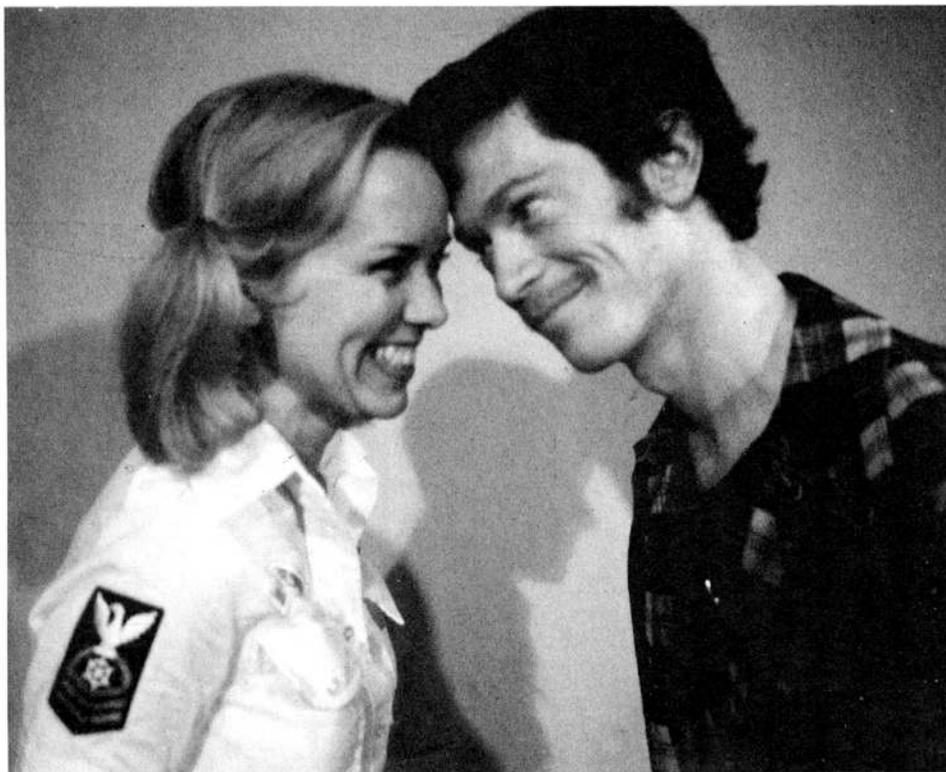
Tony Dean of Maintenance announced that the in-plant bus service at ORGDP has been discontinued except between the hours of 11 am and 1 pm. Bus service during this two hour period will be utilized for transportation of workers to and from the cafeteria.

Dean says the bus service has not been justified as there was only a minimal use of the service except for the lunch period.

The reduced hours went into effect March 9.

next issue...

The next issue will be dated March 30. The deadline is March 21.



COMEDY DUO—Caila Cox, Thermonuclear Division, and Alan Spiewak, Information Division, play high school sweethearts in the Oak Ridge Playhouse's new production, "Lu Ann Hampton Lavery Oberlander." The comedy opens today, and plays also March 18, 24, 25, 31 and April 1 at 8:20 p.m. at the Playhouse.



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