



# NUCLEAR DIVISION NEWS

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

Vol. 6 - No. 14

NUCLEAR DIVISION NEWS

July 17, 1975

## National Cancer Institute awards grants for pre-doctoral students

The University of Tennessee-Oak Ridge Graduate School of Biomedical Studies has been awarded over \$280,000 in new grants from the National Cancer Institute of the National Institutes of Health (Department of Health, Education and Welfare) to be used over a five-year period to support pre-doctoral student training in cancer research.

Funds for the training program will be administered by the Biomedical School through the East Tennessee Cancer Research Center. The Biomedical School is part of The University of Tennessee, Knoxville, but is operated as an integral part of the Biology Division of Holifield National Laboratory.

The grants will provide stipends plus tuition and fees for from seven to nine students for five years, according to Daniel Billen, director of the Biomedical Graduate School and program director for the training grant. Funds will be dispersed in the sum of \$52,934 the first year, \$51,050 the second year, \$57,100 the third year, \$58,100 the fourth year, and \$63,850 the fifth year.

Billen said, "We are extremely pleased to receive the new grant. I consider this a reflection on the fine quality of the Biomedical School's faculty and students."

The grants are the first to include a requirement that the student recipients make arrangements within two years after completing their studies to repay the stipends by engaging in biomedical or behavioral research or teaching for a period equal to the period of support. This "repayment by service" can be made in one of several ways, including: serving as a member of the National Health Service Corps; serving in private practice in a geographic area specified by the HEW; providing services for a health maintenance organization; or other activities authorized by HEW as suitable

repayment. The alternative to service is repayment of funds.

The research training will be within facilities of the Biology Division's carcinogenesis program, which includes laboratories equipped for modern interdisciplinary research in cancer as well as barrier-type animal farms and virus containment facilities.

The Biomedical School, which began in 1966 with six students, presently has 25 post-doctoral students, 42 doctoral candidates and four master degree candidates. The Biomedical School also administers the Carnegie Program for approximately 25 black biomedical students each summer.

## Pre-coop program has 13 students

Thirteen students have been selected for participation in a special "pre-cooperative" education program conducted by Union Carbide's Nuclear Division.

This is the sixth year Union Carbide has sponsored the program, which is designed to encourage black students to pursue college studies in engineering. The program, supported by the U.S. Energy Research and Development Administration, is specifically aimed at students who might otherwise not attend college.

As part of the program, some of the students are placed in summer jobs at Nuclear Division facilities as "pre-cooperative" students. Placement is contingent on their acceptance into an engineering curriculum at one of the participating colleges and universities.

Educational institutions participating in this year's program are Atlanta University, Tennessee State University, Tuskegee Institute and The University of Tennessee. The UT students are included under the University's Minorities in Engineering Program.

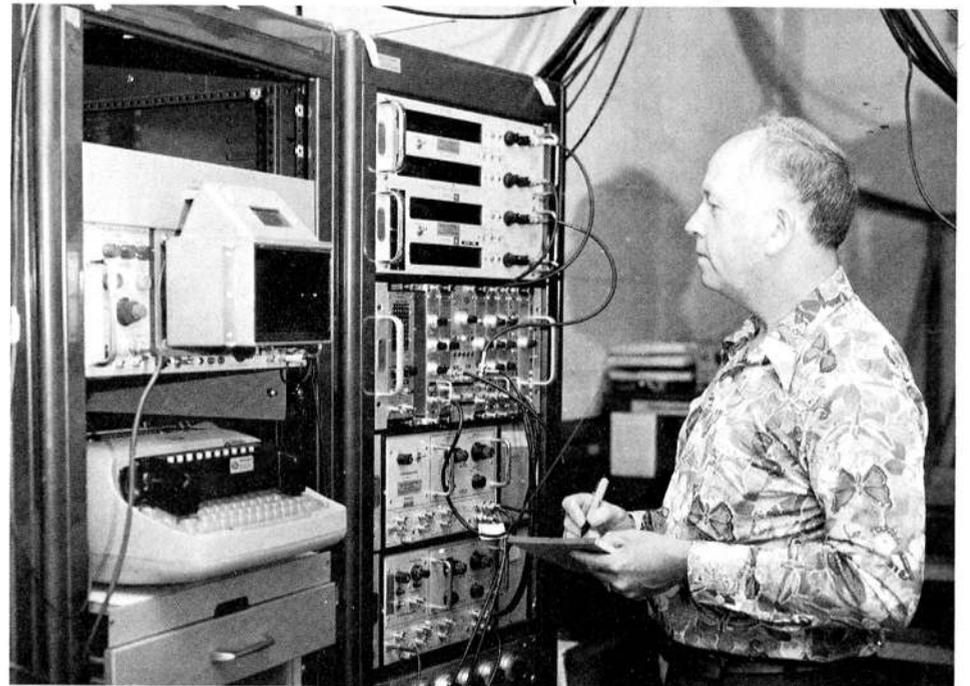
Students participating in the program this year are:

*Atlanta University* — Arnold J. Heidt, Janet Y. Hopkins, Charles E. Ramsey, Charles W. Simmons, Kenneth C. Stephens, James W. Warren and Michael D. Williams.

*Tennessee State University* — Girard M. Simmons.

*Tuskegee Institute* — Cassandra Y. Anthony, David K. Flournoy and Winford T. Ivey

*The University of Tennessee, Knoxville* — Wavery C. Graham and Debra L. White.



1999-75  
**DETECTING EQUIPMENT** — James S. Eldridge records data from the sensitive detecting equipment which was used to measure radioactivity in moon samples from previous Apollo missions.

## Experiments by two Lab men part of joint space mission

2000-75  
Two Holifield National Laboratory scientists have experiments aboard the Apollo-Soyuz Test Project (ASTP), the joint U.S.-U.S.S.R. manned space mission planned this week.

Richard E. Reed, senior scientist in the Solid State Division is the principal investigator for a study of convection currents in molten metals caused by surface tension. James S. Eldridge, Analytical Chemistry Division, is a co-investigator in an experiment to detect short-lived, cosmic-ray-induced radioactivities in sample materials.

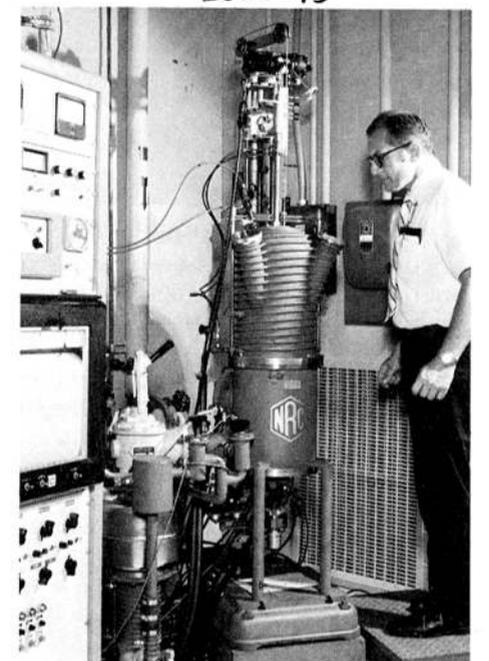
Reed's is one of several materials-processing experiments to be conducted by U.S. astronauts which will use a multipurpose electric furnace system developed by the National Aeronautics and Space Administration's Marshall Space Flight Center, Huntsville, Ala.

ASTP, the first international space mission, will provide a zero-gravity environment for the performance of experiments and also test a rendezvous and docking system which could contribute to development of international space rescue capability and future cooperation in manned space missions.

### Problem of convection currents

Reed's experiment is considered a first step in evaluating how serious a problem convection currents may be in possible future space manufacturing processes.

Entitled "Surface Tension Induced Convection in Encapsulated Liquid Metals in Microgravity," the experi-



**CRYSTAL GROWING** — Richard E. Reed examines the high temperature, crystal-growing furnace which he used in his equipment at the Laboratory.

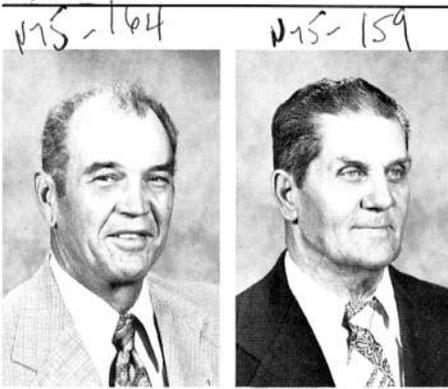
ment follows up results obtained earlier by the Skylab manned space station which showed that under zero-gravity there is an absence of convections in the molten state normally caused by density differences on earth.

This suggested that convection currents caused by surface tension may become an important factor in metal-forming processes in the zero-

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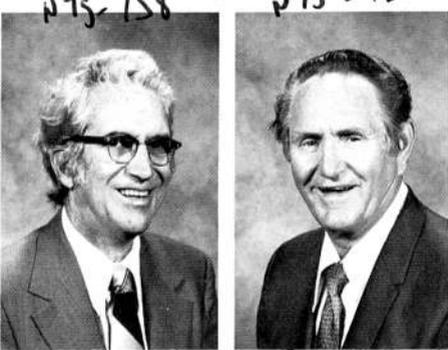


W. K. Ament C. Bullock Jr.

Nine Y-12 employees retire at the end of this month, marking a total of 244 years of Company service.

William K. Ament, research services, joined Union Carbide in 1950. He lives at Route 20, Knoxville.

Charlie Bullock Jr., also of research services, hired in in 1954. He lives at Route 2, Lake City.



R. Butler J. A. Davis

Richard Butler, chemical services, came to Y-12 in 1947. He retires to his Shady Oak Lane, Route 18, Knoxville, home.

James A. Davis, stores department, lives at Route 2, Greenback. He joined Union Carbide in 1942.

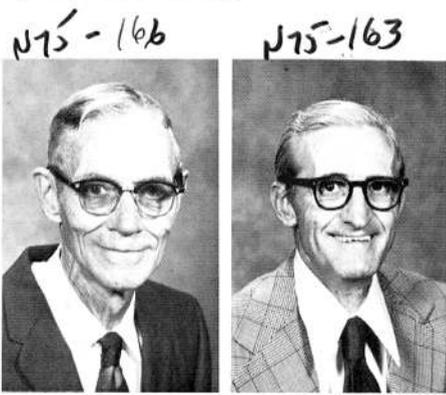


R. H. Davis C. A. Kienberger

Roselle H. Davis, laboratory operations, lives at 2515 Linden Avenue, Knoxville. She hired in in 1944.

Charles A. Kienberger, production assay, came to Y-12 in 1944. He lives at 103 Vista Road, Oak Ridge.

# Division Retirees



A. H. Norman L. E. Patterson

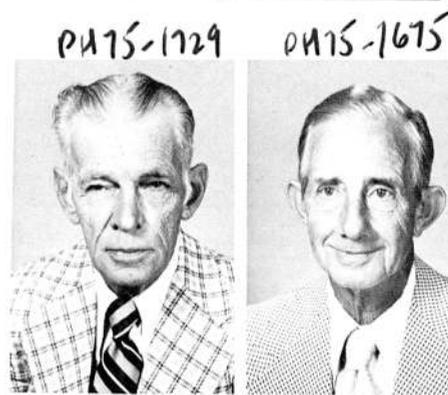
Arnold H. Norman, utilities administration, lives at 611 Ozark Circle, Knoxville. He came to Y-12 in 1943.

Lake E. Patterson, buildings, grounds and maintenance shops, lives at 4 Byerley Avenue, Maryville. He joined Union Carbide in 1947.



C. R. Roberts

Conrad R. Roberts, graphite shop, joined Union Carbide in 1947. He lives at 117 Parker Road, Oak Ridge.



G. C. Duncan J. D. McClendon

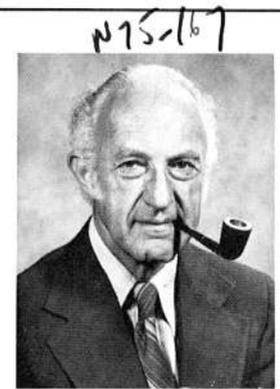
Glenn C. Duncan, Operations Division, will retire from the Oak Ridge Gaseous Diffusion Plant at the end of July, marking an end to a 31-year career with Union Carbide. He lives at 731 West Outer Drive, Oak Ridge.

J. D. McClendon, Engineering Division, also ended a 30-year career, June 30. He lives at 18 Outer Drive, Oak Ridge.



A. S. Sabin

Albert S. Sabin will also retire from ORGDP's Separation Systems Division at the end of July. He lives at 223 Belle Aire Drive, Concord.



W. E. Cohn

Waldo E. Cohn, a senior research staff member in Holifield National Laboratory's Biology Division, retired July 1. A member of the Laboratory staff since September, 1943, Cohn will serve as a consultant to the Division during his retirement.

He will also continue as director of the National Academy of Sciences' Office of Biochemical Nomenclature. The Cohns reside at 102 Plymouth Circle, Oak Ridge.



ORGDP 35 YEARS



F. B. Tredinnick

Fred B. Tredinnick, an inspection engineer in dimensional inspection, joined Union Carbide July 1, 1940, in the Duquesne Oxygen Plant, which later became part of the Linde Division of Union Carbide. He transferred to ORGDP in 1951. A native of Pittsburgh, he is a graduate of the University of Pittsburgh. He and his wife, Jeanette, live in Norris. They have three married daughters, Susan, Janet and Lois.

30 YEARS

Mary L. Fuller, medical department; Cecil A. Carmichael, guard department; James E. Wise, shop services department; Raymond E. Copeland, U-235 separation department; Glynn J. Riddle, U-235 separation department; Lee Davidson, dimensional inspection; and Freeman Fox, isotope analysis department.

25 YEARS

Glen L. Kinser.

PADUCAH 30 YEARS

Ralph F. Hutchins, mechanical inspection.

**Next Issue**  
The next issue will be dated August 7. The deadline is July 30.

### COMMUNITY CALENDAR

July 24, 25

A BBC Documentary Film, "The Dreamwalkers." Jefferson Junior High School, 8 p.m. Admission: free.



ORGDP SAFETY AWARDS — Angela Fincher and Debbie Cook, foreground, issue safety awards to employees at the Oak Ridge Gaseous Diffusion Plant. The awards were from the more than 4,225,000 man-hours worked last year without a lost-time injury, and were the first awards given in some years. Interest in safety has heightened at ORGDP with safety awareness foremost in employee's attitudes toward the job that has to be done.

## NUCLEAR DIVISION NEWS



UNION CARBIDE CORPORATION  
- NUCLEAR DIVISION

James A. Young, Editor

Ext. .... 3-7100

Ruby Miller, Assoc. Editor

Ext. .... 3-6421

Keith Bryant, Paducah

Bell .....369

Doug Carter, ORGDP

Ext. .... 3-3434

- Member -

INTERNATIONAL ASSOCIATION OF  
BUSINESS COMMUNICATORS

Office

Post Office Box Y

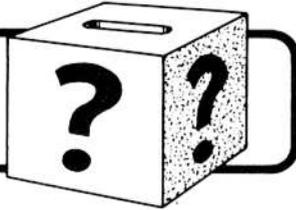
Oak Ridge, Tenn. 37830

### PRESIDENTIAL SPORTS AWARD

Stan Fraley, Laboratory, and his wife, Katie, who works at the Y-12 Plant, were recently presented their Presidential Sports Award in jogging, making the pleasant pastime one of the most popular in the Award series.

DSA Foto

# 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.

**QUESTION:** When I came to work at the Laboratory two years ago, I was told that even though I had experience, took shorthand, and met all other requirements of a secretary, I could not be hired in as one. Recently, I have noticed on the "Weekly Status Report" that several new people have been hired in as secretaries. Has this policy been changed? If so, why hasn't my classification been changed? I am still classified as a stenographer because (my boss says) I work for a group of men and am not the "No. 1 girl" in the section.

**ANSWER:** Two years ago what you are complaining about may have been so in parts of the Nuclear Division. Our present policy is to hire directly into the secretary classification when the level of the job has been established as that of a secretary, when the opening has not been filled through the job opportunity system by someone already on the payroll, and when the new employee is properly qualified. Job levels are not determined by the qualifications of the incumbent, but rather by the duties and responsibilities the job requires. You should check with your supervisor or the salary administrator at your location to determine if your job is properly classified as a stenographer. If this is the case, your best bet would be to indicate an interest in any secretary's job that is posted in connection with the job opportunity system.

**QUESTION:** I was perusing a copy of *Lab News*, published by Sandia Laboratories. Included in this employee periodical is a section for personal classified advertising by employees, limited to 125 ads per issue, 20 words per ad, and one ad per issue per person. In view of the unofficial personal ads stuck on walls, bulletin boards, etc. at UCC-ND, has this been considered for the *Nuclear Division News*?

**ANSWER:** The *News* serves more than 16,000 employees plus retirees from all four Nuclear Division plants. It is not possible to administer a classified section to serve this many people. Space limitations would be involved in printing such information also.

**QUESTION:** How many jobs above the Grade 3 level are there in the administrative support category at the Laboratory, Y-12, and ORGDP?

**ANSWER:** As of June 1, 1975, 680 nonexempt administrative support employees in the three Oak Ridge facilities were in jobs above Grade Level 3.

**QUESTION:** Presumably, quite a few Carbide employees are participating in the Equity Fund in connection with their Personal Investment Accounts. Is there any reason why an up-to-date value of a "share" can't be published in each issue of the *Nuclear Division News*? Is there any way to find out the value on a day-to-day basis?

**QUESTION:** I belong to the Fixed Income Fund group in the Savings Plan, and believe it to be a fine thing. But, my problem is I never know where I stand, what my investments are, etc. Could the *Nuclear Division News* possibly feature an article on this part of the Savings Plan, explaining it in detail?

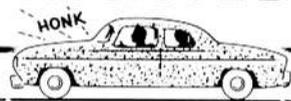
**ANSWER:** The latest available unit values for each share in the Equity Fund and the Fixed Fund are being published regularly in the first issue of the *Nuclear Division News* each month. All units added to an employee's account or removed from an account are transacted at the same unit value each day during the month.

Each employee who is in the Personal Investment Account receives a statement early in the year showing the number of units in the PIA account as of December 31 of the preceding year.

Employees can make an accurate estimate of subsequent additions to their accounts by adding their monthly contributions in the Plan to the Company's contributions and dividing the total by the unit value for each month for the appropriate fund, Equity or Fixed.

We will consider running a future article on the Savings Plan in some early issue of *Nuclear Division News*.

## WANTED



### Y-12 PLANT

RIDE from Lincoln Park section, Knoxville, to West Portal, straight day. L. W. Moneymaker, plant phone 3-7596, home phone Knoxville 523-4988.

RIDERS or car pool members from Woodland Drive, Clinton, to Central or North Portal, straight day. C. W. Anderson, plant phone 3-7392, home phone Clinton 457-2687.

RIDER from North Knoxville, Whittle Springs Road, Washington Pike area, via Clinton Highway, to East, North or Central Portal, Jim Baker, plant phone 3-5935, home phone Knoxville 637-1769.

### ORDGP

JOIN car pool from near West Town, Knoxville, to K-1007, 7:45 a.m. - 4:15 p.m. shift. Jan Watson, plant phone 3-3121, home phone Knoxville 693-1477.



DIPEC BRIEFING—Jack Conn, second from right, of Y-12's Fabrication Division, recently briefed ERDA representatives on the advantages of the Defense Industrial Plant Equipment Center program and exhibited some examples of Y-12 microinch precision machining and electrochemical machining. From left are Leland N. Sparks, ERDA-HQ; Ron Zeitler, ERDA-Chicago; Conn; and Ward A. Pollard, Deputy Director, DIPEC, Memphis. Photo courtesy of Defense Supply Agency.

## Y-12 Plant most active user of ERDA's DIPEC equipment

Most persons would agree that it is just good common sense to make the optimum use of equipment purchased by taxpayers' money.

With this philosophy in mind, the Oak Ridge Y-12 Plant became a participant in the Defense Industrial Plant Equipment Center (DIPEC) program in 1968 and has since become the most active ERDA installation user of the DIPEC service. In the past seven years, Y-12 has obtained over two million dollars worth of equipment by paying only the shipping costs from the storage depots.

The DIPEC is an organization established in 1963 by the U.S. Department of Defense to obtain maximum reuse of idle industrial plant equipment, originally costing \$1,000 or more per item, purchased with Department of Defense funds. The types of equipment included are those used for cutting, abrading, grinding, shaping, forming, joining, testing, measuring, heating, treating, or otherwise altering the physical, electrical or chemical properties of materials, components or end items used in manufacturing, maintenance, supply, processing, assembly or research and development operations.

Idle industrial plant equipment owned by participants in the program is stored and maintained in four storage-maintenance facilities located in Stockton, Cal., Mechanicsburg, Pa., Columbus, Ohio, and Atchison, Ka. The Atchison center is contractor-operated, while the others are operated by federal employees. About 25,000 items are stored in these centers for reuse. The record center and clearinghouse for the system is located in Memphis, Tenn.

Jack Conn of Y-12 Plant's Fabrication Division is the Plant's coordinator with the DIPEC system. At the request of the U. S. Energy Research and Development Administration, Conn recently briefed representatives of the ERDA field offices on the advantages of the DIPEC program. The briefing was held at the DIPEC office in Memphis. Conn pointed out that the program has been extremely useful in assisting the Y-12 Plant in meeting its defense mission requirements. Since 1968, Y-12 has obtained through the program 111 items which had an original cost of \$2,139,793. Another \$363,615 worth of items also were obtained for the Laboratory during this period.

## Enzymes' displaced 'building blocks' may be key to some inherited diseases

By Robert L. Wesley

A chemical compound synthesized several years ago by Fred C. Hartman of Biology Division and a colleague has been found by a team of California research personnel to reverse the sickling properties of red blood cells in suspension.

The compound, dimethyl adipimidate, tends to restore abnormal blood cells (taken from persons with sickle cell anemia) to a more normal shape and texture without causing side effects. The report was made recently by a group representing several California hospitals and the University of California and was headed by Lester Packer of Lawrence Laboratory at Berkeley.

The compound has not yet been tested within the bodies of humans or animals and experiments to date have been performed only with blood specimens extracted from afflicted persons.

### Promising New Approach

While it is much too early to proclaim this compound as a possible treatment or cure for an estimated two million persons in this nation who carry the traits of the disease, it at least may provide medical science with a promising new approach for treatment. In addition, the finding would appear to lend strong support to the value of basic research.

Why? Because when Hartman and his colleague, Finn Wold (now chairman of the department of biochemistry at the University of Minnesota), were attempting to synthesize the compound, it was not with the idea of producing a drug to treat sickle cell anemia.

As Hartman explained, "I was involved in postdoctoral work in Wold's laboratory at the University of Illinois and was trying to make some protein reagents which could be used to study the conformation of proteins in solution. At the time we synthesized these compounds, for altering the 'building blocks' in proteins, we had no intention nor expectation that one of these compounds would find potential use in medicine. Now, it appears that it might. To me, this is the exciting thing about basic research. You can study a problem for a given reason for a number of years with no result other than to add to the overall store of scientific knowledge. Then, years later, that bit of information may be the missing link badly needed in another area of research."

**The present work of Hartman and his staff, composed of Lucile Norton, Claude Stringer, James Brown and John Schloss, is directed toward determining how enzymes carry out their functions. Enzymes are special proteins within the cells of an organism which cause certain chemical reactions to occur. Hartman and team are attempting to correlate an enzyme's function with its structure. If some of the important building blocks of the enzyme are out of place or missing, does it make any difference in the enzyme's function?**

### Might such displacement be a reason for some inherited diseases?

To gain a better perspective of the complexity of this work, let's back up a bit and consider a cell in human body tissue. Take, for example, the cells in the palm of a hand. Without the aid of magnification, your vision won't enable you to single out one cell in your hand from all the surrounding cells because of a cell's extremely small size.

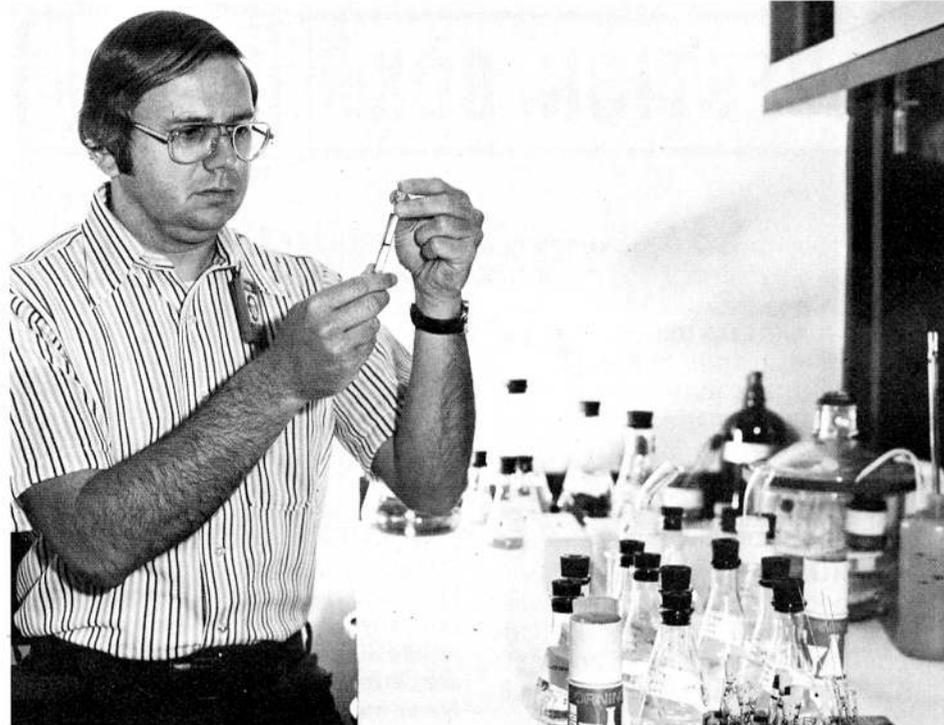
By looking at that cell under a microscope, you discover a rather complex structure, an automated chemical processing plant in miniature. Within this tiny township, a series of chemical reactions are occurring in the proper sequence required for the cell to keep itself alive and to contribute to the life of the total body.

Probing still deeper with the use of other laboratory tools, you find that these chemical reactions are brought about by enzymes — proteins with special structures that somehow enable them to carry out a specific role in the life of the cell. The cell of the bacterium *E. coli* may have as many as 800 enzymes. A human cell may have up to ten times that number, but no one knows for sure.

### 20 Different Amino Acids

Now, looking more closely at the enzymes, we find that they are composed of 20 different amino acids arranged in a variety of sequences that may total up to as many as 500 different locations called "residues." The enzymes, strings of amino acids, wind through the structure of the cell, some overlapping one another, and some touching the structural protein of the cell wall.

Perhaps the non-technical reader can grasp the idea of enzyme structure a bit more clearly by thinking of clover tied into strands. Imagine you have a field of clover of 20 different colors. You are going to construct 1,000 strands of clover. Each strand will be between 100 and 500



**STRUCTURE OF ENZYMES** — Fred Hartman, Biology Division, is involved in studies to define the structure of enzymes, the chemical catalysts within cells. Here he evaluates whether a protein is sufficiently purified for the next phase of experimentation.

clovers in length and the color combinations can be any that suit your fancy. Given sufficient time, you would have no difficulty in constructing at least 1,000 strands, all different from each other. The actual number of strands theoretically possible to construct would be astronomical.

Nature also has a seemingly infinite variety of ways in which it can attempt to link those 20 amino acid building blocks together to construct something that moves in concert to perform a number of functions necessary to a living organism. For various reasons, most of the combinations cannot react properly and do not work. But through the passage of time, workable combinations have come together (by chance or by master design) to result in cells and total living organisms which live and reproduce in kind.

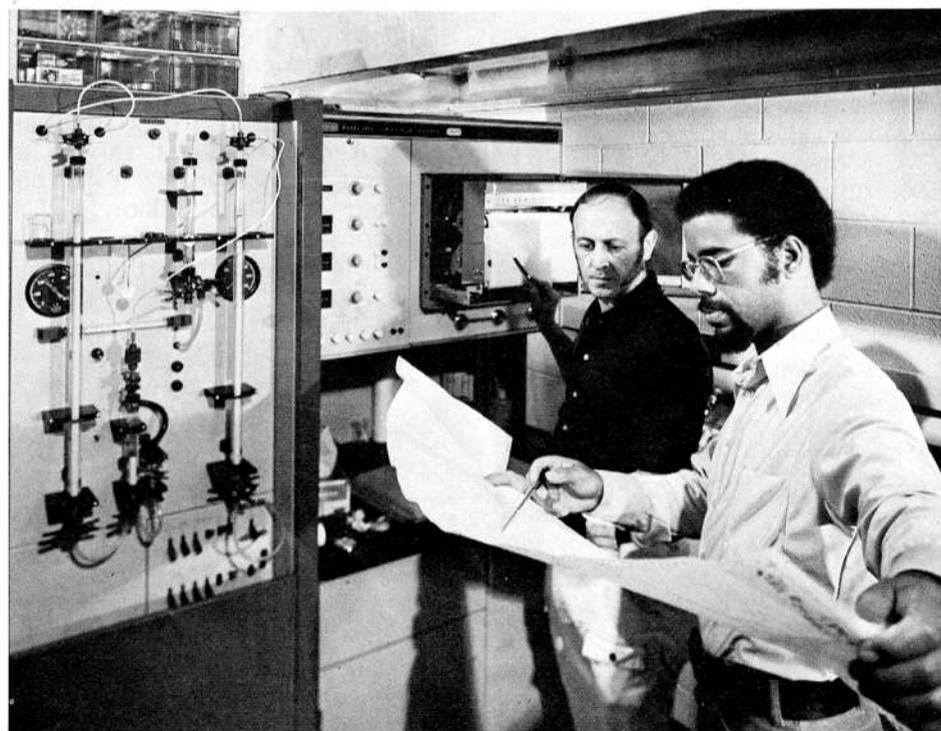
**Sometimes those building blocks get out of place because of defects in the DNA, the cell's reproductive system. In many cases, a displacement might not make any difference, but in other cases it may knock the enzyme strand out of kilter and set off**

**a series of other disturbances that ultimately could cause problems for the total organism. Even worse, the organism may pass the wrong structure on to succeeding generations.**

Hartman explained: "Out of an enzyme with 150 amino acid residues, just one minor change, such as a missing or an incorrect residue, can completely distort its ability to carry out its job. Sickle cell anemia is an example of a disorder caused originally by just one building block being out of place. A single amino acid was replaced by another — valine replaced glutamic acid. This seemingly minor change in hemoglobin (the protein within the red blood cell that transports oxygen from the lungs to the tissues) makes it insoluble and eventually causes the cell to assume a half moon or sickle shape. This distortion of shape prevents the hemoglobin from carrying out its proper function in the body and often results in a shortening of the life span of the individual afflicted with this disorder. Although the disease was first clinically described in 1915, and its basis defined by Linus Pauling in the late 1940's, the amino acid displacement as the initial cause was not determined until the mid-1950's by an investigator named Ingram. Many other inherited diseases also are caused by some basic amino acid displacement, but in most cases the displacement has not been identified."

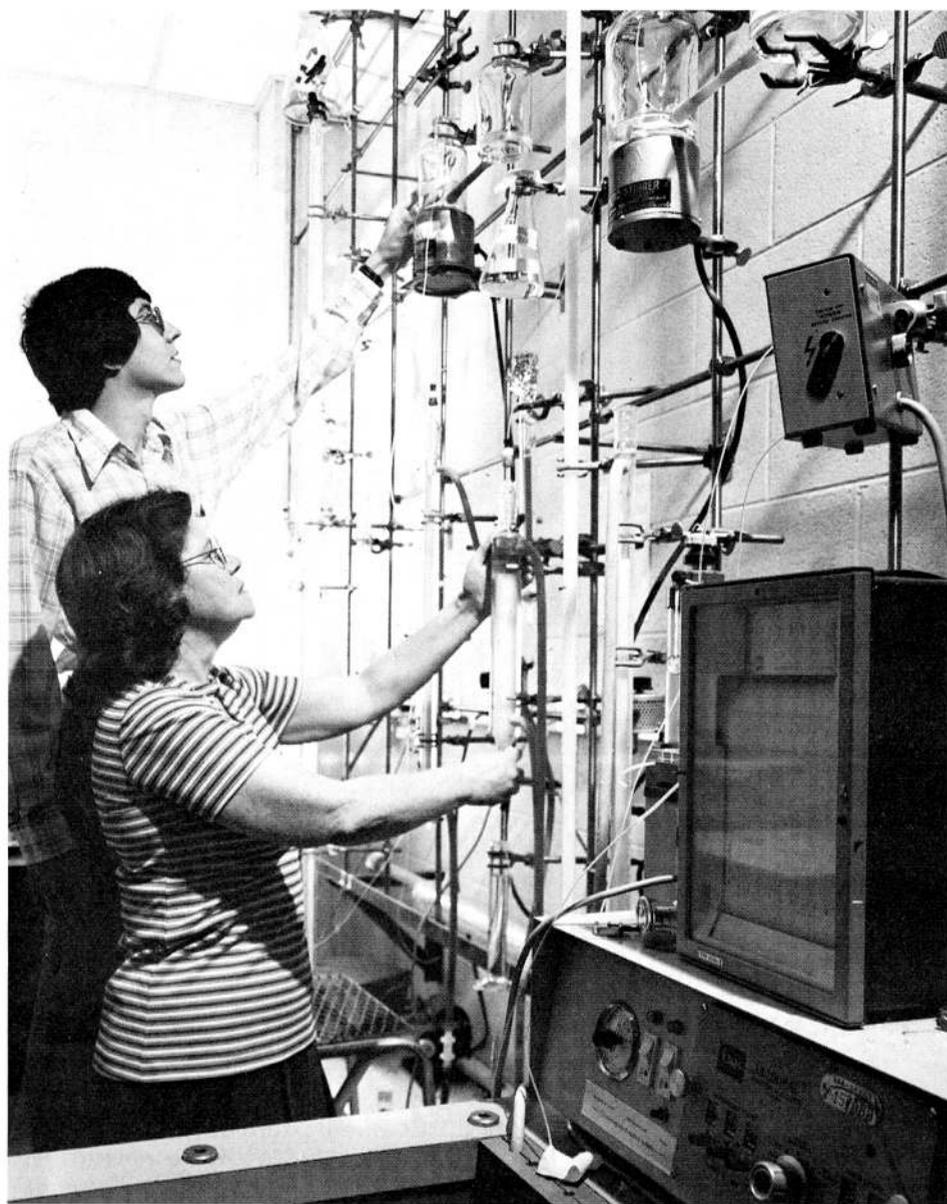
The task of describing the structure of normal enzymes in order to be able to recognize the abnormal ones would appear to be impossible, even for armies of enzymologists, were it not for new tools and instruments which make it easier to separate proteins and enzymes on the basis of size and chemical differences.

There also may be some shortcuts available. For example, it may be that every amino acid does not have to be in a specific location throughout the length of an enzyme strand, but only in certain key places — just as you might not need a traffic light at every one-mile interval along a stretch of



**LIFE'S BUILDING BLOCKS** — The building blocks of living systems, amino acids, are separated with this amino acid analyzer. Examining a readout sheet from the instrument are Claude Stringer, left, and James Brown.

(Continued on page 5)



PROTEIN PURIFICATION — John Schloss and Lucile Norton prepare chromatography columns for use in protein purification.

**COMPANY Service**  
20 25 30

**Y-12 PLANT  
30 YEARS**

Edwin R. Pulley, SS material control; Cecil M. Miller, building services; Rudolph Paluzelle, Development Division; George W. Graph, process maintenance; Everett C. Walker, buildings, grounds and maintenance shops; Joseph R. Wilson, Engineering Division; Owen C. Beatty, guard department; Ruth H. Gallardo, alpha 5 processing; Lawrence E. Baker, H-1 foundry; Eva K. Williams, stores department; and Elmer H. Johnson, alpha 5 processing.

**25 YEARS**

Paul Overton, Lawrence E. Christopher, Warren F. Cartwright, Boyd H. Hobby Jr., Dillard I. Davis, Kenneth L. Honeycutt, Charles R. Connaster, Victor M. Hovis Jr., William H. Dodson, Le Vaughn Davis and Edward R. Pollard.

**20 YEARS**

Peggy K. Silver, Gino F. Zanolli, Betty D. Ward, Evelyn G. Dixon, Hubert W. Hensley Jr. and James Bradford.

**GENERAL STAFF  
30 YEARS**

Walter L. Ford, Computer Sciences Division.

**25 YEARS**

Flossie T. Denton, Valice C. Jennings, Kluck U. Berkau and Joseph O. Bishop Jr.

**Enzymes studies**

(Continued from page 4)

highway, but you would certainly need them at busy intersections. The task then might be narrowed down to find those key intersections, or as it is called on an enzyme under study, the "active site."

"The active site refers to the relatively small number of amino acid residues intimately involved in acting as the catalyst for a given chemical reaction," Hartman said. "We try to identify those residues in a number of enzymes. We do this by treating the enzyme with a chemical reagent capable of changing an amino acid residue and correlating the change in property with change in function. By using the reagent (now attached to the enzyme as a marker), we can determine the site at which it reacts. If reaction at that site abolishes the enzyme's ability to act as a catalyst, we then can say that the given site is a critical one to the enzyme in carrying out its function. Since many antibiotics work by reacting with the active site of a key enzyme within a pathological organism, an exciting potential fringe benefit of our work is the design of new chemotherapeutic agents."

Once enzyme structures and active sites are established, a task which will probably take investigators many years to accomplish, Hartman believes it may be possible to use this knowledge to rearrange the building blocks in the defective systems and provide medical science with new methods of treating abnormalities which now seem to defy solution.

**Thomas Row named head of environmental impacts**

2206-74

Thomas H. Row has been appointed head of the environmental impacts department in the Energy Division of Holifield National Laboratory.

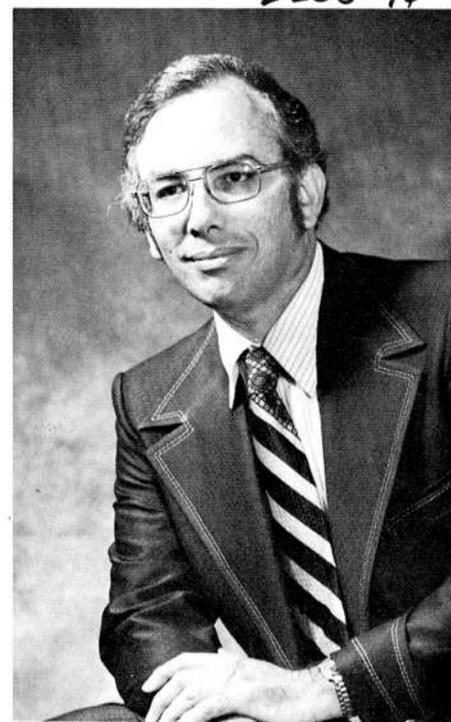
Row has served for the past year as manager of the environmental statements project carried out by the Energy Division. He succeeds William Fulkerson, who has been appointed division director.

Row joined the staff of the Laboratory's Reactor Division in 1959, working in both the reactor analysis and nuclear safety sections. In 1967, he was appointed coordinator of an Atomic Energy Commission-supported spray and absorption technology for pressurized water reactor containment spray systems.

In 1971, he became a member of the Laboratory's original team assigned to the preparation of environmental statements on nuclear facilities. He was appointed deputy manager of the environmental statements project in that year and manager in March, 1974.

Row received his B.S. degree in physics from Roanoke College in 1957 and the M.S. in nuclear engineering in 1959 from Virginia Polytechnic Institute and State University.

He is a consultant to the Nuclear



Thomas H. Row

Regulatory Commission's Advisory Committee on Reactor Safeguards and a member of the American Nuclear Society and Sigma Xi.

He and his wife, Carole, live at 301 Virginia Road, Oak Ridge.

**Division Death**

Woodrow W. Gardner, an operator at the Oak Ridge Gaseous Diffusion Plant, died at the Oak Ridge Hospital July 3.



Mr. Gardner

A native of Oliver Springs, he joined Union Carbide in 1945. He was a veteran of World War II.

Survivors include his wife, Mary Fritts Gardner; a daughter, Sherry, 114 Pembroke Lane, Oak Ridge; sons, Charles and George; a sister, Mrs. Owen Portwood; brothers, Thomas A., Charles W. and Walter E. Gardner; and one granddaughter.

Funeral services were held at Spark Funeral Home Chapel with the Rev. Bruce Robinson and Don Long officiating. Burial followed in the Oliver Springs Cemetery.

**PATENTS Granted**

To Paul E. Reagan, Y-12 Plant, for "Device for Sampling Exhaust Stack Effluent."

To John F. McLaughlin and Stephen S. Cristy, both of the Y-12 Plant, for "Specimen Transfer Container for Ion Microprobe Mass Analyzer."

To Calvin C. Wright, Ralph R. Wright and George S. Petit, Oak Ridge Gaseous Diffusion Plant, for "Electro-Galvanic Gold Plating Process."

PH75-1728

PH75-1674



J. Csurny III



W. C. Zody

**ORGDP promotions for Csurny, Zody**

Two promotions were announced recently at the Oak Ridge Gaseous Diffusion Plant. John Csurny III has been named a computer applications programmer in the Computer Sciences Division, and William C. Zody has been promoted to a laboratory supervisor in the Separation Systems Division.

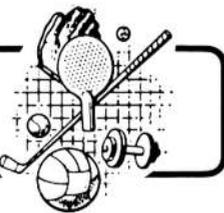
Csurny, a native of Leetsdale, Pa., has been at ORGDP more than two years, and previously worked as a lab technician at the Holifield National Laboratory. He holds a B.S. degree in accounting from The University of Tennessee.

Mrs. Csurny is the former Linda Sue Dixon, and they live at 428 Hicks Circle, Clinton. They have two children, Ginger and Mark.

Zody, who was born in Peru, Ind., joined Union Carbide in 1973, and worked in the operations department as a laboratory technician.

He and his wife, the former Joanne Johnston, live at 128 Everest Circle, Oak Ridge. They have a son, William S.

# RECREATIONOTES



## LAB FISHING RODEO

The Laboratory announces the following winners in the 10-category fishing rodeo:

- Largemouth Bass**
  1. R. T. Santoro, 6 lbs. 8 ozs.
  2. V. R. Bolden, 5 lbs. 14 ozs.
  3. J. C. Thompson, 5 lbs., 1.5 ozs. (husband of E. H.)
  4. G. E. Pierce, 4 lbs.
- Smallmouth Bass**
  1. Arnold Beets, 5 lbs. 8 ozs.
  2. W. F. Ohnesorge, 4 lbs. 1.5 ozs.
  3. Casey Jones, 4 lbs. (son of G. W.)
  4. Sam S. Hurt, 3 lbs. 8 ozs.
- Stripe (White Bass)**
  1. George Shooster, 3 lbs. (son of R. G.)
  2. Sam S. Hurt, 2 lbs. 3 ozs.
  3. George A. West, 1 lb. 6 ozs.
- Bream (Bluegill)**
  1. Raymond Shooster, 1 lb. 2 ozs. (son of R. G.)
  2. Gregory Jones, 12 ozs. (son of R. H.)
  3. Lyndon Hurt, 9.5 ozs. (son of Sam S.)
  4. E. B. Cagle, 7 ozs.
- Crappie**
  1. Georgette Shooster, 2 lbs. 1 oz. (wife of R. G.)
  2. Max B. Brewer, 1 lb. 8 oz.
- Rock and Hybrid**
  1. Ralph L. Clark, 31 lbs. 8 ozs.
  2. Tracy A. Clark, 19 lbs. 8 ozs. (daughter of R. L.)
  3. W. T. Bosti, 17 lbs. 8 ozs.
  4. R. G. Rose, 9 lbs.
- Rough Fish**
  1. R. G. Shooster, 16 lbs. 2 ozs.
  2. T. H. Gilliam, 15 lbs.
  3. William DuBose, 3 lbs. 4 ozs. (son of C. K. H.)
- Sauger**
  1. R. G. Lawson, 6 lbs. 4 ozs.
  2. J. P. Heiskell, 3 lbs. 7 ozs.
  3. James L. Moore, 1 lb. 12 ozs.
- Trout**
  1. J. N. Smith, 1 lbs. 2 ozs.
  2. Dave Reichle, 15.25 ozs.
- Walleye**
  1. J. Allen Smith, 7 lbs. 4 ozs.
  2. A. D. Ryon, 5 lbs. 6 ozs.
  3. Eddie Bailiff, 3 lbs. 8 ozs.
  4. W. L. Howard, 2 lbs. 9 ozs.

## ORGDP GOLF TOURNAMENT

H. Creswell took medal honors at the Wallace Hills golf tournament for ORGDPers recently, with an even par score of 72. Lenny Wright carded second place with a 74.

Charlie Hale and Mike Dawley shared handicap honors with 78, and 76. Dawley tied with Bob Nier and Sid Hudson for the second honors.

John Ghosten, John Patrick, E. T. Strunk, Bill Reynolds, Gary Williams and J. M. Davis all counted 12 pars.

Second flight honors went to J. C. Horton and N. W. Gatewood with scratch scores of 80. Jim Edwards took an 80 handicap score; while Virgil Williams came in second with an 81.

H. B. McBride counted 10 pars, W. L. Goodwin, 9; and D. F. Hall, Jim Smith, C. A. Reeves and E. V. Bogle all counted eight.

Third flight honors were picked up by J. D. Kirkpatrick, with a 79; while John Shelton took an 81.

P. E. Lampton had handicap lows with a 91, and David Lane carded a 104.

Pars were counted in the order of five by J. H. Ballard, Seth Wheatley, W. S. Lenihan, S. A. Speckter and J. B. Sprayberry.

## LAB GOLF TOURNAMENT

Quail Creek honors were picked up among Lab golfers by C. Brown, with a 70; and L. Caldwell and H. Tuck, each with 73.

Handicap lows went to L. Vest, 75; and R. Ladd, 77.

D. Collins, K. Lannon accounted for 14 pars; R. Barker, G. Cain and A. Wright, 13.

Second flight honors went to D. Lee, 79; and D. Kington, 80. Handicap lows were carded by J. Wiggins, 79; and L. Lane, 80.

J. Johnson scored nine pars; H. Bryson, D. Eaker, O. Rogers and P. Staffard, eight.

Third flight scores were polished off by E. Cox, 82; and V. Miracle, 85.

M. Carter and R. Livesey both scored 91 to take handicap honors in the last division.

J. Jackson and J. Carr counted seven pars; C. Collins, F. Schmollinger and W. Vaughn, five.

## Y-12 FISHING RODEO

The Y-12 fishing rodeo listed 11 categories. Winners are shown below:

- Largemouth Bass**
  1. B. O. Miller, 8 lbs. 12 ozs.
  2. E. T. Stair, 8 lbs. 2 ozs.
  3. Willie C. Newson, 7 lbs.
  4. J. B. Wade, 6 lbs. 4 ozs.
- Smallmouth Bass**
  1. Lamar R. Benker, 5 lbs. 12 ozs.
  2. G. G. Everett, 4 lbs. 8 ozs.
  3. A. G. Steele Jr., 4 lbs. 4 ozs.
  4. H. L. Pace, 3 lbs. 15 ozs.
- Stripe (White Bass)**
  1. T. D. Newman, 2 lbs. 14 ozs.
  2. J. M. Whatley, 2 lbs. 4 ozs.
  3. Golda Caylor, 2 lbs. (wife of G. H.)
  4. Randall Monday, 1 lb. 14 ozs. (son of A. L.)
- Bream (Bluegill)**
  1. Lloyd Wyatt, 14 ozs.
  2. Kevin Jago, 10 ozs. (son of W. R.)
  3. Joe Jackson, 9 ozs.
  4. Tracy Monday, 7 ozs. (son of A. L.)
- Crappie**
  1. A. L. Monday, 2 lbs. 9 ozs.
  2. D. L. Johnson, 1 lb. 15 ozs.
  3. C. H. Roddy, 1 lb. 14 ozs.
  4. L. M. Denman, 1 lb. 8 ozs.
- Rock and Hybrid**
  1. W. C. Fraley, 16 lbs. 12 ozs.
  2. Tim St. Onge, 8 lbs. 15 ozs. (son of C. D.)
  3. Paul Craft, 6 lbs. 6 ozs. (son of A. K.)
- Rough Fish**
  1. H. N. Benninghoff, 17.21 lbs.
  2. W. G. Steele, 15 lbs. 8 ozs. (son of A. G.)
  3. Gail Martin, 14 lbs. 8 ozs. (wife of L. F.)
  4. Rufus E. Baxter, 11 lbs. 12 ozs.
- Sauger**
  1. J. E. Thompson, 4 lbs.
  2. J. W. Graves, 3 lbs. 4 ozs.
- Trout**
  1. H. A. Price, 1 lb. 8 ozs.
- Walleye**
  1. Charles Graves, 4 lbs. 10 ozs. (son of J. W.)
  2. Charles Campbell Jr., 3 lbs. 11 ozs.
  3. Emery J. Yearwood, 3 lbs. 8 ozs. (1" bigger in girth)
  4. G. H. Caylor, 3 lbs. 8 ozs.
- Muskie**
  1. R. Hopper, 12 lbs.



PADUCAH SPRING DANCE — The Paducah Gaseous Diffusion Plant recently staged a successful dance with "Spring Frolics" as its theme. Part of the festivities are seen in the above random shots.

## ORGDP FISHING RODEO

ORGDP featured a 10-category fishing rodeo for the first six months of the year. Winners were:

- Largemouth Bass**
  1. William A. Price, 7 lbs. 12 ozs.
  2. M. J. E. Shelton, 7 lbs. 1 oz.
  3. Wayne E. McGhee, 6 lbs. 8 ozs.
  4. A. C. Heitzman, 6 lbs. 7 ozs.
- Smallmouth Bass**
  1. Paul W. Harris, 5 lbs. 8 ozs.
  2. Bruce McCullough, 4 lbs. 13 ozs. (son of J. O.)
  3. Richard R. Abbott, 4 lbs. 2 ozs.
  4. Marshall Hickey, 3 lbs. 13 ozs.
- Stripe (White Bass)**
  1. W. M. Cox, 1 lb. 2 ozs.
  2. Tim Cox, 1 lb. (son of W. M.)
- Bream (Bluegill)**
  1. B. J. Ford, 9 ozs.
- Crappie**
  1. Fred R. Sanders, 2 lbs. 1 oz.
  2. H. E. Walters, 1 lb. 14 ozs. (wife of H. E.)
  3. W. E. Brown, 1 lb. 10 ozs.
  4. J. D. Hart, 1 lb. 2.5 ozs.
- Rock and Hybrid**
  1. N. H. Rathbone, 26 lbs. 8 ozs.
- Rough Fish**
  1. Robby Sheets, 8 lbs. 13 ozs. (son of R. M.)
  2. C. W. Castle, 6 lbs. 8 ozs.
  3. Danny C. Williams, 5 lbs.
- Sauger**
  1. Bernard E. Woody Jr., 2 lbs. 13.5 ozs.

## Y-12 GOLF TOURNAMENT

Dead Horse Lake winner for Y-12 duffers was John Baker, with a three over-par score of 75. Bill Butturini followed with a 77; while handicap winners were Ed Size, 76; and George Cozart, 81.

Charlie Baxter counted 13 pars; W. H. Tipton 11; W. A. Rutherford and Ted Littleton, nine each.

In the second division, it was C. J. Haun, with 81; Roy Morrow, 83. Handicap honors went to John Hamilton, with 82; Ed Ball, with 89.

Dick Huber and Larry Jones counted six pars; John Brown, R. B. Strickland and Hess Nobles, five.

Third division honors went to H. F. Spires, 92; and Ken Campbell, 93. Handicap lows went to H. G. Dyer, 93; and Avery Kendig, 94.

George McPherson and L. R. Loveless took four pars; Jack Holt, Otis Milen and J. Stewart, three each.

- Trout**
  1. A. D. Reeder, 3 lbs. 5 ozs.
  2. R. L. Farrar Jr., 1 lb. 11 ozs.
  3. J. A. Walker, 1 lb. 7 ozs.
- Walleye**
  1. H. E. Walters, 4 lbs. 4 ozs.
  2. Anthony P. Jago, 4 lbs.
  3. C. D. Edmundson, 3 lbs. 8 ozs.
  4. Lisa A. Ford, 2 lbs. 8 ozs. (daughter of B. J.)

## Tee-Off Time Application for July 26

(Check Appropriate Plant)

- ORGDP — Whittle Springs
- Y-12 Quail Creek Country Club
- Laboratory — Wallace Hills  Check

LEADER \_\_\_\_\_ Phone \_\_\_\_\_ Bldg. \_\_\_\_\_

Time Preferred \_\_\_\_\_

### COMPLETE AND RETURN TO YOUR RECREATION OFFICE

Entries must be received prior to drawing on July 23, 2 p.m.

ORGDP — Building K1001—C-Wing—MS 122  
Y-12 — Building 9711-5 ORNL — Building 2518

Tee-off times for all tournaments will be drawn on Wednesdays prior to each Saturday's tournament. Golfers are responsible for reserving their own carts by contacting the pro shop following drawing for tee-off times.

# The Medicine Chest

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

By T. A. Lincoln, M.D.

QUESTION: "My husband worked for Carbide at Y-12 for 30 years and retired in July, 1974. We certainly would appreciate any information you have on hypoparathyroidism. Our 25-year-old daughter was told this past February after repeated blood tests, x-ray and other tests and consultations, that she had hypoparathyroidism. She has had a nerve deafness since she was three years old."



ANSWER: The history of many years of nerve deafness is probably not pertinent. My answer will cover the general subject of the parathyroid glands and the symptoms associated with hypoparathyroidism.

There are usually four small parathyroid glands, two associated with each lateral lobe of the thyroid gland. They are roughly oval in shape, about 6 mm in length and often embedded in the thyroid gland. The parathyroid glands control calcium metabolism. Normally each person's serum calcium is maintained within narrow limits not varying more than a plus or minus three percent, regardless of how much calcium is being eaten in the diet or how much is being excreted in the urine. If the calcium level is artificially made to drop, it will be rapidly restored to normal. The reason for this tight control is the key role calcium plays in the permeability of cell membranes, in the coagulation of blood, in many neuromuscular activities and in several enzymic and secretory processes. It is a key control element in our bodies and when its internal regulation is damaged serious consequences occur.

## In continuous state

Although there is a huge reserve of calcium in the skeleton, less than one percent of the body's calcium is present in the circulation and soft tissues. This does not mean that bone is an inactive tissue. It is in a continuous state of metabolic turnover. Calcium is constantly being absorbed and laid down again in what is known as remodeling. For example, weight lifting not only builds muscles, but also makes the bones denser.

When the serum calcium level is rapidly lowered by giving EDTA, a chelating agent, the parathyroid gland responds by synthesizing its hormone called parathormone, and releasing it directly into the blood. It causes bone crystals to release their calcium into the blood, acts directly

on the kidney to reduce the excretion of calcium and stimulates the gut to increase calcium absorption from food. When one considers that additional hormone has to be manufactured after the low calcium signal reaches the gland, it is remarkable that an effect can be seen in 15 to 30 minutes. The hormone is rapidly cleared from the circulation so its effect has to be prompt and temporary. Such a short acting hormone provides a remarkably sensitive control mechanism.

## Vitamin D

There is another hormone, calcitonin, which plays a role in controlling high levels of serum calcium. It is produced by the thyroid gland and probably is most useful during periods of calcium stress such as rapid bone growth, pregnancy and lactation. Vitamin D also plays an important role in calcium metabolism and is necessary to make parathormone work. In adults only a small amount is necessary, but during periods of rapid bone growth such as during early childhood or adolescence, much more is needed.

There is a rare inherited condition called pseudohypoparathyroidism which is due to a pathological resistance to the effect of parathormone. Often the hormone is secreted in excessive amounts, but not quite enough to overcome the resistance. This may be your daughter's problem. The most common cause of hypoparathyroidism is the result of unintentional removal of the parathyroid glands during thyroid surgery.

## Large doses

When the serum calcium falls from its normal level of between 8.5 and 10.5 mg/100 ml to between seven and eight, patients begin to show signs of tetany. Typically there are tingling sensations around the mouth. Muscles become spastic and when stressed, as for example when a blood pressure cuff is applied to the arm, the fingers flex at the palm but extend in the joints in the fingers themselves and the thumbs cross over the palm.

When this happens, it is completely involuntary and can be quite painful. There may be twitching and jerking of muscles in other parts of the body. Spasm and cramps in the feet and toes are often painful and may last for hours. When the serum calcium has been depressed since childhood, the



Negative and positive results — Sandy Rogers, technologist in the Medical Laboratory at Y-12, compares results of a normal blood specimen (left) with a specimen containing abnormal hemoglobin indicating that the donor may have sickle cell trait.

## Screening tests for sickle cell available to Oak Ridge employees

More than 300 employees in the Nuclear Division's Oak Ridge plants have been tested for sickle cell anemia and sickle cell trait since the screening program was initiated in 1973.

Sickle cell abnormality is a hereditary blood condition that primarily affects the Black population, although it may be found in some Caucasians, particularly those of Mediterranean origin. Sickle cell anemia is a severe and often fatal disease. Sickle cell trait is a carrier state with no known symptoms or ill effects.

In sickle cell anemia, the red blood cells become abnormal in shape (curved like a sickle instead of round) and contain an abnormal type of hemoglobin. People who have the disease experience some or all of the following symptoms: deficiency in skin color, exhaustion, shortness of breath, pain in arms, legs, back and abdomen, loss of appetite and yellowish cast in the eyes. Their joints sometimes swell and their bodies usually do not have a normal growth rate. They also have low resistance to infections.

It is estimated that as many as 75,000 Blacks in the United States alone have sickle cell anemia. Various supportive treatments during crises are available, but there is no cure at the present time.

The possibility that anyone screened in the Nuclear Division will have sickle cell anemia is very likely, because those affected would have experienced some of the symptoms in early childhood or adolescence. The main reason for employees who have not had the test to take it is to

above acute symptoms are seldom seen except during acute surgical stress or pregnancy. The bones are more dense than usual and cataracts in the eyes sometimes occur.

The treatment of hypoparathyroidism is usually fairly large doses of Vitamin D. With careful monitoring, adequate serum calcium can usually be maintained. Unfortunately, parathormone has not been very successfully extracted from animal glands and is not widely used.

determine if they have sickle cell trait.

A person who has the trait is considered a carrier. Being a carrier rarely has any physical effect on the individual and is only a problem if that person should marry another person who is also a carrier. Then, the chances are two in four that each child will have the trait like its parents; one in four that the child will have sickle cell anemia; and one in four that the child will have no form of sickle cell disease at all.

## Test is simple

The test, which will be done upon request by the medical staff at the Oak Ridge plants, is very simple. It consists of placing a drop of blood taken from the finger or arm in a test tube of solution. If the solution clears, the hemoglobin is normal; if it does not clear, it is referred to as a positive sickle cell test.

Results of the tests, as with all other medical tests performed in the Nuclear Division, are kept in strict confidence. Persons who are found to be positive will be advised to get a confirmatory result by electrophoretic testing. This type of testing is done at the University of Tennessee Hospital as well as other places in the area. A confirmed carrier will be referred to his or her family physician or other appropriate sources for further counseling. Employees taking the test are assured that the results, whether positive or negative, will not have any bearing on their present jobs or future advancement with the Company.

Summer employees who have not been screened previously are invited to take advantage of the program during their work assignments in the Nuclear Division. For additional information or the screening tests, contact the health facilities — at the Laboratory, Building 4500N, 3-1348; at ORGDP, Building K-1003, 3-9687; and at the Y-12 Plant, Building 9706-2, 3-7554.

## ANOTHER JOGGER

James T. Bradbury, Oak Ridge Gaseous Diffusion Plant, has joined the many Nuclear Division folks holding a President Sports Award in jogging.

PH 75-1541



**UNION CARBIDE CONTRIBUTION** — A plaque recognizing Union Carbide's efforts in support of the Tennessee Association for Retarded Citizens is presented by Clarence R. Lay, center, to Ernie C. Evans, Separation Systems Division superintendent at the Oak Ridge Gaseous Diffusion Plant. I. C. (Sam) Flanders looks on from the right. Lay retired recently from ORGDP to devote full-time efforts to the retarded in the state, as well as Roane County.

## Retirement just beginning for ORGDP's Clarence Lay

Retirement for Clarence R. Lay, a supervisor in the Oak Ridge Gaseous Diffusion Plant's Separations Systems, is not retirement at all. He's just beginning.

While many people retire to the rocking chair to take the easy way out, Lay opts for a quickening of pace which will take him into every part of Tennessee doing what he likes to do most — service to others.

Lay was recently re-elected to a second term as president of the Tennessee Association for Retarded Citizens, which will take him into all parts of the state, contributing his enthusiasm and talents to helping others.

It all began 10 years ago when Lay's grandson, Michael Dunn, arrived in the world a victim of mongolism. "It's unfortunate that people have to wait to be motivated into doing something," Lay says, "but that's human nature for you."

Since that time, a Michael Dunn Rehabilitation Center has been established in Kingston, operating from the educational building at the Presbyterian Church. Plans call for ground-breaking this fall for a new building which will serve the 70-plus students that the Center serves.

Honors have not slowed Lay in the least. It's not honor he seeks in his work, it's the soul-satisfying knowledge that he is helping others which motivates him into his efforts.

Young Michael is now in public school, a graduate of the Center, where he adapts very comfortably into the "normal" world. "It's odd to think that 30 years ago, he would have been hidden at home, never to be able to grow or develop his potential," the grandfather observed.

The TARC has 40 units throughout the state and Lay plans to spend time with each one of these.

Much of the money needed to support efforts for the retarded

comes from the state of Tennessee, and a great deal comes from the United Way drives held in the fall. "There's never enough," Lay said, "but we're getting there."

The retired Lay, whose looks belie his 55 years, has a contagious elan about him when he discusses plans for the future and hopes for the retarded.

In a touching letter to his fellow employees Lay wrote: "I will miss all of you as working companions but I hope to remain a true friend. When you hear of the work being done for the retarded and developmentally disabled, think of me sometimes, for I hope to be in there fighting for them and their rights."

And be in there fighting he will, learning the eternal secret of youth.

### Calendar of EVENTS

#### TECHNICAL

July 21

Laboratory-wide Seminar: "The Maturity and Future of Nuclear Energy," Alvin M. Weinberg, Central Auditorium, Building 4500N, 3 p.m. (TV viewing in East Auditorium)

Solid State Division Seminar: "Fundamental Aspects of Flux Pinning in Type 2 Superconductors," E. J. Kramer, Argonne National Laboratory, Conference Room, Building 3025, 10 a.m.

July 29

HNL Summer Seminar Series: "Fusion," J. F. Clarke, East Auditorium, Building 4500N, 3 p.m.

August 5

HNL Summer Seminar Series: "Environmental and Biological Costs of Energy Production," C. R. Richmond, East Auditorium, Building 4500N, 3 p.m.

## Experiments by two Lab men

(Continued from page 1)

gravity environment. Such surface tension gradients can be caused by thermal or second-metal concentration differences.

Reed's ASTP experiment will evaluate surface tension effects due to concentration gradients to determine whether special precautions need to be taken to avoid these convective effects in space processes that depend on the suppression of convection currents.

#### Experiment

The experiment will consist of melting three samples of bi-metallic material (lead with .05 atomic gold) in wetting (iron) and non-wetting (graphite) capsules in the multi-purpose furnace, allowing them to inter-diffuse, and then solidify.

If no stirring occurs, a normal diffusion of gold into the lead is expected. However, if the surface-tension of the lead-gold alloy liquid is sufficiently different from that of lead to cause additional stirring, this would be detected.

On return to earth, the capsules will be sectioned and the distribution of gold will be analyzed by neutron activation to determine the effective liquid diffusion coefficient and then detect the presence or absence of convective currents caused by surface tension. This work will be done at the Laboratory.

#### Research specialties

In the Solid State Division, Reed directs a program to produce research-grade refractory metal materials for the ERDA Research Materials Program. His research specialties include stress corrosion cracking, deformation textures, plastic deformation of niobium crystals, neutron irradiation damage,

crystal growth and vacuum degassing.

He joined the Laboratory staff in 1960 after receiving the Ph.D. degree in metallurgical engineering from Carnegie Institute of Technology.

Eldridge is a co-investigator with Jack Trombka, of the NASA Goddard Space Flight Center, Greenbelt, Md. in the "Passive Crystal Activation Experiment" aboard the Apollo-Soyuz mission.

His experiment will measure the cosmic-ray-induced radioactivity in a single crystal of sodium iodide, a universally-used radiation detector, and some pieces of high-purity germanium metal.

#### Analyses in Oak Ridge

After the scheduled splashdown on July 24, these materials will be rushed to Oak Ridge in a specially-designed carrying case, shielded by several thicknesses of cadmium which serves as a neutron shield.

Upon arrival, Eldridge and Ernest Schonfeld, of the Johnson Space Flight Center, Houston, a former member of the Laboratory staff, will analyze very short-lived radio-nuclides, some with half lives as short as 14 hours, induced in the sample materials by cosmic-ray bombardment during the nine-day mission.

They will be using the same sensitive detecting equipment used earlier at the Laboratory to study the radioactivity of samples returned from the moon by the Apollo astronauts.

The work is being carried out under an interagency agreement between the Laboratory and NASA.

## RIDES-RIDES-RIDES

Y-12

CAR POOL MEMBERS from Norris, Andersonville or Clinton area to Central Portal, 8:00-4:30 shift. Cheryl Phillips, plant phone 3-7733, home phone 494-9492.

CAR POOL MEMBERS from East Village, Oak Ridge, to Biology or North Portal, straight day. N. J. Schulman, plant phone 3-5376, home 483-8207.

#### SUMMER FUN

E, F, G, H and J Shifters at the Y-12 Plant have picked Sunday, July 27 for a big watermelon slicing and party time. There will be 10 prizes for children, and 10 for adults.

It's all free at the Clark Center Recreation Park, and the ice-cold melons come out at 1 p.m. See you at the Park as it's seed-spittin' time again!



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