

THE NEWS

OAK RIDGE NATIONAL LABORATORY

A Publication for the ORNL Employees of Union Carbide Corporation

Vol. 18 — No. 18

OAK RIDGE, TENNESSEE

Friday, October 29, 1965



WELL DONE!—Fire Department and Budget and Program Planning are two of the first groups to become top contributors to the United Fund Appeal. In the left photo, Chairman L. P. Riordan (second from left) presents a plaque to Inspector J. A. Harris for achieving 100 per cent Fair Share giving. Looking on are Chief G. T. McIntyre (left) and B. M. Beeler. Representing B & P in the right photo are (L-R) R. A. McNeese, Wilma Campbell and H. R. Beatty. B & P is one of the first groups to attain its goal—0.25 per cent of payroll.

UF Appeal Passes Halfway Mark; Several Groups Full Participators

The United Fund Appeal at ORNL has passed the halfway point with indications that this year's contributions will set a new Laboratory record.

With 55 per cent of the Appeal Cards returned, a total of \$39,654.59 has been pledged by Laboratory personnel.

Plaques are awarded to groups which achieve 100 per cent Fair Share participation or which reach their divisional or departmental goals. Certificates are awarded to groups which achieve 100 per cent participation, regardless of the sum donated.

Thus far, the Fire Department is the only group to achieve the

Construction Starts On TRU Expansion

Work began this week on a 4,000 square foot addition to the Transuranium Processing Plant, now under construction in Melton Hill Valley.

The addition will be a single story concrete block structure containing space for offices, a combined lunch and conference room, and a small instrument shop.

A \$74,185 contract for the new facilities was awarded Williams Construction Company of Knoxville last week. The award was made on the basis of advertised bids and Williams was the low bidder among five firms.

Scheduled to go into operation early next year, the TRU plant will be used for processing and separating heavy man-made elements produced in the High Flux Isotope Reactor, which began initial operation August 25. The HFIR is located adjacent to the TRU Plant.

SIGNAL REMOVAL
On November 1, the City of Oak Ridge plans to remove all traffic signals at the intersection of Highway 58 and Blair Road.

Fair Share goal, 0.3 per cent. Two other groups, Budget and Program Planning and Personnel Administration have attained their United Fund goal, 0.25 per cent.

Electronuclear and Laboratory Protection Divisions are the only two to achieve 100 per cent participation thus far.

Sub-divisional groups attaining full participation are: Industrial Hygiene (Health); Isotopes Training and Information, and Thermal Diffusion Research and Development (Isotopes); Laboratory Shift Supervisors (Director's); Janitors, Decontamination Laundry, and Demineralized Water Plant (Operations); Programmed Maintenance, Field Engineers Department, Maintenance Planning, and Materials Department (Plant and Equipment); Personnel Development, Recreation, Labor Relations, Personnel Records, Insurance, Employee Relations, and Traffic (Personnel); Central Reproduction, ORNL Y-12 Photography, and General Administration (Technical Information).

Oak Ridge Cosmos Slate October Meet

Oak Ridge Cosmopolitan Club will hold its October meeting Sunday, 8 PM, in the Green Room of Ridge Recreation Hall. A social hour follows the program.

Bill Albrecht and Ruth Fisher will be featured in a selection of Schumann songs. Two new board members will be elected. This meeting is the first general session of the year. All interested persons are invited to attend.

Bingham Award

Guth Receives High Honor At Rheology Society '65 Meeting

Eugene Guth, Director's Division, received the Eugene Cook Bingham Award for 1965 this week at the Society of Rheology's annual meeting in Cleveland, Ohio.



Guth

The award is made annually to a scientist who has made an outstanding contribution to the science of rheology. The Society of Rheology, a member society of the American Institute of Physics, is dedicated to the development of the science of the deformation and flow of matter.

Immediately following the Cleveland meeting, Guth will give an invited talk to the University of Buffalo Physics Department on "Quantum Theory and Brownian Motion."

Earlier this year, Guth participated in a symposium at the Brooklyn Polytechnic Institute to honor Dean H. F. Mark on his 70th birthday. Guth was invited to write a chapter on "The Statistical Mechanics of Polymers" to be included in **The Polymer Concept**, a book to be published in commemoration of the same occasion.

Guth recently spoke at the dedication of the new Science and Engineering Center at St. Louis University.

A native of Budapest, Hungary, Guth received his Ph.D. degree in theoretical physics from the University of Vienna in 1928. He came to the United States in 1937, and held positions as assistant professor, professor, and director of the polymer physics laboratory at the University of Notre Dame. He joined ORNL in 1958.

Guth is a member of the American Nuclear Society and a fellow of the American Physical Society.

Speeds Calculations and Data Collection

Small Computer Automates Studies Of Crystal Structures With X-Rays

By R. B. DAVENPORT

A small computer recently acquired by the Chemistry Division has helped solve a number of time-consuming problems normally encountered in the study of crystal structures.

The computer, a PDP-5 (Programmed Data Processor) model manufactured by Digital Equipment Corporation, is the heart of a control system for an automatic X-ray diffractometer used by the Chemical Physics Group in crystal studies. The computer can be programmed to give instructions, make calculations, and even answer the telephone in Morse code.

W. R. Busing, J. K. East, R. D. Ellison and H. A. Levy (Chemistry Division), Ron Rosebury and R. B. Splittgerber (Instrumentation and Controls), Sharron King (Mathematics), and J. A. Burkhalter (Plant and Equipment) had a part in developing the system.

In recent years, according to Levy, one of the biggest problems facing crystallographers studying structures of crystalline materials was that of handling large volumes of data and performing necessary calculations. As computing facilities improved, however, the slowest step became the collection of data.

Present standards require accurate measurement of up to several thousand individual "reflections" of X-rays (or neutrons) from a single crystal. Each measurement may take several minutes if instrument settings are made and results recorded manually. It may take several months for one person to collect data from a single crystal structure experiment, and then the data must be transferred to punched cards before calculations can be made by a computer.

Because of the complexity and time involved in performing X-ray and neutron diffraction experiments, they have proved ideally suited to automation. Several devices have been built recently which use punched paper tape or punched cards to instruct the experiment and to report data.

However, these devices depend on calculations made before the actual measurements begin, and making refinements in preliminary calculations necessitates the use of a computer, and perhaps re-starting the experiment.

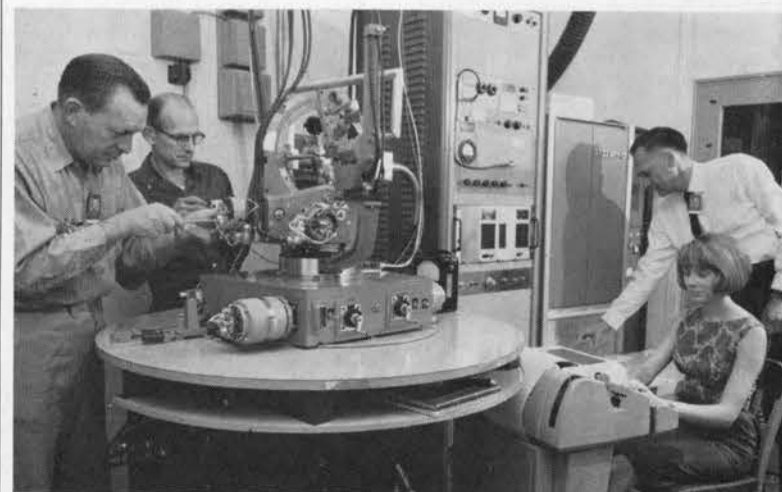
The compact PDP-5 computer, connected directly to the diffractometer, has eliminated these most serious problems.

Communication with the system is through a teletypewriter keyboard or punched paper tape. X-ray diffraction measurements (a similar instrument is planned for neutron diffraction work) may be made using a variety of techniques, and by typing new instructions into the system, the user can switch from one technique to another.

A typical experiment might go as follows: A single crystal specimen of the substance under study is mounted on the diffractometer; preliminary crystallographic information and instructions are fed into the computer and the signal to start is given. The computer is programmed to use this information to calculate the various angles through which the crystal must be turned in order to measure the first reflection, where the X-ray detector must be set, and to control and check the progress of diffractometer motors making the settings.

A special interrupt feature of the computer enables it to act as the counting circuitry in making the measurements. After a measurement is completed (usually two or three minutes later), the computer performs some preliminary steps in data reduction and

Continued on Page 2



CHEMISTRY DIVISION's new PDP-5 computer (right), connected to an automatic X-ray diffractometer (foreground), has greatly improved the efficiency of crystal structure studies. Sharron King (Mathematics Division) and W. R. Busing (Chemistry) operate the computer while J. A. Burkhalter (Plant and Equipment), left, and R. B. Splittgerber (Instrumentation and Controls) make adjustments on the diffractometer.

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Technical Calendar

Monday, November 1

Nuclear Engineering Seminar: "Long Term View of Nuclear Energy," A. M. Weinberg. — University of Tennessee, Dougherty Building, Room 601, 4 PM.

Tuesday, November 2

General Engineering and Construction Division Safety Seminar: "Building Code Requirements of the AEC Design Criteria," W. J. Nichol; "Application of the Building Codes at ORNL," Gibson Morris. — East Auditorium, Building 4500, 1:30 PM.

Wednesday, November 3

Agricultural Research Laboratory Seminar: "Anatomic Features of Radiation - Induced Mitotic Inhibition in Plants," D. E. Foard. — UT-AEC Laboratory Conference Room, 3:30 PM.

Instrument Society of America, Oak Ridge Section Meeting: "Simultaneous Multi-Frequency Ultrasonics," R. S. Peugeot, The Ridge Instrument Company; "Turbine Flow Measurements and Readout Devices," Mike Walker, The Foxboro Company; "High Density Panel Boards," A. L. Caradec, The Taylor Instrument Companies. — Green Room, Oak Ridge Recreation Hall, Oak Ridge, 8 PM.

Thursday, November 4

Atomic and Molecular Processes Seminar: "Raman Spectroscopy Using a Laser Source," S. Porto, Bell Telephone Laboratories. — Room 605, Physics Building, University of Tennessee, 9 AM.

Electronuclear Division Seminar: "Levels in ^{11}B from ^7Li (A, A) and ^7Li (A, A')," R. Y. Cusson, California Institute of Technology. — East Auditorium, Building 4500, 10:30 AM.

Biology Division Seminar: "Studies on the Content and Turnover of RNA in Various Tissues During the Molt Cycle of the Land Crab, *Gecarcinus lateralis*," D. S. Cook, New York University. — Large Conference Room, Building 9207, Y-12, 12:15 PM.

Biology Division Seminar: "Cell Division Delay in Echinoderm Zygotes Following Ultraviolet Irradiation," J. S. Cook, New York University. — Large Conference Room, Building 9207, Y-12, 3:30 PM.

University of Tennessee Department of Botany Seminar: "Relationships in the Biogeography of Eastern Asia and North America," Zenoske Iwatsuki, Hattori Botanical Laboratory, Japan. — Room 204, Hesler Biology Building, U-T, 4 PM.

Friday, November 5

Physics Division Seminar: "Progress in DCX-2 Experiments and

University of Virginia To Host 32nd Southeast APS Meeting

Twenty-eight papers (five invited) sponsored by eight Laboratory divisions are on the agenda of the 32nd Southeastern Section American Physical Society meeting, beginning Monday in Charlottesville, Virginia.

Hosted by the University of Virginia, the three-day meeting will feature nine sessions on Monday and Tuesday, respectively, and four sessions on Wednesday.

Invited ORNL papers include: "Scattering of 40-MeV Polarized Protons" by Alexander Zucker, Electronuclear Division; "Developments in the Band Theory of Disordered Solids" by J. S. Faulkner, Metals and Ceramics Division; "Recoilless Gamma Ray Emission Following Coulomb Excitation" by Gordon Czjzek, Metals and Ceramics; "Studies of V_k Centers in Alkali Iodides" by R. B. Murray, Solid State Division; and "Electric Quadrupole Moments of Nuclei in Excited States" by P. H. Stelson, Physics Division.

L. D. Roberts (Physics) and A. H. Snell (ORNL assistant director) are members of the Southeastern executive committee. Program committee members from the Laboratory include Roberts, C. D. Moak and H. B. Willard, both Physics.

Other Laboratory papers and their authors are listed according to the order they appear in the official program.

"Neutron Scattering from Nitrogen" by J. L. Fowler, Physics director, and C. H. Johnson, also Physics; "On the Question of Bound States in a Dipole Field" by J. E. Turner and Kenneth Fox, both Health Physics Division; "Conversion of Derivative ESR Data to Area Under Absorption Curve" by M. L. Randolph, Biology Division.

"Production and Decay of the ρ Meson" by H. O. Cohn, Physics, R. D. McCulloch (Central Data Processing), W. M. Bugg and G. T. Condo (University of Tennessee); "Relative Response of NaI(Tl) and Anthracene to ^{32}P Beta-Rays Under Conditions of Partial Absorption" by J. L. Hosszu, Biology.

"Ion Optical Design Considerations for an Inhomogeneous Magnetic Field Isotope Separator" by W. K. Dagenhart and T. W. Whitehead Jr., both Isotopes Division; "A High Intensity 50-MeV Accelerator, The Separated Orbit Cyclotron" by J. A. Martin, R. S. Livingston, J. E. Mann and E. G. Richardson Jr., all Electronuclear.

"Research Program for a High Intensity 50-MeV SOC" by Zucker; "The Magnetic Guide Field and Beam Focusing in the SOC" by R. E. Worsham, E. D. Hudson and R. S. Lord, all Electronuclear; "Generation of the Accelerating Voltages in the the SOC Accelerator" by N. F. Ziegler, S. W. Mosko and Hudson, all Electronuclear; "Residual Radiation Studies for a 50-MeV Separated Orbit Cyclotron" by C. B. Fulmer, K. S. Toth and B. M. Davis, all Electronuclear.

"Spectrographic Observations of Calcium Beam and Source Plasmas in an Electromagnetic Isotope Separator" by W. L. Holley and W. A. Bell, both Isotopes; "Optical Properties of Polystyrene in the Vacuum Ultraviolet" by J. G. Carter, T. M. Jelinek

the ORNL Controlled Fusion Program," N. H. Lazar. — East Auditorium, Building 4500, 3:15 PM.

(Vanderbilt University), R. N. Hamm and R. D. Birkhoff, Isotopes.

"A Course in Dimensional Analysis" by H. C. Schweinler, Health Physics; "Doping of Semiconductors Using Ion Implantation Techniques" by G. D. Alton, Isotopes, K. E. Manchester (Sprague Electric Company), C. B. Sibley (NRC Equipment Corporation) and L. O. Love, Isotopes; "Gamma Ray and Thermal Neutron Irradiation of Cadmium Sulfide" by R. O. Chester, Instrumentation and Controls Division.

"A Swarm-Beam Method for Measurement of Electron Capture Cross Sections" by G. S. Hurst, L. G. Christophorou, and P. W. Reinhardt, all Health Physics, also R. N. Compton (ORINS Fellow); "Low - Energy Electron Capture Cross Sections for Dissociative Processes in Complex Molecules" by Christophorou, Hurst, Compton and Reinhardt.

"Ladder Corrections to the Static RPA Dielectric Constant" and "Positron Annihilation in a Free Electron Gas" by R. H. Ritchie, Health Physics, and Julian Crowell (ORINS Fellow); "Effective Mass of a Slow Charged Particle in an Electron Gas" by J. C. Ashley, Health Physics, Crowell and Ritchie.

"Electron Slowing Down Spectrum of ^{64}Cu Beta Rays Absorbed in Aluminum" by W. J. McConnell and R. D. Birkhoff, Health Physics, also R. O. Rotolante and G. Benson, both Vanderbilt University; "Calculation of Atomic Mean Excitation energies (I-Values) from Stopping Power Measurements" by Patricia Dalton (ORINS) and J. E. Turner.

At Melton Hill CC

ASTME Schedules Thursday Meeting

Knoxville - Oak Ridge Chapter 107 of the American Society of Tool and Manufacturing Engineers will meet at Melton Hill Country Club Thursday at 8 PM. Dinner will be served at 7.

The evening's speaker is L. G. Whitten of the Y-12 Plant. He will deliver the second part of a series on Industrial Interferometry.

The presentation will deal with the practical applications of interferometry in production and quality control as applied to precision fabrication and inspection.

Whitten's lecture will be accompanied by slides and a film. All members are urged to attend and bring a guest.

Engineers To Give ISA Meeting Talks

Three industrial electronic specialists will share the program at the November meeting of the local Instrument Society of America Wednesday. The group will meet at 8 PM in the Green Room of the Ridge Recreation Hall.

Speakers and their subjects are: R. S. Peugeot, Ridge Instrument Company, "Simultaneous Multi - Frequency Ultrasonics"; Mike Walker, Foxboro Company, "Turbine Flow Measurements and Readout Devices"; and A. L. Caradec, Taylor Instrument Companies, "High Density Panel Boards."

In addition to the talks, each firm will feature a display of new instrumentation and controls equipment.



NATIONAL MERIT SCHOLARSHIP semi-finalists from Oak Ridge High School include six children of Oak Ridge National Laboratory employees. In the first row (L-R) are Margaret Means, Beverly Stout, Karol Adam and Ann Overmann. Second row: Toby Boulet, Gail Gilbert (daughter of R. A. Gilbert, Chemistry Division), Liz Kramer and Don Behrman. Third row: Tom Spray, Bruce Benjamin (B. M. Benjamin, Chemistry), J. R. Fowler (J. L. Fowler, director of Physics Division), and John Neufeld (Jacob Neufeld, Health Physics). Fourth row: Bill Koehler (W. C. Koehler, Solid State), Danny Foster (W. E. Foster, Personnel), Brad Smith and Danny Rice. Not pictured is Arthur Pigg (J. C. Pigg, Solid State) who attends Knoxville Catholic High School.

November 13

Welding Society To Sponsor Field Trip

Northeast Tennessee Section of the American Welding Society will sponsor a field trip to Combustion Engineering Company in Chattanooga on Saturday, November 13.

Reservations and fee payment must be completed by November 3. Transportation will be by bus at a cost of \$4 per person. Teenagers, accompanied by parents, are welcome. All visitors must be citizens of the United States.

The bus will leave Knoxville at 5:30 AM and Oak Ridge at 6:10 AM. The three-hour tour will begin at 9:30 AM. For further information, contact J. W. Tackett, 3-6571.

Aided by Computer Studies of Crystals

Continued from Page 1 records the answers on punched paper tape.

The program is then repeated so that the next reflection can be measured. This procedure continues until all of the data called for are measured, or until the program is interrupted by the user.

The progress of the experiment may be checked either by inspection of printed output on the teletypewriter, or by telephone. Morse code signals generated by the computer tell what the system is doing. Fed into the telephone, the signals enable the user to quickly check on the experiment from other parts of the Laboratory or even from his home. This feature has been particularly useful since experiments often run for several days or weeks.

Oakberg To Participate In Geneva Health Talks

E. F. Oakberg, Biology, will participate in a World Health Organization group meeting on Chemistry and Physiology of the Gametes next week in Geneva.

Oakberg was invited to take part in the group discussions as a result of his fundamental work on gametogenesis in mammals and radiation response of germ cells.

Seven ORNL Staff Members' Children In Scholarship Bid

Seven children of Oak Ridge National Laboratory staff members have reached the semi-finals of the National Merit Scholarship competition. Six attend Oak Ridge High School and one is from Knoxville Catholic High School.

Only 14,000 high school juniors across the nation reach this plateau — about one-fourth of one per cent of all high school students.

The semi-finalists are Bruce Benjamin (son of B. M. Benjamin, Chemistry Division), Danny Foster (W. E. Foster, Personnel), J. R. Fowler (J. L. Fowler, director of Physics Division), Gail Gilbert (daughter of R. A. Gilbert, Chemistry), Bill Koehler (W. C. Koehler, Solid State), John Neufeld (Jacob Neufeld, Health Physics), and Arthur Pigg (J. C. Pigg, Solid State).

The competition is sponsored by the National Merit Scholarship Foundation, an independent nonprofit organization that administers the nationwide independently supported program.

The program's purpose is to identify and honor students of unusual intellectual attainment and promise. It also helps the students to attend the college of their choice and provides a means whereby corporations, colleges and other sources of financial aid can help support worthy students to the extent of their need.

Over 11,000 Merit Scholars have been selected in the first ten annual programs. Six classes of Merit Scholars have graduated from college. In addition, about 6,000 are now undergraduates in over 400 colleges.

LOST AND FOUND

Lost: Man's Parker 51 pen with black and stainless steel trim.

For further information concerning lost and found articles, call Guard Headquarters, 3-6646.

GIRLS' CLUB MEETING

ORNL Girls' Club will hold its November meeting Monday, 7:30 PM, at the home of Evelyn Babb, 104 Pratt Lane, Oak Ridge. Interested personnel are invited to attend.

A Self-Sustaining Reaction

Part II

GOUT: Criticality in a Joint

By *Dr. Lincoln M.*

Until recently, the mechanism by which uric acid causes gout has been a mystery. It now appears that once conditions are just right, a critical reaction takes place which has been compared to the chain reaction of a nuclear reactor.

For over a hundred years, physicians have been unable to relate the level of uric acid in the blood with an attack of arthritis. In 1859, Sir Alfred Baring Garrod proposed that the attack was due to the deposition of uric acid crystals in the lining of the joint. Presumably the crystals caused severe inflammation, which produced swelling and severe pain. However, since then, numerous investigators have injected various uric acid compounds into joints without causing any particular inflammation.



Dr. Lincoln

They also found that deposits of chalky material, often found under the skin in gout patients, consisted of crystals of a salt of uric acid, sodium urate. These deposits, called tophi, which are usually found around the joints of the hands and feet as well as under the skin of the ears and nose, are completely painless. This finding seemed to suggest that uric acid, by itself, did not cause inflammation.

Another argument against the role of uric acid crystals was the failure to find any relationship between the acute attack and a change in the level of uric acid in the blood. Many patients with consistently high levels of uric acid have few attacks and some with relatively low levels have severe joint trouble. To top it off, colchicine, an oral drug which stops most attacks in 24 to 48 hours, doesn't affect the level of uric acid. Probenecid, a new drug which lowers the uric acid level in the blood, doesn't have any effect on the acute attack. All these facts seemed to argue against uric acid as the specific cause of an attack.

Dr. J. E. Seegmiller of the National Institute of Arthritis and Metabolic Diseases in Bethesda, Maryland, now feels that Sir Garrod's idea was basically correct, but until recently no one had been able to prove it.

Dr. Seegmiller and a number of other investigators have been able to show that a special form of uric acid is consistently present in the acutely inflamed joint. It is crystals of monosodium urate monohydrate which cause the trouble. These crystals, 5 to 8 micra in size, will cause inflammation if injected into the skin or into a joint while sodium urate in solution or in a non-crystalline form, will not.

Here was where previous investigators had failed. They had injected sodium urate or non-crystalline material and had obtained no inflammation, so naturally they thought that the gout attack was due to some other mechanism. The urate crystals can be seen in the joint fluid removed from an acutely inflamed joint. They have to be viewed under the microscope, using polarized light. Here again, an old idea was resurrected. This technique was first described in 1892 but the diagnostic value of this observation was not appreciated until about four years ago.

The inflammatory reaction in the joint is due to the physical

characteristics of the crystals and not their chemical properties. The next big question: why do the crystals deposit in the joint? Patients who are subject to gout attacks usually have an excess of uric acid in their blood all the time. Why don't they have more frequent attacks?

For the answer Dr. Seegmiller and his associates looked for conditions that lead to the formation of special urate crystals. They found that uric acid was in a super-saturated solution in the serum of many gout patients. When inflammation started, crystals precipitated rapidly from the serum. They studied several chemical compounds present in the body, called kinin peptides, which seemed to be associated with inflammation. These compounds were found to increase dramatically in the joint fluid of volunteers who had had their knees injected with uric acid crystals. Soon after, their joints became hot and swollen. When colchicine was injected intra-venously, the kinin peptides decreased and the inflammation also subsided.

Dr. Seegmiller now proposes three general requirements for the development of an acute attack of gouty arthritis. First, crystals of monosodium urate have to be deposited in the joint tissues. This happens quite easily when the blood uric acid level is elevated. Then there has to be an inflammatory reaction to these crystals. Finally, in order to have a full-blown attack, the inflammation causes more crystals to be deposited which, in turn, causes more inflammation.

There is apparently a critical level at which the inflammation gets just bad enough to cause more crystals to be deposited. Once it has exceeded this level, an almost runaway reaction occurs. The more inflammation, the more the crystals are deposited and vice versa. It is this self-sustaining reaction which caused Dr. Seegmiller to compare it with the criticality reaction in a nuclear reactor.

Gout sufferers may still be disappointed at the explanation offered because it still doesn't explain what important factors are necessary to get the inflammation started. It also doesn't explain why some people who have an elevated amount of uric acid in their blood never seem to get an acute attack of arthritis.

Some of the factors implicated in causing an attack include injury, dietary excesses, drugs, alcohol, surgical operations and even emotional upsets. Many physicians in the Dakotas and Minnesota receive frantic night calls from pheasant hunters each fall. Apparently the combination of an unusual amount of walking, followed by a number of drinks and a heavy meal of rich foods, seems to bring on the attack.

Not everyone who has an elevated uric acid develops gout. In a survey of 2,283 men conducted in Framingham, Massachusetts, as a part of the Framingham Heart Study, 29 per cent of the men who developed gouty arthritis had blood levels of uric acid thought to be in the normal

Color Photography Experts To Speak At IRPS Meeting

Two of the world's outstanding color photographers will lecture at the November meeting of the Industrial and Research Photography Society of Oak Ridge Monday, 7:30 PM, in the American Museum of Atomic Energy. The public is invited.

Edgar Carlson, technical representative of Meisel Photochrome Corporation and Ulric Meisel, Corporation president, will be co-speakers.



Carlson

Meisel

Carlson was formerly associated with Ford Motor Company as advertising photographer for new cars. Meisel is considered one of the leading authorities on color photography.

According to Bill Shipley, IRPS president, a six-weeks refresher course on color photography, printing, lighting, developing and evaluation will begin soon, sponsored by the Society. More information on this course will appear in future issues of ORNL News.

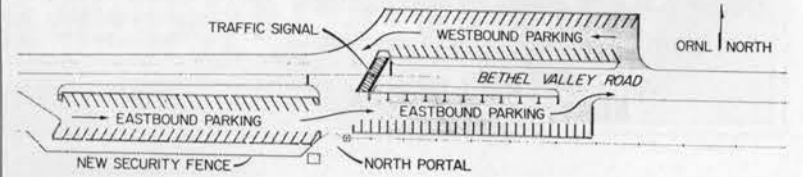
Junior Playhouse Presents Latshaw Puppet Theater

The Oak Ridge Junior Playhouse will present the Latshaw Puppets in a performance of "The Emperor's New Clothes" tomorrow at 1 and 3 PM in Jefferson Junior High School. Season memberships are now on sale at the Playhouse and tickets for this performance will be sold at the door.

range. However, the risk of developing gout increased as the uric acid level went up. Of 50 men who had the relatively high level of eight milligram per cent, 36 per cent developed gout.

It may be that some individuals have an inherited trait which predisposes them to high uric acid levels, but unless certain conditions prevail, they may never get gout. The big task now remaining is to better determine what these predisposing factors are so gout can be prevented.

Next: The treatment of Gout.



North Parking Improvements To Be Available November 1

Improvements to the north parking lot have been completed and the facility will be available for use November 1, according to a General Engineering and Construction Division spokesman.

The new construction includes new paved parking facilities, extruded concrete curbs, installation of a traffic light and general grading improvements to make better visibility at the pedestrian crossing.

For the new facilities to serve their intended purpose, the following rules must be observed:

1. Because the parking area is designed as a zone-type system, westbound traffic should use the north section, and eastbound traffic should use the south section. This arrangement eliminates the hazard of crossing two lanes of traffic and will expedite departure from the lots.

2. Employees picking up passengers at this location should pass through the parking areas to do so. Stopping in through traffic lanes is a dangerous practice and results in unnecessary delays to fellow employees.

3. The traffic signal is primarily for pedestrian safety. It is not programmed to control vehicle traffic departing from the lot. Acceleration lanes have been provided for this purpose and should result in smooth merging of departing and through traffic.

4. Push-button stations located on each side of the road actuate the traffic light. Momentarily depressing the button will signal the controller to stop Bethel Valley traffic for a timed interval to permit safe pedestrian crossing. After depressing the button one time, wait for the traffic light to change. The control unit will not forget your request.

Seven Employees Observe 22 Years

H. J. Klemski, D. F. Webster, K. A. Spainhour, R. L. Newton, J. W. Loy, C. D. Greenway and Lucille Raulston are celebrating their 22nd anniversary this week.

Others marking company service dates are:

Twenty-one years: E. R. Boyd, O. F. McClendon.

Twenty years: T. M. McGill, C. R. Johnson, F. F. Keylon, J. H. Morgan, Theodore Sylva, G. F. Blankenship, N. L. Belier.

Nineteen years: R. H. Beidel, Elizabeth Richardson, J. P. Jackson, Jo Long.

Eighteen years: Evelyn Viles, D. J. Irby, F. W. Mervyn, Margaret Dunham, W. E. Shockley, G. E. Tipton.

Seventeen years: J. H. Hawkins.

Sixteen years: W. F. McCullough, J. A. Newman.

Fifteen years: M. L. Tobias, R. E. Coleman, Garland Samuels Jr., Mary Holbrook, T. L. Hudson, Louis Dusina, E. W. Hagen.

Fourteen years: J. A. Barker, W. F. Vaughan, R. E. MacPherson Jr., Ann Savolainen, J. R. Savage, G. S. Hill Jr., W. H. Culbert, Laura Moss, Katherine Jones.

Thirteen years: J. A. Wallace, C. L. Haley, Reginald Gwin, J. T. Hill.

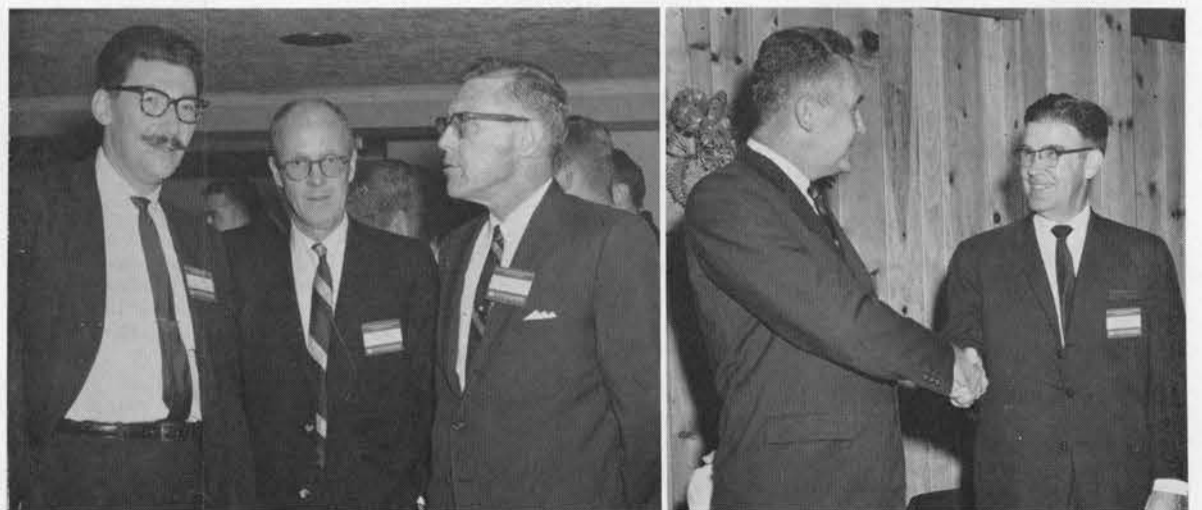
Twelve years: J. R. Taylor, J. B. Gheen, L. H. Jordan, Robert Blumberg.

Eleven years: J. H. Gibbons, Walter Zobel, R. M. Evans, C. W. Bandy, T. P. Hamrick, R. K. Branam, F. J. Malone, R. H. Miles, L. C. Jenkins, R. W. Harris, A. V. Wilder.

Ten years: B. R. Fish, J. C. Richter, Virginia Farris.



OAK RIDGE HOSPITAL: W. C. Garrison Jr. and R. D. Lawson, Plant and Equipment; C. E. Haynes and Gladys Arthur, Health Physics; D. A. Stewart, Operations.



NINTH ANALYTICAL CHEMISTRY CONFERENCE participants meeting in Gatlinburg recently included (L-R) A. S. Friedman of the U. S. Atomic Energy Commission's Division of Research, Washington, D. C.; G. E. Boyd, ORNL assistant director; and T. R. Jones, USAEC, Washington. In right photo, J. R. Anderson of Union Carbide Corporation's Chemicals Division, Tarrytown, New York, is greeted by M. T. Kelley, director of Analytical Chemistry Division. Anderson was principal speaker at the conference banquet.

OAK RIDGE NATIONAL LABORATORY

operated by UNION CARBIDE CORPORATION for the U.S. ATOMIC ENERGY COMMISSION

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CARBIDE ASTRONOMY CLUB members are often treated to an up-close glance at the heavens through this 12 and one-half inch reflecting telescope belonging to Alan Kiplinger of Oak Ridge. The club meets each month on the second Tuesday (8 PM) at the United Church in Oak Ridge. The Laboratory has approximately 15 members in the astronomy club. All interested employees should make plans to attend the November meeting.

ORNL's Smallbore Shooters Paced By Halstead, Eldridge

Betty Lynn Halstead and J. S. Eldridge walked off with small-bore laurels at the All-Carbide Rifle League's sixth match of the season.



Eldridge



Betty Halstead

Betty turned in a sparkling 292.651 handicap scoresheet, and Eldridge whipped all scratch shooters with 290 of a possible 300 (96 offhand).

Rounding out the top scratch five were George Reimann, 290 (93 offhand); Bill Wilkie, 288; A. S. Quist, 285; and D. R. Sears, 284.

Backing up Betty in the handicap column were Eldridge, 291.-859; Reimann, 291.083; Jack Mrochek, 290.463; and Wilkie, 290.231.

In team competition, ORNL again bested the Independent shooters, 1437 to 1428. Y-12 gunners were third with 1418.

The standings:

Team	Points
ORNL	30
Independents	15
Y-12	15

RECREATION Calendar

Monday, November 1
BOWLING: 5:45 PM, "A" League, Ark Lanes.
TABLE TENNIS: 7:30 PM, Wildcat Den.

Tuesday, November 2
BOWLING: 5:45 PM, "D" League, Oak Terrace; 8 PM, "B" League, Ark Lanes.
PHYSICAL FITNESS: 7:30 PM, Oak Ridge High School Gym.

Wednesday, November 3
BOWLING: 5:45 PM, "C" League, Ark Lanes; 6 PM, Kingston Lab League, Tri-Cities Lanes; 8 PM, ORNL Ladies' League, Oak Terrace.
RIFLE LEAGUE: 7 PM, Anderson County Gun Club.

Thursday, November 4
BALLROOM DANCING: 7:30 PM, Ridge Recreation Hall.

Managers Urged To Make Loop Entries

Basketball and volleyball team managers should submit team rosters to Recreation Section as soon as possible—deadline for entries is November 19 at 4:30 PM.

Basketballs and volleyballs will be available when the rosters are turned in. Practice sessions will be set up around the middle of November. For further information, contact Recreation, 3-6723.

RECREATIONAL ITEMS

The ORNL Recreation Section now has new bingo sets available as part of its overnight and weekend loan service for departmental and divisional activities.

Suntanned Tourists Proclaim Hawaiian Tour Huge Success

Several ORNL employees, families, and guests who returned recently from a glorious vacation in Hawaii have proclaimed the Recreation - sponsored event a huge success.

Those on the tour included Jim Crowley, Gorman Hill, Eunice Webster, Georgia Moore, Dan Bopp, Francis Ball, Elsie Dodson, and Della Culler.

The suntanned, muumuu-clad crew are full of stories of fabulous Waikiki Beach, a real Hawaiian Luau, a cruise of Pearl Harbor, a tour of the Dole Hawaiian Pineapple fields, and side trips to other fascinating islands.

In addition to the Hawaiian tour, the group spent several days on the west coast. In San Francisco, they took a boat trip around the bay, and toured Muir Woods, Fisherman's Wharf, Golden Gate Park and Chinatown.

In glamorous Hollywood, the group enjoyed a tour of Universal Studios where they saw sound stages, stars' dressing rooms, McHale's Navy being produced, and glimpses of Debbie Watson, Denver Pyle, Raymond Burr and others.

Other highlights were visits to Beverly Hills, Will Rogers Memorial Park, Farmers Market, Disneyland and Knott's Berry Farm.

The trip was climaxed by two fun-filled days on Las Vegas' famous strip where such stars as Dean Martin, Liberace, Sheila and Gordon MacRae, and Connie Francis were appearing.



RIDERS from Michigan Avenue or New York Avenue to East Portal. F. H. Ward, 3-6240 or 483-3427.

TO JOIN CAR POOL from West Fountain City, Norwood or Clinton Highway vicinity to East Portal. Call Bill Felknor, 3-6421 or 689-6912.

RIDER OR CAR POOL MEMBER from Hunter's Circle or Waddell Circle to East Portal from 8:30 AM to 5 PM. Bob Morton, 3-6055 or 483-0067.

CAR POOL MEMBER from East Village to East Portal. G. W. Allin, 3-6724 or 483-4131.

TO JOIN OR FORM CAR POOL from East Drive-California Avenue area to East Portal. K. S. Warren, 3-6756 or 483-3572.

RIDE OR JOIN CAR POOL from vicinity of Fairmont Boulevard (Knoxville) to East Portal. Margaret Norman, 3-7241 or 546-3526.

CAR POOL MEMBERS from West Farragut or Dixie Lee Junction to either portal. Naomi Longworth, 3-1336 or 966-9258.

RIDE from West Hills to Central Portal at Y-12. June Zachary, 3-5463 or Knoxville 588-0966.

CAR POOL MEMBER from vicinity of Wendover Circle, Oak Ridge, to East Portal. J. H. Burns, 3-1308 or 483-1084.

CAR POOL MEMBER from Cumberland Estates to East Portal. Jim Newsome, 3-6659 or 588-0674.

RIDE from Inskip area (two blocks off Cedar Lane) to East Portal. K. K. Klindt, 3-1571 or 689-1824.

CAR POOL MEMBERS from Lenoir City to East Portal. Jim White, 3-6303.

Keglers Report

Challengers Continue Assault On Bowling Loop Pacesetters

With the exception of Pickups' five point advantage over the Ladies' League, no more than two markers separate first and second-place squads in the other five Laboratory bowling loops.

Pee Wees still rule "A" League by a mere two points, Smokies are atop "B" by one, Alley Rads are number one in "C" by a couple of points, Alley Rams are best in "D" by a slim one-half point, and X-Y's are barely ahead of the Kingston Lab Loop by one point.

This gives a pretty good idea of the balance in ORNL bowling competition this year. No team can afford to let up without getting the stuffings kicked out of them.

Ten Pins picked up three full points on "A" leading Pee Wees this week. Rebels moved to third, picking up four markers.

Taking high team handicap series was Fireballs with 2939. Berkley Davis of Timekeepers rolled a 633 individual handicap series and Marvin Morgan of Rebels finished with a fine 213 scratch line. Fireballs' Van Pelt, bested all handicap rollers with a 242 game.

In the "B" Loop, Smokies took over undisputed first position, bumping Lifeguards down to fourth and Beryls to fifth. Taking over second place were Chams and Happy Five.

Ralph Shooster turned in a blistering 712 individual handicap series for the 25'ers as they won high team handicap series with 2958. Dave Bourgette's 251 took handicap game honors. Bernie Borie of Beryls rolled a 212 scratch line.

Alley Rads moved to undisputed first place in the "C" League. Damagers and Knuckleheads plunged to a tie for third. Bums moved to second. The leaders took high team handicap series with 2962, and their J. N. Smith's 234 line deadlocked Gas Coolers' E. A. Belvin for scratch honors.

W. D. Carden of Remkeys turned in a 647 handicap series to pace the league. A. M. Veach of Knuckleheads finished with individual handicap game laurels via a 258 game.

"D" League action saw Alley Rams take over the top spot, and Kemix settle for second. Alley Cats moved to third and Pin Gems dropped to fourth.

Alley Rams rolled a 2932 team handicap series; its Stan Misra's 660 individual handicap series was tops across the league. R. G. Haire (Lofters) and A. P. Marquandt (Pin Gems) deadlocked for individual handicap game laurels, both with 243 lines. Haire grabbed scratch honors, however, with a 213 game.

In the "K" League, X-Y's held onto the lead, but only by a single point. Right behind are McDuffers. Rookies are entrenched in third and Misfits and Haz Beens are sharing fourth position.

John Franzreb's 664 individual handicap series led the Misfits to a high team series of 2945. Jesse Duff of McDuffers turned in a 254 handicap game sheet, and Clyde Clower's 220 for X-Y's was the top scratch score.

Pickups extended its lead over the Ladies' League to five full points. Mouse Chasers took over the second place post, and Bowling Bags and Four Aces are deadlocked for third.

Pickups grabbed high team handicap series with 2305, and its Sandra Beidel continued to burn up the lanes with a 633 individual series. Marselle Ruzskowski of Reactors took handicap game



Carden



Franzreb



Sandra Beidel



Shooster

(233) and scratch game (177) honors.

The standings:

"A" League (October 10)			
W	L	Pts.	
Pee Wees	15 1/2	5 1/2	20 1/2
Ten Pins	12 1/2	8 1/2	18 1/2
Rebels	13	8	17
Cellar Dwellers	11	10	15
Punops	11	10	15
Woodpeckers	11	10	15
Timekeepers	10	11	15
Pockets	10	11	13
Fireballs	9	12	12
Chipbreakers	8	13	10
Lethargics	8	13	9
Eagle Eyes	7	14	8
"B" League (October 19)			
W	L	Pts.	
Smokies	13	8	16
Chams	12	9	15
Happy Five	11	10	15
Engineers	10 1/2	10 1/2	14 1/2
Lifeguards	11	10	14
Beryls	10 1/2	10 1/2	13 1/2
25'ers	8	13	12
Hodads	8	13	12
"C" League (October 20)			
W	L	Pts.	
Alley Rads	13	8	19
Bums	13	8	17
Damagers	12	9	16
Knuckleheads	12	9	16
Remkeys	12	9	16
Gas Coolers	11	10	15
Handicaps	10	11	14
Barracudas	10	11	12
Be-Bops	9	12	12
Nads	9	12	12
Old Men	8	13	10
Pin Heads	7	14	9
"D" League (October 19)			
W	L	Pts.	
Alley Rams	15	6	20
Kemix	13 1/2	7 1/2	19 1/2
Alley Cats	14 1/2	6 1/2	17 1/2
Pin Gems	12	9	17
ORNS	13	8	15
Lofters	12	9	15
Lucky Strikers	11	10	15
Gutterfinks	10	11	14
Woodchoppers	9	12	12
Gutterknives	8	13	11
Gnotos	7	14	11
"K" League (October 20)			
W	L	Pts.	
X-Y's	15	6	21
McDuffers	15	6	20
Rookies	11 1/2	9 1/2	17 1/2
Misfits	13	8	17
Haz Beens	13	8	17
Mac's Quaks	12	9	16
Green Hornets	9 1/2	11 1/2	13 1/2
Rebels	10	11	13
Kuhlers	10 1/2	10 1/2	12 1/2
Roll Aids	9 1/2	11 1/2	12 1/2
Riff Ruffs	7	14	9
Ladies' League (October 20)			
W	L	Pts.	
Pickups	23	5	
Mouse Chasers	18	10	
Bowling Bags	16	12	
Four Aces	16	12	
Strike-ettes	13	15	
HP-ettes	13	15	
Isotopes	10	18	
Reactors	3	25	

SAFETY SCOREBOARD

Your Laboratory Has Operated Through 112,000 Labor Hours Since October 24, 1965 Last Lost-Time Injury Phone 3-1218 for Daily Report