John Howard

Significant UT Scientists

In the years between 1950 and 1970, Duerk helped care for the wounded from the Korean War and Vietnam, and developed programs to teach others about military nursing. She served as director of nursing at the San Diego Naval Hospital Corps School and chief of nursing services at Great Lakes Naval Hospital. She helped establish a program in which the Navy paid for the last year of a student's education if the student joined the Navy upon graduation. Duerk also was promoted to captain and later admiral. In early 1970, Duerk was appointed director of the Navy Nurse Corps, and she returned to Toledo to be recognized at a reception in her honor.

While the Secretary of the Navy received permission in 1967 to promote a woman to flag rank of Rear Admiral, it was not until 1972 that it was announced that Duerk had been chosen as the first woman to rise to that rank. Her greatest satisfaction in receiving this promotion was feeling that she had opened new paths for young girls to follow.

Duerk retired from service in 1975, but remained active in social causes and currently lives in Florida. She has received several honorary doctorates including a Doctor of Science from the Medical College of Ohio in 1976, and she was inducted into the Ohio Veterans Hall of Fame in 1999. In 1992, the Navy Nurse Corps Association established the Alene B. Duerk Award to recognize individuals "for significant contributions to the Navy," and an undergraduate nursing scholarship has been established in her name at the University of Central Florida. The uniform she wore as an admiral is part of the collection of the Smithsonian Institution.

Medical Advances from the Korean War

The Korean War began on June, 29, 1950, when troops from North Korea crossed the 38th parallel and invaded South Korea. A United Nations coalition of forces intervened on behalf of South Korea, the new People's Republic of China intervened on behalf of North Korea, and a bloody stalemate ensued. The war (which was undeclared) ended on July 27, 1953, when the United Nations and North Korea signed an armistice agreement.

Like all previous wars it was horrendous and caused untold misery, suffering, and death—over 2 million troops killed, wounded, or reported missing; about a million South Korean civilians killed and several more millions made homeless. Yet like many wars it also led to life-saving medical advances. One was deployment of a system of Mobile Army Surgical Hospital (MASH) units close to the front lines of combat. Another was the introduction of helicopters in 1951 for rapid medical evacuation ("medevac") of injured soldiers from battlefield positions. The idea behind both of these concepts was to provide wounded casualties with the earliest possible treatment, and the end result was fewer deaths: the U.S. Army's fatality rate in Korea dropped to a new low of 2.5 percent from 4.5 percent in World War II. This MASH/medevac model served as a prototype for the modern civilian system of aeromedical transport to the closest Level 1 Trauma Center.

Another major medical advance and undoubtedly the greatest surgical advance resulting from the Korean War was improvement in techniques for repairing damaged arteries in extremities, which dramatically reduced amputation rates to 13 percent from 49 percent in World War II. And for the first time in a combat theater an artificial kidney machine was used to treat acute renal failure. At the time, there were only two such machines in the United States and artificial dialysis was a new and relatively untested treatment option. Methods of collecting and storing blood were also much improved during the Korean War. The transition from glass to plastic containers eliminated loss from breakage during shipment, made it possible to easily prepare multiple blood components from units of whole blood, and decreased septic and clotting complications from transfusions. In addition, a well-organized blood bank system was established which funneled blood products from the U.S. to Korea and kept MASH units supplied with enough to provide the life-saving massive transfusions given to thousands on the front lines.

The U.S. Army Surgical Research Team, under the direction of Dr. John Howard, played a significant role in these accomplishments. Howard would be awarded the Legion of Merit by President Eisenhower for his efforts, become an internationally recognized expert in trauma care and pancreatic surgery, and eventually join the staff of the Medical College of Ohio in 1973. But when he arrived in South Korea in December 1951 at the 8209 MASH (later called the 46th Surgical Hospital), he was a newly minted surgeon, just one year out of residency training at the University of Pennsylvania. His orders

were to organize and direct an Army Surgical Research Team that would improve the care of battle casualties through field research.

In the midst of the mud, blood, horrible wounds, and seemingly non-ending supply of patients, the team he assembled immediately began experimenting with arterial repair surgery, which was in a state of infancy at the time. Their early attempts using standard and "home grown" surgical clamps were unsuccessful. But things changed when they tried a new type of clamp, the Potts ductus vascular clamp, which Howard recalled they received a sufficient supply of only after the Army threatened to break the patent of the manufacturer, who was reluctant to provide them. The team subsequently gathered surgeons from each MASH to practice arterial repair on stray dogs, and then the doctors went back to their units, each having completed the world's first (albeit short) vascular fellowship.

Over the next 18 months, Howard's team would conduct numerous studies on resuscitation, how trauma affected the various body systems, and the clinical management of specific battle injuries. They also established a Renal Insufficiency Center which included a dialysis machine to treat severely wounded soldiers who developed acute kidney failure. Their findings were subsequently published in a comprehensive and still often cited four-volume set entitled *Battle Casualties in Korea: Studies of the Surgical Research Team*, of which Howard was editor-in-chief.

When he returned from Korea, Howard joined the surgical faculty at Baylor University then went on to chair the surgery departments at Emory University and Hahnemann University. In 1966, a report published by two National Research Council committees he chaired stimulated development of the current emergency medicine services system in the United States. He also played a major role in establishing EMS systems in Philadelphia and Toledo. In addition to trauma care, Howard became an internationally recognized expert in pancreatic surgery. He retired from MCO in 1993 but continued to teach, write, and conduct research there until his death in 2011 at age 91.

Vietnam and Beyond

Medicine in the Vietnam War followed closely the advances made in Korea, including the use of helicopters to evacuate the wounded and vascular surgery. The war also produced some unique issues: Agent Orange, a chemical dropped by planes to kill foliage where the enemy hid, affected the health of many veterans; and easy access to illegal drugs led to addiction problems for some American troops. The gruesomeness of the war, and its unpopularity with the American people, produced post-traumatic stress syndrome for many veterans.

Dr. Paul Clark was a second-year resident when he was drafted in 1971. He said his two-year experience of serving as a surgeon in the war provided him more training than he could have experienced in 15 years, including experience with vascular surgery. Clark said that it was not uncommon for soldiers to come in with multiple injuries, and he remembered the case of a single patient who had over 200 wounds. The wounded were brought by helicopter to field hospitals, where they were stabilized enough to allow transport to medical hospitals in the United States, Europe, and Japan. In addition to treating the wounded from both sides of the conflict, Clark also treated civilians. As Clark recalled, "You never knew what was coming through the door next."

Dr. Steven Gale also served in the war, although not as a physician. But it was the experience of the war that inspired him to enter medical school. Like many Vietnam veterans, Gale felt unwelcomed when he returned home, and rather than continue as a soldier, he decided to change careers and apply to medical school. He became a certified vascular surgeon, and has practiced in Toledo for 30 years.

Most recently, Gale has decided to give back to his country through a volunteer program at the Landstuhl Regional Medical Center in Germany. He and other vascular surgeons from Toledo, including Dr. Anthony Comerota, volunteer for two-week periods to work alongside military surgeons providing specialized vascular surgical care to wounded soldiers from Afghanistan. Such specialized care is required because the wounded often suffer from devastating injuries caused by explosive devices.

Harlow Lindley, *ed. Personal Diary of Captain Daniel Cushing, October, 1812-July 1813.* Columbus, OH: The Ohio Historical Society, 1975. WMCC.

This transcribed diary of one of General William Henry Harrison's men at Fort Meigs describes the misery of trying to survive in the Black Swamp.

Wilhelm Eitel
William Kneller

Dirty business in the coal lab

by Jim Heltebrake

Ask any 10 students for directions to the UT Organic Coal laboratory and they will answer, "What coal lab?"

Few people on campus know of the $600,000 facility in the basement of Bowman-Oddy Laboratories.

smell bad enough to drive one out of the room.

People in the biology offices upstairs smell it and come down looking for a fire, Mr. Quick said.

During the last 12 years, geology department Chairman William Kneller has built the UTOC, or coal lab, one piece at a time, into one of the finest coal research laboratories in the state of Ohio. Few people at UT know the geology department is into such dirty work.

The coal research from UTOC, which has yielded 17 master's theses, centers on the characterization of Ohio coal. The main goal is to increase the marketability of Ohio's coal for safe use.

Ohio ranks sixth in U.S. coal production and first as a user, yet because of the high sulfur content of its coal, Ohio also must import the fuel.

Gasoline from Ohio coal

Dr. Kneller has set up a comprehensive project to characterize Ohio coal for industrial use according to rank, geologic history, combustion behavior, sul-

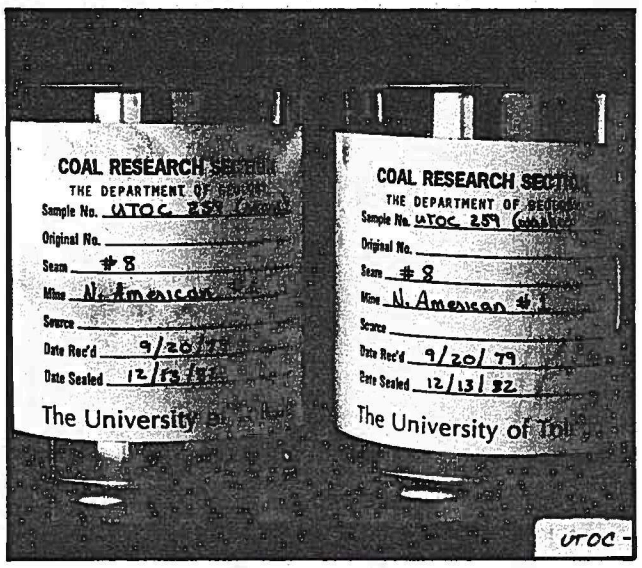
Oil glut slows study

Dr. Kneller has written that some of the impurities of Ohio coal can be considered positive liquification characteristics, but, with the present oil glut, many of the plans to use coal as an interim fuel have been halted.

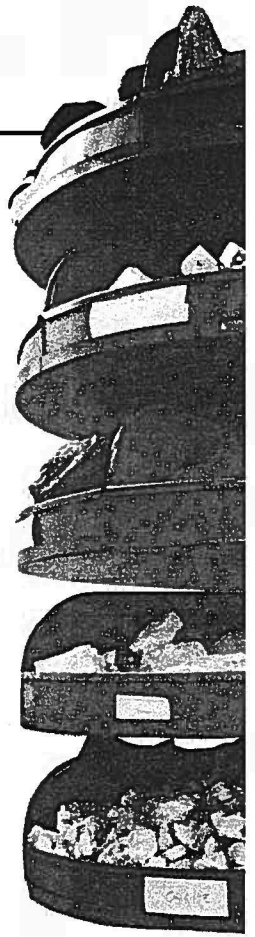
The research at UTOC centers on the classification of the many different kinds of Ohio coal. Each sample brought back from Ohio coal fields is classified, tested and analyzed, then is canned for storage and later use.

Extra-special scope

Much of the research support in the form of grants and gifts of equipment for UTOC has come from outside sources. Some of the equipment, such as the Automated Zeiss Coal reflectance microscope with computer analyzer, exists



Fresh Canned Coal — Ohio coal samples are literally canned and shelved for later use.



RESEA
R.C

fur and other mineral content, and to develop a coal data bank.

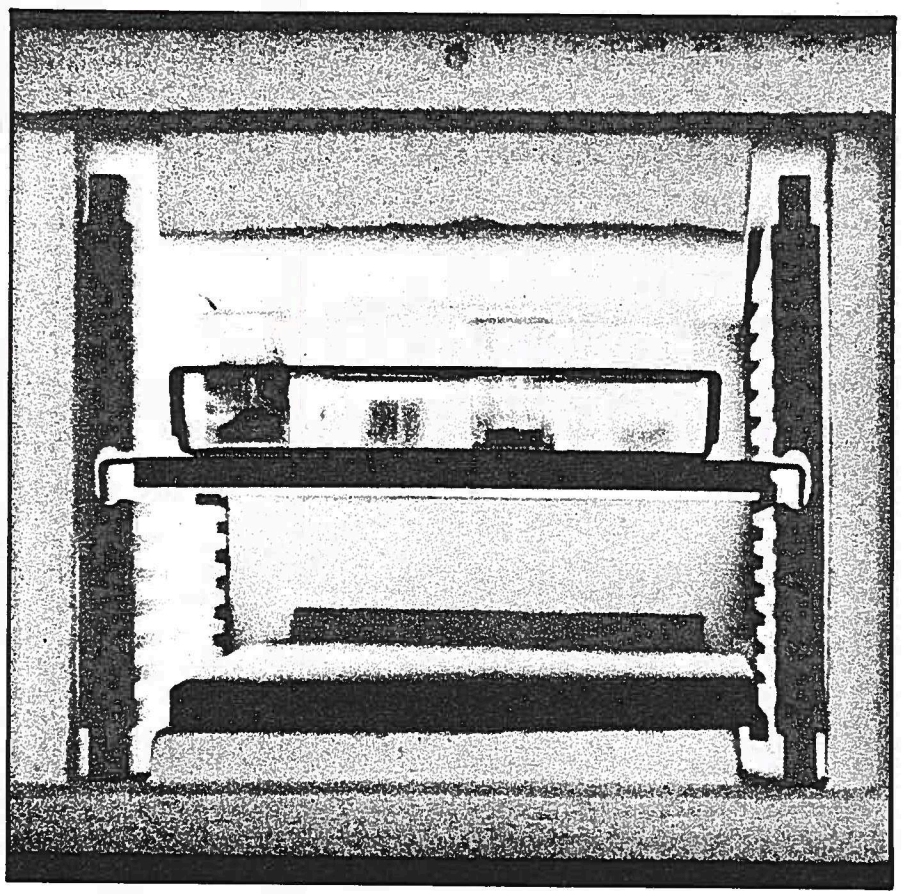
He said from 1950 to 1970, little work was done to utilize coal as an interim fuel. Recent studies show, "Ohio coal appears to be best suited for liquification to make gasoline, regardless of its impurities," UT graduate student coal researcher Jeff Quick said.

The work is not as dirty as working in a deep coal mine, but some of the tests do have noxious side effects. One test to measure moisture, volatiles, ash, impurities and fixed carbon gives off a

in only a few research laboratories in the U.S. and Europe.

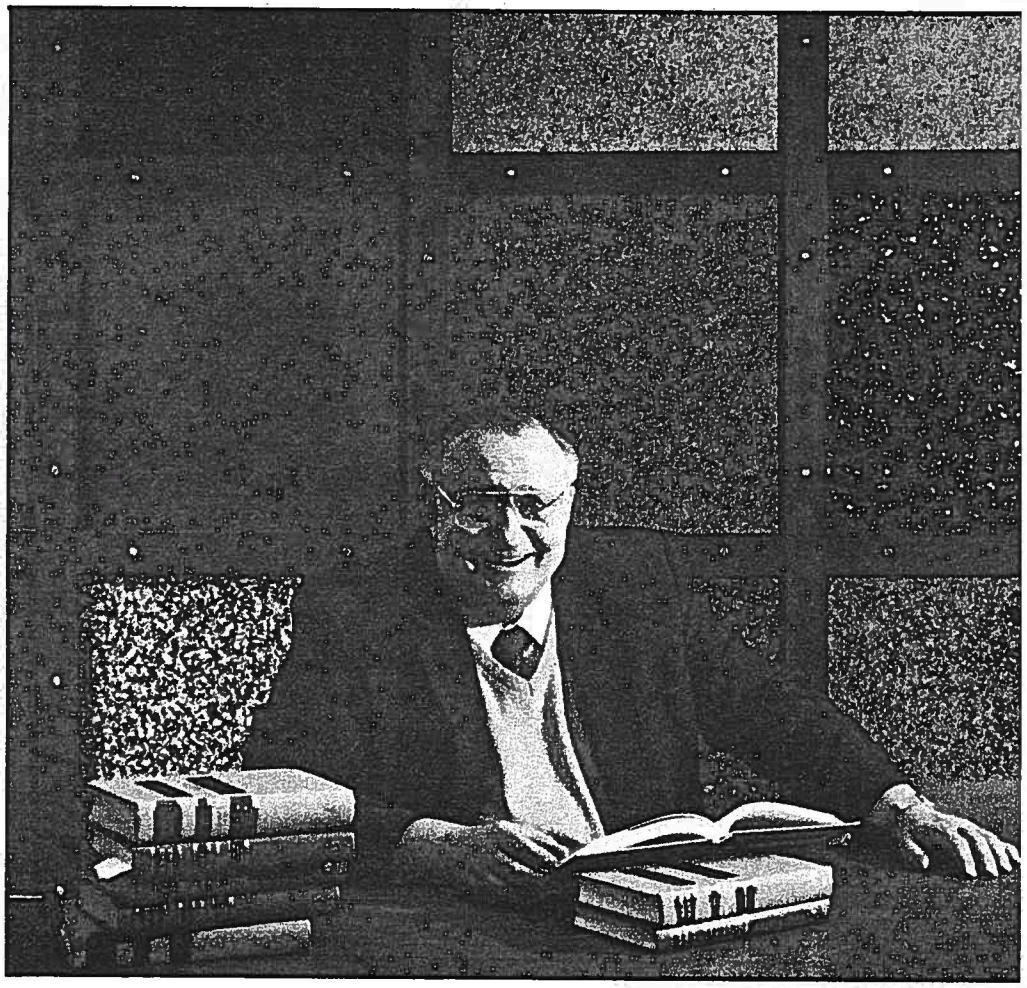
The establishment and expansion of the coal lab rests with Dr. Kneller, department founder and chairman. He's also a trustee of the Ohio Coal Research Lab Association, and is a committee member of the prestigious National Research Council.

While the coal lab may go unnoticed deep in the basement of Bowman-Oddy, the research on Ohio coal continues at a spirited pace. As Mr. Quick says, "Rocks are real. I'm into coal."



Somethin's Burning — Coal samples are heated to a white-hot 900 degrees C. to burn off moisture.

UT Scientists Find Solu



Silicate Sanctuary — The special friendship shared by Dr. William Kneller (shown) and the late Dr. Eitel is reflected in the silicate paneled wall of the Eitel library.

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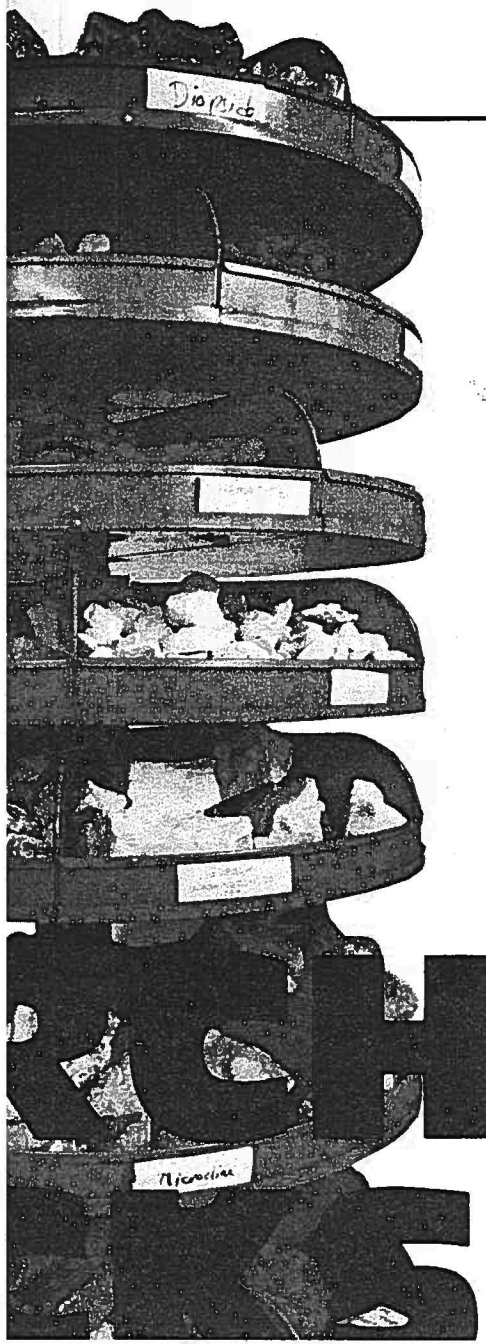
Alumnus
June, 1983



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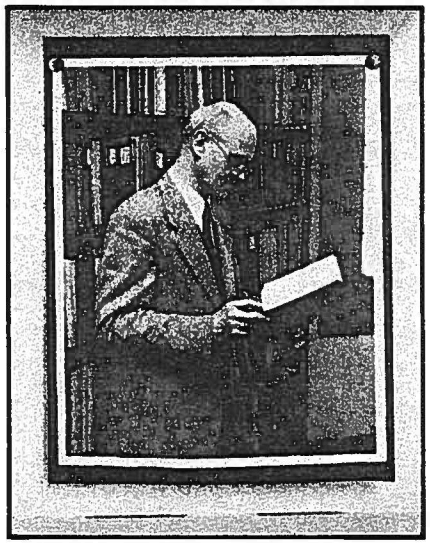
The Eitel Institute-Where silicates are sacred



West of the Wall — Dr. Eitel fled occupied Berlin in 1945, leaving behind the prestigious Kaiser-Wilhelm Institute he founded and directed.

by Robin Gescheider

The Eitel Institute for Silicate Research is even harder to find, sprawled all over the building, beginning in Bowman-Oddy's labs in the basement and permeating the geology, chemistry, physics and biology departments.

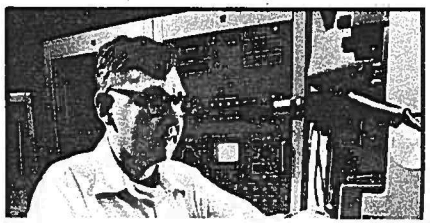
The institute really is more a concept than a place. The idea is research and development of silicates — those rocks, soils and clays that comprise the greater part of the earth's crust, and the cement, concrete, brick and glass building materials made from them.

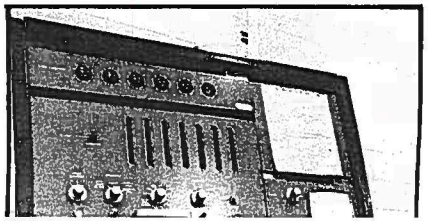
As director of the institute, Dr. Kneller oversees a team of professors and graduate assistants working on practical projects, sometimes coming up with patentable solutions for problems in government and industry.

The energetic professor is awaiting patents that may also bring royalties from two recent developments — a new treatment process for sewage sludge, and a method of turning a waste by-product, cement kiln dust and fly ash, into road-building materials. The work is part of a four-year agreement with N-Viro Energy Systems of Toledo.

Other examples of institute contributions to business and society include a disposal system for nuclear wastes, developed by Dr. Michael Phillips, associate professor of geology, under a $153,000 grant from the Nuclear Regulatory Commission.

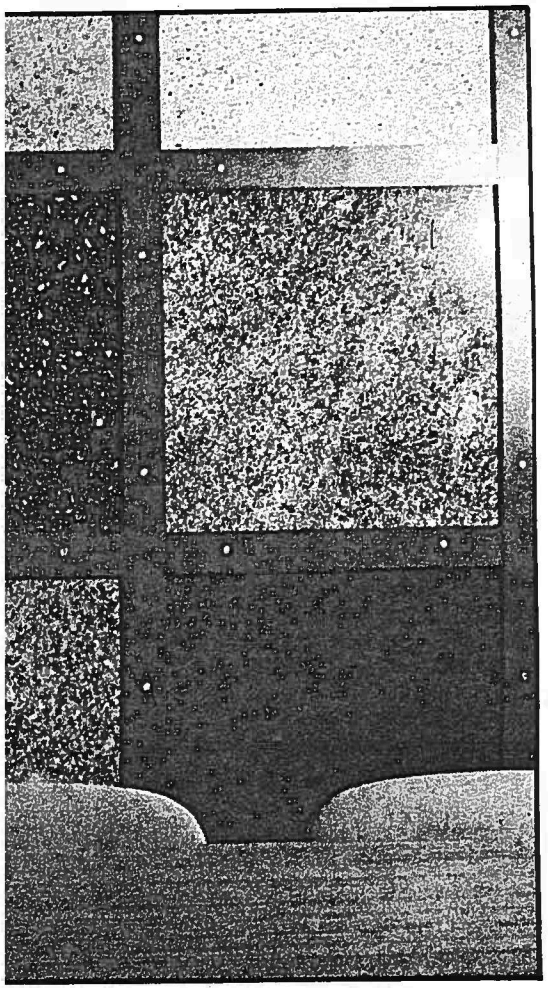
ACHTUNG!
ALLES LOOKENSPEEPERS
DAS X-RAYDETECTENMACHINE IS NICHT FÜR GEFINGERPOKEN UND MITTENGRABBEN. IS EASY SCHNAPPEN DER SPRINGEWERK, BLOWENFUSEN, UND POPPENCORKEN MIT SPITTZENSPARKEN. IS NICHT FÜR GEWERKEN BY DAS DUMMKOPFEN!
DAS RUBBERNECKEN SIGHTSEEREN KEEPEN HANDS IN DAS POCKETS — RELAXEN UND WATCH DAS BLINKENLIGHTS.





Photographs by Bill Hartough and Jim

tions in Stone & Coal



Quality in outer space

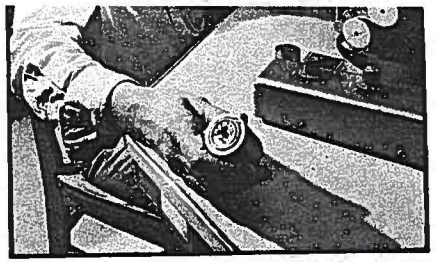
And, for the past nine years, the Eitel Institute has served as a quality control testing laboratory for a space shuttle component. UT personnel test batches of a powder-like material produced by Johns-Manville used to make the heat-absorbing tiles on the exterior of Columbia. "We make sure the material disperses heat in all directions," Dr. Kneller explained, "so it doesn't expand in only one direction and buckle." The work generates about $12,000 a year.

But the apparatus to handle such testing and development comes with some hefty price tags, prompting Dr. Kneller to become expert at talking large corporations and private individuals into donating their used equipment to UT.

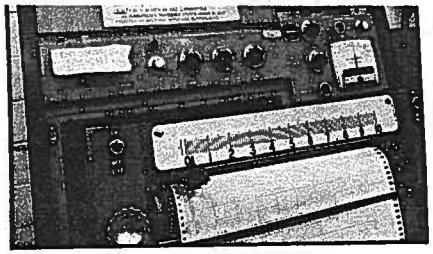
During his 22-year tenure, he's brought home more than $1 million in gifts and grants, including an odd assortment of tangible assets — three truckloads of granite and marble, a Jeep for field work, and a $200,000 X-ray diffractormeter/generator. He's exuberant about his latest plum, a $300,000 electron probe from Climax Molybdenum Co. of Michigan that enables researchers to analyze particles 1/1000 of a millimeter in diameter.

Still looking

He's done well, but he needs more. As he talks about what's been collected, he mentions what he could use for even more detailed and specialized work.



Majestic Machine, Microscopic Work — Tom Miller at the electron microprobe.



X-Ray for Columbia — Prevents popping tiles

"It's important to forge a relationship between governments, industry, universities and the professional world, as they do in Germany, Japan and other countries," he explains. "All facets of society must work together to discover new products and educate people for tomorrow. We can't train students with yesterday's ideas and equipment; we must educate them for the future."

Dr. Eitel's example

Dr. Kneller's drive and motivation seem to be spurred by memories of Wilhelm Eitel, namesake of the institute and one of the world's leading silicate chemists-mineralogists. He was among the key German scientists invited to move to the United States after World War II.

In 1952, Dr. Eitel accepted the invitation to move to the Glass Capital and establish UT's Graduate Institute in Silicate Chemistry in partnership with Toledo's major glass manufacturers. The scientist had already spent 25 years building and operating the prestigious Kaiser-Wilhelm Institute of Silicate Research in Berlin-Dahlem and was currently studying the synthesis of silicate materials in the U.S. Office of Naval Research.

Dr. Eitel headed the UT institute until his official retirement in 1961, but he still came to campus, worked in the labs, and formed a bond with his replacement, Dr. Kneller. Dr. Eitel unofficially retired the day he died in 1979.

A real man

"He was a real man, a man for all seasons," Dr. Kneller says with obvious admiration for his friend and mentor. "He could read 12 languages, including Japanese and Russian. He played the piano four hours a day, every day. He was brilliant. He played piano concertos when he was only three."

Dr. Kneller won't let him be forgotten. The geology department display cases are filled with photographs, medals and other keepsakes of Dr. Eitel's accomplishments. Dr. Kneller founded the Eitel Scholarship Fund and glassblower-artist Dominic Labino is a major contributor every year.

And Dr. Kneller established and dedicated the Eitel library on the third floor of Bowman-Oddy in 1974. There hangs Dr. Eitel's portrait in oils, commissioned by Dr. Kneller. That's for the visitors.

The opposite wall is paneled with 15 30-inch-square polished slabs of silicates, reflecting strength in their density and softness in their delicate coloring. Those are for Dr. Eitel.

UT's First Scientific Research Center

The Silicate Research Center, founded at The University of Toledo in 1952, was the University's first designated center for scientific research. It was renamed the Eitel Institute in 1961 in honor of its first director and founder, Dr. Wilhelm Eitel.

Wilhelm Eitel and William Kneller at the ceremony that renamed the institute the Eitel Institute for Silicate Science.

Dr. Eitel was born in Frankfurt, Germany, in 1891. Between 1926 and 1945, he was founder and director of the Kaiser Wilhelm Institute for Silicate Research in Berlin-Dahlem, later renamed the Max Planck Institute. He was internationally known, and connected to scientists all over the world. He wrote the seminal study on silicate, the five-volume *Silicate Science*. After the war, with the institute in ruins, Eitel was threatened by Soviet Union officials who tried to lure him to East Germany. He escaped to the United States with his family when he was 55 years old and spent a year in a refugee camp. He was brought to the country through "Operation Paperclip," a post-war organization of science consultants who helped many German scientists relocate in this country. He worked initially for the Office of Naval Research and the U.S. Bureau of Mines.

UT President Asa Knowles wanted to expand scientific research at the University and sought to establish a program that could make a name for the institution. A program in glass technology already existed, and Toledo was well-established as the "Glass Capital of the World." Through Jack Waggoner, an executive at Owens-Corning Fiberglas and a member of "Operation Paperclip," the University found Dr. Eitel and brought him to campus in 1952. Eitel modeled the Institute for Silicate Research after the Kaiser Wilhelm Institute. It was located in West Hall, a surplus military building brought to campus following the war to provide temporary classrooms and labs which was located between the Student Union and University Hall on what is today Centennial Mall.

The institute was supported by Libbey-Owens-Ford, Owens-Illinois, Owens-Corning Fiberglas, and the University in its early years. The institute's research centered on two specific areas: high temperature studies of refractories, phase equilibria, and the synthesis of silicates; and low temperature studies of silicate surface properties and colloid physics of silicates.

Dr. Eitel retired in 1961, and started work on three more volumes of his *Silicate Science* series. He was named a fellow of the American Ceramics Institute, its highest honor. He received an honorary doctorate degree from the Ruprecht-Karl Universitat in Heidelberg, Germany, and was honored by the Free University in Berlin. Upon his retirement, Dr. William Kneller was named director of the institute, and it was renamed the Eitel Institute for Silicate Science. In 1971, The University of Toledo granted Eitel an honorary doctor of laws degree. Dr. Eitel died in 1979.

Utimes
The University of Toledo

Volume 15, Issue 6
September 27, 1999

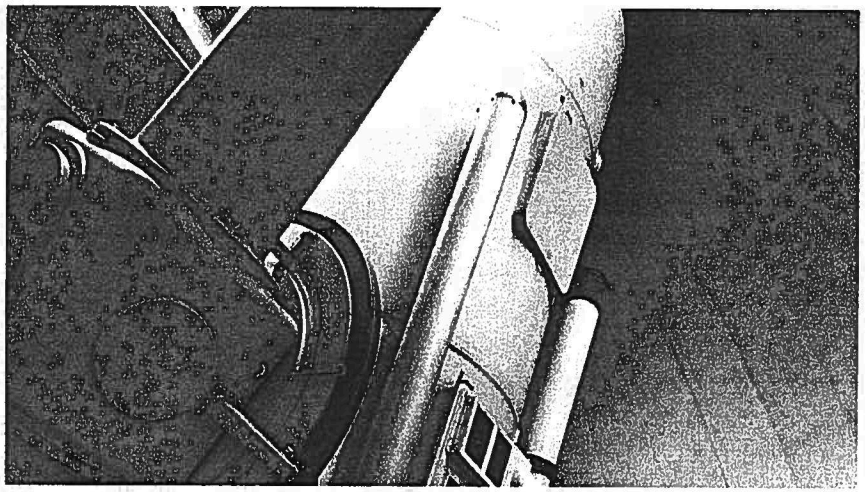
Armand Delsemme

UT professor emeritus of astrophysics in stellar company

By Valerie Brown

Dr. Armand Delsemme, Distinguished University of Toledo Professor Emeritus of Astrophysics, has received the 1999 Gerard P. Kuiper Prize of the American Astronomical Society (AAS) Division of Planetary Sciences (DPS). Previous winners include Carl Sagan and Russian astronomer V.S. Safronov.

The international award established by DPS recognizes and honors lifetime outstanding contributions to planetary science.



It is given to scientists who have advanced the understanding of the planetary system through their achievements. Winners are selected by the DPS committee annually or less frequently, and receive a certificate and citation accompanied by a cash award.

Delsemme, who retired from The University of Toledo in 1988, will attend the award ceremony, which takes place during the 31st annual AAS meeting in Abano, Italy, in October. His wife, Delphine, former UT adjunct assistant professor of astronomy, will accompany him.

He will present a lecture titled "Cometary Origin of the Biosphere" at the ceremony.

Summarizing the theme of his lecture, Delsemme said, "I have used the results of 50 years' work to unravel the origin of comets and their connection to the origin of the solar system. I discov-

Children to decide which trees are tops

The University of Toledo's Stranahan Arboretum is seeking children to participate in its new Prettiest Tree Contest.

"Children are asked to find what they think is the prettiest tree in the arboretum, draw it and find out its official name. They also identify where the tree is from, and why they feel it is

coordinator of the arboretum, said.

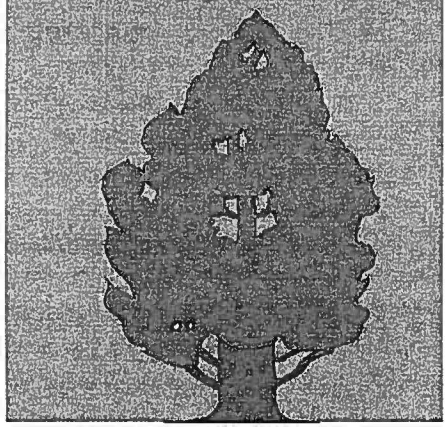
The arboretum plans to make the contest an annual event.

Entries must be submitted on 8-1/2-by-11-inch plain white paper, with the child's name, address and phone number on the back and must be received by 5 p.m. on Friday, Oct. 22. They can be dropped off in person or mailed to the Stranahan Arboretum, 4131 Tantara Drive, Toledo, OH 43623.

Winners will be announced at the arboretum's Halloween Hike on Oct. 30 and will be selected from each of the following age groups: 1 to 4, 5 to 10, 11 to 13, and 14 to 18.

The Stranahan Arboretum is located on Tantara Drive off Sylvania Avenue and is open Monday through Friday, 9 a.m. to 2 p.m.

For more information, contact Stutzenstein at (419) 841-1007.



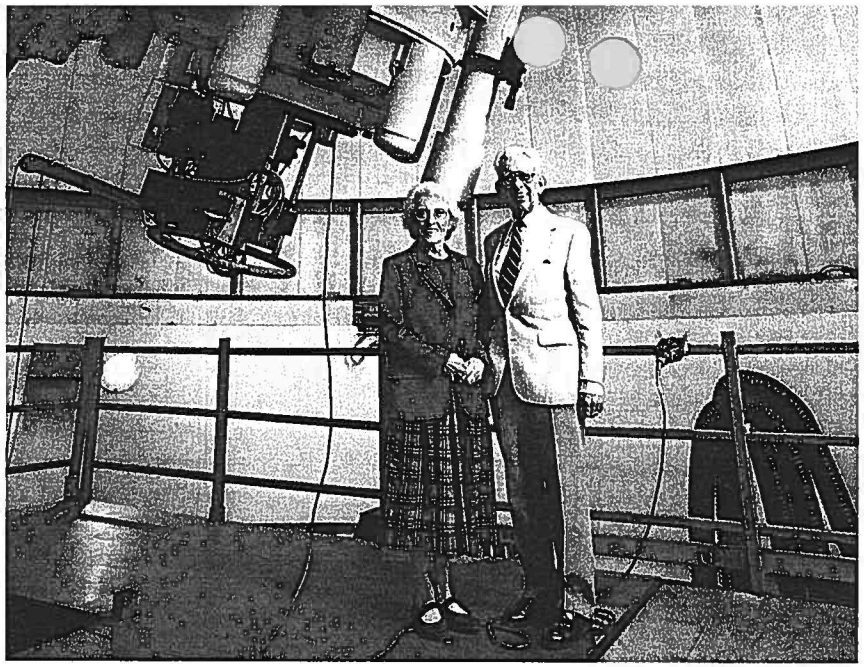


Photo by Bill Hartough

***Stardom:** Delphine and her famous husband, Dr. Armand Delsemme, Distinguished University Professor Emeritus of Astrophysics*

planets induced a cometary bombardment that brought to Earth all of seawater and all our atmosphere, plus all compounds needed to make soil and all organic molecules to help life appear."

A native of Belgium, he earned bachelor of science, master of science, master of education and doctor of philosophy degrees from the University of Liège.

During World War II, Delsemme served in the Intelligence Service of the Belgian underground movement. He informed London of the locations and wavelengths of the entire line of radar equipment crossing Belgium before they became operational for the German Luftwaffe. Wanted by the Gestapo, he safely escaped to England in 1943. He also served in efforts with the British

Continued on page 2

Staff urged to use teamwork, renew family spirit

By Don Koralewski

There was a time, Bob Glover was told before he took a job with The University of Toledo, that working for the University was like being in the company of family, "where almost everyone was working together," he said.

"By the time I started here most of that was gone," he said during the first UT staff assembly. "On top of that, my expectations for working for a state-of-the-art facility were shattered."

Glover, president of the Communications Workers of America (CWA) Local 4530, came to the institution eight years ago while the University was in the middle of a massive expansion — and also in the middle of budget crunches that would linger for most of the decade. While the University expanded, Glover noted, something was lost. As funding across the campus fell, so did the spirit of cooperation, teamwork and concern between departments.

A revival of that earlier spirit is what the staff assembly in the Nitschke Hall Auditorium on Sept. 16 was all about, according to Glover and other speakers who addressed UT staff from the CWA, the Professional Staff Association (PSA) and the UT Police Patrolman's Association (UTPPA). In addition to Glover, other speakers were Michelle Hudson, PSA president; Brett Weaver, UTPPA president; Sandra Drabik, vice president for administrative services; UT President Vik Kapoor; and Ronald Langenderfer, chairman of the UT board of trustees.

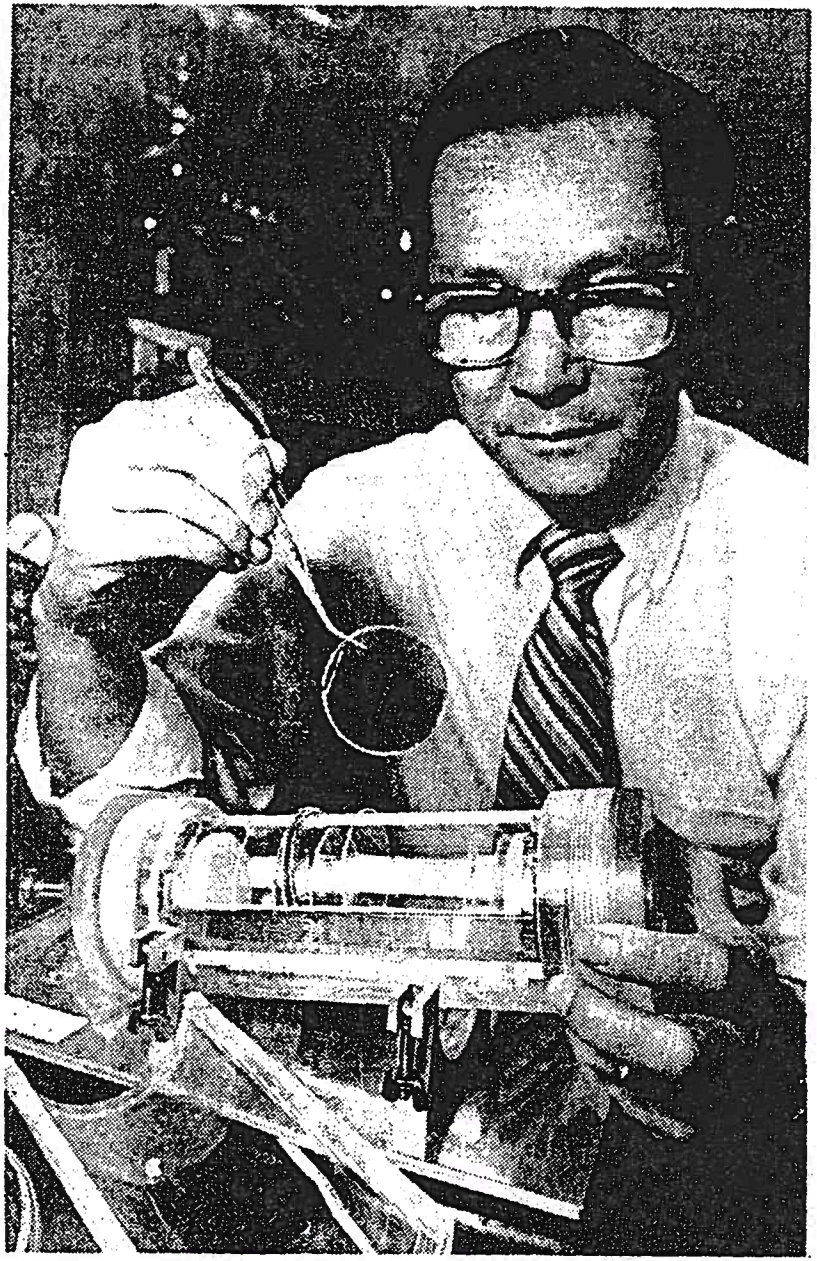
A revival of the spirit of cooperation also will be a key ingredient in moving the University toward national prominence to become Kapoor's oft-quoted "crown jewel."

Continued on page 3

tised Sovi[illegible] opener of America's favorite [illegible]time. The Nicaraguans defeated the ot[illegible] 3-0, in an informal game.

game, however, that there was not yet a baseball federation, which must be formed before plans could be made to expand the sport.

edged b[illegible]he State Department, was only th[illegible]est [illegible]chnological spying effort mounte[illegible]ainst the embassy in Moscow.



— Blade Photo

Dr. Harold Lee, professor of biology at the University of Toledo, works with the cell-culture device he developed

Complex Cells Grown In Unit

Device Developed At TU Licensed For Production

By MICHAEL WOODS
Blade Science Editor

A new device for growing fragile, complex human and other mammalian cells that produce medically important enzymes, antibodies, and other proteins has earned a place in University of Toledo history.

The cell-culture device, developed by Dr. Harold Lee, professor of biology, has become the first invention by a TU faculty member to be licensed for large-scale commercial production.

TU officials have granted an exclusive license to manufacture and sell Dr. Lee's rotary disk cell culture system to Savant Instruments, Inc., of Farmingdale, N. Y.

Savant, a small firm highly regarded for the quality of its instruments, will pay TU a royalty of 3 per cent for the first $400,000 of sales and 2 per cent of sales exceeding $400,000. Dr. Lee will receive $20,000 in 1987 to continue development of the device. Patent policy at TU makes the university owner of inventions resulting from faculty research conducted in a university facility.

Dr. Lee said the system has a number of advantages over conventional cell-culture devices, such as the Petri dish, roller bottles, and microsphere carriers.

Likewise, he noted that its commercial development comes at a time of growing interest in more efficient cell-culture techniques to grow human and other mammalian cells in the laboratory.

A cell culture consists of tissue that has been broken into individual cells by enzymes or mechanical means. The cells then are inoculated into a growth medium that may consist of amino acids, salts, glucose, blood serum, antibiotics, and other materials. With the temperature, levels of oxygen and carbon dioxide, and other factors carefully controlled, the cells grow and secrete valuable by-products.

These include hormones, interferons, antigens, monoclonal antibodies, and enzymes that are used to conduct research in a number of areas of biomedical science. Products of cell cultures also are playing an increasingly important role in the diagnosis and treatment of disease. Human kidney cells, for example, produce urokinase, an enzyme capable of dissolving blood clots. Other cells produce interferon, the disease-fighting agent being evaluated in the treatment of some forms of cancer.

Scientists then "harvest" these products from the nutrient medium in the cell culture. Dr. Lee noted that dramatic advances in recombinant DNA or genetic-engineering technology have not diminished the importance of cell cultures. Although genetic-engineering technology now can produce some forms of interferon, for example, it cannot produce many other biologically important molecules.

Turn to Page 4, Col. 1

Harold Lee

Device Developed At TU

Continued from First Page

Dr. Lee's invention consists of a small cylindrical chamber that contains a series of thin glass disks partially immersed in a solution of nutrients and other materials necessary for cell growth. The disks, which serve as the attachment point for growth of the cells, are suspended in a motorized cradle that rotates them through the culture medium, where they take up nutrients and secrete the desired protein products.

The growth chamber has ports for connections to a supply of the particular kind of gas needed by the culture, as well as reservoirs that hold fresh nutrient solution and collect used solution.

Dr. Lee said the chamber is more cost-effective than Petri dishes or other cell-culture devices because it provides substantially more surface area for the attachment and growth of cells.

The amount of surface area for anchorage is a critical factor in the culture of animal cells. Unlike bacteria, yeasts, and molds — which grow when simply suspended in a nutrient solution — most animal cells will grow only if they can attach themselves to some surface.

Each disk in the Lee cultivation system has two surfaces that can serve as anchorage points for growing cells. A common Petri dish, in contrast, has only one surface available for anchorage. A prototype of the new cultivation vessel has space for 22 disks, which have a surface area equivalent to that on 44 Petri dishes.

"That many dishes would require at least eight times as much space," Dr. Lee said, noting that the geometry of the chamber can be altered to make space for different numbers of disks.

The culture vessel also provides easy access to the growth disks, so that those overgrown with cells can be removed and replaced without interrupting the others. In addition, the used nutrient solution can be processed on a continuous basis. The desired protein material produced by the cells thus can be collected before it is degraded by metabolic wastes or other factors.

With some other cell-culture techniques, the product usually can be collected only once a day, Dr. Lee noted.

Dr. Lee cited other advantages of the system, including its ability to grow two or more different types of cells at the same time — by simply inserting different disks. The system also is suitable for use in a spacecraft orbiting the earth.

In fact, Dr. Lee developed the system after a 1978 conference held at TU by the National Aeronautics and Space Administration. NASA was seeking a small, lightweight device for conducting cell-culture experiments on the space shuttle. It took Dr. Lee about three months to develop the preliminary design for the rotary disk system that subsequently was patented.

Dr. Lee now is working to expand, automate, and computerize the system, transforming it from a laboratory prototype to commercial-scale device, an effort that may take up to two years. Savant will not begin marketing the device until the additional development work is com-

Genscher Released

BONN (AP) — Foreign Minister Hans-Dietrich Genscher, 59, was released from a hospital yesterday, five days after suffering a fainting spell, a ministry spokesman said. Reinhard Bettzuege, the spokesman, said Mr. Genscher's "general condition is good," and that doctors diagnosed only a temporary circulatory

Vt.), vice chairman of the committee, said. "Then, we'll have serious trouble conducting our foreign policy down there. Those people should know that they damage U.S. policy more than help it."

"I share the concern that, once you issue a credit card for so-called freedom fighting, you get a lot of people who want to use it," Sen. Dave Durenberger (R., Minn.), the committee chairman, said.

political views through his National Caucus of Labor Committees.

In his telegram to Mr. Reagan, Mr. LaRouche denied any personal criminal activity and said that any attempt to apprehend him would have historic consequences.

"Any arrest or attempt to arrest me would be an attempt to kill me," Mr. LaRouche said. ". . . The Reagan administration will be condemned by history if such a scenario

Larry Curtis

Dr. Larry J. Curtis
Department of Physics & Astronomy
College of Arts and Sciences

Dr. Curtis has been on the UT Faculty in the Department of Physics and Astronomy since 1963, having received his PhD from the University of Michigan. In addition to being a Distinguished University Professor since 1992, he has also been designated as a "Master Teacher" in the College of Arts and Sciences, and is also a Licensed Professional Engineer in the State of Ohio.

While at the University of Toledo, Dr. Curtis has established an international reputation for himself and for his Department in the field of Atomic Structure. While at UT he has also held visiting scientist positions at the Universities of Lund, Stockholm, and Uppsala in Sweden, the Free University of Berlin in Germany, the University of Aarhus in Denmark, the University of Oslo in Norway, and the University of Lyon in France. In the US he has held similar positions at Princeton University, the University of Arizona, Notre Dame University, as well as at Woods Hole Oceanographic Institution, Argonne National Laboratory, and Brookhaven National Laboratory.

He has published over 200 refereed scholarly scientific papers, and has received research funding totaling more than $1.5 Million in grants, dating from 1964 to the present, from the US Department of Energy, the National Science Foundation, the Nordic Institute for Theoretical Physics, the Swedish Natural Sciences Research Council, and the Swedish Royal Physiographical Society.

He is a Fellow of the American Physical Society and a Fellow of the Optical Society of America. He is Editor of the International Journal Physica Scripta, and a Member of the Editorial Board of the Physical Review, which is the Premier Journal of the American Physical Society.

In 1999 Dr. Curtis, together with UN Secretary General Kofi Annan, was awarded the Degree "Philosophia Doctor Honoris Causa" by the University of Lund in Sweden. The Ceremony took place in the Lund Cathedral, which was consecrated in 1145, and was held entirely in Latin, punctuated by trumpet fanfares, the ringing of bells, and a field cannon salute. The English translation of Dr. Curtis' commendation reads:

> "For his significant contributions to the knowledge of atomic structure, with important applications in astrophysics, plasma physics, and fusion research."

An international symposium was held in his honor in association with the award of the Honorary Degree, with invited speakers who highlighted the contributions of Dr. Curtis to a variety of different scientific fields.

And Dr. Curtis was a 1958 graduate of the University of Toledo.

UT mathematician disproves accepted theorem

by Julie Knapp

After more than four years deliberating and searching for a counter-example to disprove a 40-year-old geometry theorem of mathematics, Dr. Henry Wente, UT professor, could finally sit back and say, "Eureka!"

"I was intent in trying to produce a counter-example and it finally came to a point when I knew things were beginning to fit together," he said about his discovery that has attracted national attention.

Dr. Wente was challenged by a theorem, named the Hopf conjecture after its founder, mathematician Heinz Hopf, which states that a sphere is the only "closed surface with a constant mean curvature" or bending of a surface.

Dr. Wente proved that another surface does exist which, although it intersects itself many times, has the same constant mean curvature.

Dr. Wente said the solution also has "given rise to answering similar problems" about curvatures, although it may be years before other applications are found.

The surface Dr. Wente created began with a mathematical object called a torus which Dr. Wente described as a bulging, doughnut-shaped surface with a hole in it. The difference between a torus and a sphere is that the sphere does not have a hole.

The surface of the torus does not have constant mean curvature, but with numerous drawings and calculations, Dr. Wente found a way to "stretch the torus to intersect itself" in a unique way. A new surface with constant mean curvature was the result of his long hours and efforts.

Dr. Wente said his research has uncovered counter-examples for other theorems that may have been more difficult to disprove than the Hopf conjecture, but this achievement has attracted the most attention from the mathematics world because of the principle's popularity.

Much of Dr. Wente's time is spent proving existence theorems. He said he sets up problems from their physical aspects and figures out their mathematical counterparts.

His specialty involves working with the geometry of soap films and liquid drops. For his graduate work at Harvard University, where he earned his doctorate of philosophy degree in mathematics and his bachelor and master of science degrees, Dr. Wente had a contract with Du Pont to develop waterproofing materials. It enabled him to use his knowledge of the geometry of liquid drops.

In addition to invitations to lecture at various universities around the U.S., Dr. Wente was invited to Bonn, Germany this past summer to speak before an international math conference. He also lectured at the Planck Institute in Bonn.

Dr. Wente has been teaching at UT since 1971.

Dr. Wente (above) awaits a computer graphic of the surface so it can be visually understood.

Alumnus - Spring, 1985

Henry Wente

72|3|4|45

11-13-84

Professor Solves 40-Year-Old Math Riddle, Finds New Surface In Process

By TAHREE LANE
Blade Staff Writer

The risk that Henry Wente took was great — the University of Toledo professor spent years trying to solve a problem that had confounded mathematicians for decades.

Last winter, his paper and pencil calculations showed he had finally found the solution to Hopf's Conjecture, a discovery his colleagues regard as being of great significance.

"I don't know if there was a certain day when I could say 'Eureka!' but certain calculations fell into place perfectly and at the time I felt, 'Gee, it should work,' " he said.

Now his cerebral math has turned him into a math celebrity and he is in demand as a lecturer at universities around the country.

Hopf's Conjecture is called both a "beautiful problem" because of its classic simplicity and a curse because so many labored so long on it. It was named for Heinz Hopf, a Swiss mathematician who stated the problem in the late 1940s.

It is differential geometry and pure math, Dr. Wente says, and it concerns the curvature of spheres.

Courage Is Praised

"There were two ways to go — to prove it was true or find a counter example," he said. He found a counter example and in the process discovered a new surface.

His colleagues praise him for his courage and perseverance at sticking with the elusive problem, and they laud his work for its originality and creativity. It will, they say, provide other math researchers and scientists with new methods for solving problems.

But, they say, it may be years before other applications are found.

"Ten years from now, a lot of things will be very clear," said David Hoffman, a math professor at the University of Massachusetts, in Amherst. "It might lead to dozens of other interesting things."

Dr. Hoffman, who has been fascinated with the problem for 19 years, has been working for months on designing a computer graphic of Dr. Wente's surface so that it can be visually understood.

'It Must Be Beautiful'

"I expect it will look something like a necklace of raindrops. . . . It must be beautiful — that's an article of faith. And I have a hunch that it will be useful," Dr. Hoffman said.

Dr. Robert Osserman, a math professor at Stanford University in California, also worked on the conjecture and was ready to announce a resolution of his own last year, but did not. Today, he also recognizes Dr. Wente's contribution as valid.

The new surface that Dr. Wente discovered in solving the problem is one that even mathematicians who have tackled the conjecture have difficulty in visualizing.

He started with a mathematical object called a torus — something that he described as a bulging doughnut shape. The important difference between a torus and a sphere is that the torus has a hole in it.

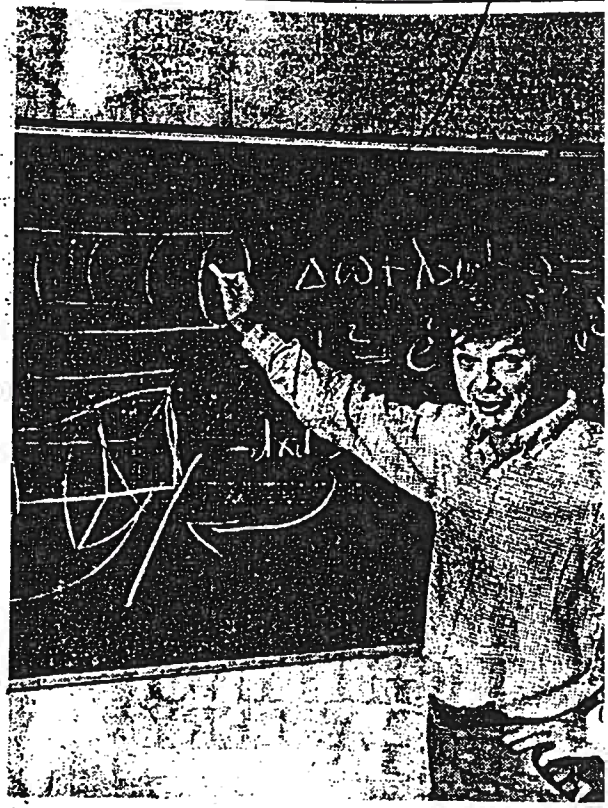
The surface of the torus does not have constant mean curvature like a sphere. But through countless drawings and calculations, Dr. Wente found a way to "stretch" the torus so that it intersected itself in a unique way. The result — eureka! — was a new surface with constant mean curvature.

University On Academic Map

To math wizards taken with Hopf's mystery, the resolution put the University of Toledo on the academic map.

"There is this sphere, then there is this new thing that just came into being in the [winter] in Ohio," Dr. Hoffman said enthusiastically.

Turn to Page 4, Col. 4



— Blade Ph

Dr. Henry Wente in University of Toledo classroom

THURSDAY, NOVEMBER 15, 1984

Professor Solves Riddle

Continued from First Page

Dr. Wente, now 48, had been aware of the puzzle since he was a graduate student at Harvard University in the 1960s, but in the last four or five years began to look at it seriously. He said he was reluctant to devote all his time to it "because I realized it could be a wasted effort."

But his research on the problem eventually increased to between 10 and 20 hours a week squeezed between teaching calculus classes, and vacations were devoted almost exclusively to it.

Sometimes he got stuck and would drop it for months at a time to work on other problems.

In the last few years, he was worried by rumors that other mathematicians were about to clinch the answer.

65-Page Solution

"I was afraid to say anything. I was afraid to get scooped," he said. "I guess I wanted to be the first one to get it."

In June he was invited to Bonn, Germany, to speak before an international math conference. During the summer, he lectured at the Max Planck Institute in Bonn.

His 65-page solution will be published sometime next year in the Pacific Journal of Mathematics.

He describes himself as someone who likes to solve problems but not a genius. He said he did a lot of hard mental work on the problem and that he does his best work during the morning and evening — usually at home and without using a computer.

"I'm kind of anti-computer. A computer would never prove a theorem. A computer could lend credence to a theorem you're trying to prove," he said.

Dr. Wente has taught at the University of Toledo since 1971 and now, with Hopf's riddle resolved, says he is eager to get to work on other projects.

Henry Wente
Tde

Alvin Compaan Compaan 1/21/41 838

About Thin-films and Coatings Research at The University of Toledo

The $1.5 million congressional appropriation enhances a strong effort by researchers at The University of Toledo toward further industrial innovation in films and coatings.

Solar cells – also known as photovoltaics – are semiconductor devices that convert the energy of sunlight directly into electricity, with no moving parts (other than electrons).

Dr. Alvin Compaan, professor of physics and astronomy and director of the Center of Materials Science and Engineering, works with cadmium telluride photovoltaics.

Dr. Xunming Deng, associate professor of physics and astronomy, studies amorphous silicon thin-film solar cells. Deng's amorphous-silicon based solar cells with triple-junction structure were tested recently by the National Renewable Energy Laboratory of the U.S. Department of Energy. It is the highest government-confirmed efficiency achieved by an academic group for this type of solar cell.

Numerous uses have already been identified for thin-film coatings and solar cells, including issues of national need in electrical power generation, clean transportation and biotechnology.

- Solar cell power has the potential to lead to energy independence in the foreseeable future.
- Solar cell power currently makes a small contribution to electricity generation, but its potential is great for use during peak-load times and for off-grid applications.
- Recently there have been exciting developments in the use of fuel cells for power generation for electric vehicles.
- Solar cells also are being used to split water to generate hydrogen, a possible fuel of the future. General Motors has funded Deng's group to explore this clean fuel alternative.
- A fuel-cell-electric-powered vehicle could one day provide pollution free personal transportation.
- Photovoltaics could be used to power high-tech equipment used by special armed forces.
- Thin-film photonic circuits for optical computing are key in the development of high-speed parallel computing.
- Thin-film coatings play a critical role in consumer electronic devices, particularly large-area plasma display panels for HDTV.
- Thin-films for the fabrication of nano-sensors could be utilized to monitor a large number of chemicals at once, such as pollutants in the Great Lakes or the level of chemicals in the blood

The University of Toledo is well positioned for this initiative:

- Since 1988, UT has received more than $5.8 million to pursue photovoltaic research. The new funding takes that total to more than $7.3 million.
- Proximity to businesses who could benefit from practical uses of this thin-film technology
    1. Pilkington-LOF
    2. Owens Corning
    3. Dana Corp.
    4. General Motors
    5. Ford
    6. DaimlerChrysler

David Dollimore
Alvin Compaan

The University of Toledo/Toledo, Ohio 43606-3390

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Address correction requested

UTIMES

UNIVERSITY OF TOLEDO

Three named outstanding faculty researchers

by Cindy Large

Alvin Compaan

David Dollimore

Matthew Wikander

A physicist who researches the use of lasers for growing thin films, a British chemist, and a former drama lecturer received this year's Outstanding Faculty Research Awards at UT.

The recipients are **Dr. Alvin Compaan,** professor of physics and astronomy and director of the Thin Films Institute; **Dr. David Dollimore,** professor of chemistry; and **Dr. Matthew Wikander,** associate professor of English.

The $1,500 awards were presented at UT's Honors Convocation at John F. Savage Hall.

Dr. Alvin Compaan's fields of research include resonant Raman scattering, semiconductor physics, laser annealing of semiconductors, ion implantation studies, coherent Raman scattering (CARS), ellipsometry, and thin film solar cells. He has published more than 100 articles exploring these topics.

Compaan's research centers on the use of lasers for analyzing the characteristics of semiconductors and for modifying their surface properties. He is working on several different semiconductor systems ranging from silicon, used for most present microelectronic devices, to mercury cadmium telluride, used for infared night vision and satellite imaging applications. His research involves ongoing collaborations with scientists from IBM Corp., Aerospace Corp., Rockwell International, the U.S. Army Night Vision Laboratory, Bilkent University in Ankara, Turkey, and the Polytechnic Institute of Mexico City.

Since arriving at UT, Compaan has pursued a research program in the use of high power pulsed lasers for growing thin films of semiconductors for the fabrication of photovoltaic solar cells. The work was initially supported by two grants from Ohio's Thomas Edison Program and co-sponsored by Glasstech Inc. and Solar Cells Inc. Currently his photovoltaic research is supported by a three-year grant from the U.S. Department of Energy's National Renewable Energy Laboratory (NREL). Recently two solar cells grown in UT's thin film laboratory using pulsed lasers and radio frequency sputtering were tested by NREL at 10.5 percent efficiency. This is a record solar cell efficiency for these two deposition techniques. The total externally funded support for Compaan's research over the past five years exceeds $1.25 million.

Compaan received a bachelor of arts degree from Calvin College in 1965. He received a master of science degree in 1966 and a doctor of physics degree in 1971, both from the University of Chicago. He completed a two-year postdoctoral appointment at New York University in 1973, and was a faculty member at Kansas State University between 1973 and 1987. During the 1982-83 academic year, he was an Alexander von Humboldt Fellow at the Max Planck Institute for Solid State Research in Stuttgart, Germany. When he joined the UT faculty in 1987, he brought much of his research laboratory equipment with him from KSU and expanded it to establish a major regional facility for thin film growth using the techniques of pulsed laser deposition, rf sputtering, plasma-enhanced chemical vapor deposition, and evaporation.

Dr. David Dollimore has published more than 300 research papers dealing with surface chemistry, the behavior of suspensions, and the effect of heat

(continued on page four)

Last issue of *UTimes*

This is the last issue of *UTimes* for the academic year. A summer issue is scheduled to be published July 28.

Outstanding faculty researchers honored

(continued from page one)

treatment on solids. Part of his research has included thermal decomposition studies on inorganic and polymeric materials. His work has various industrial connotations in such areas as cement technology, the glass fabrication process, and water treatment.

Dollimore has been honored with many awards in his career. He received a silver medal in 1978 for his work on the surface characterization of cements from the management of *IL Cemento* on the 75th anniversary of the journal's publication. He also was the recipient of the 1979 Mettler Award in thermal analysis. Other awards include the W. Eitel Award and the award of distinction in recognition of professional excellence in powder technology at the 10th Conference on Powder and Bulk Solids, both in 1985. The following year, Dollimore was made a fellow of the North American Thermal Analysis Society for distinguished and continued work in thermal analysis. In 1988, he received the DuPont Award for work in thermal analysis, awarded by the International Confederation for Thermal Analysis.

Dollimore has organized several international meetings, including both the first and second European symposiums on thermal analysis, and the 14th conference on microbalance techniques, all in 1976.

He also has organized symposia on geological materials, on materials related to the building industry, and on energy-related topics at the yearly conferences of the North American Thermal Analysis Society. He has presented papers and lectures at many international conferences in Europe, Africa, America and Asia. He gives short courses on surface chemistry, particle size effects, and the heat treatment of solids to industrial audiences, and he has lectured on these topics to a variety of industrial institutions.

Dollimore received a bachelor of science degree in chemistry in 1949, a doctor of philosophy degree on "Chemi- Studies of Volatile Boron Compunds" in 1952, and a doctor of science degree for work in the field of hemistry and the heat treatment of solids in 1976, all from London University. He held a postdoctoral research post at Exeter University from 1952 to 1954, then was assistant lecturer at Queens College at St. Andrews University until 1956. He was senior lecturer, then principal lecturer at the Royal College of Advanced Technology in Salford, England, from 1956 to 1964. He became senior lecturer, then reader at the University of Salford from 1964 until 1982, when he came to UT as professor and chairman of the chemistry department.

Dr. Matthew Wikander has written two books and 25 articles and reviews on Shakespeare and other playwrights. His latest book, *Princes to Act: Royal Audience and Royal Performance, 1578-1792,* examines relations between theater and monarchy in the 17th and 18th centuries in England, France and Sweden. His research on this book received two national awards.

In 1989, Wikander received a grant from the American Council of Learned Societies to study the court theater of Gustav III of Sweden at the Royal Library of Sweden in Stockholm. In 1990, the National Endowment for the Humanities awarded him a summer stipend to complete a chapter on Voltaire and his theatrical activities.

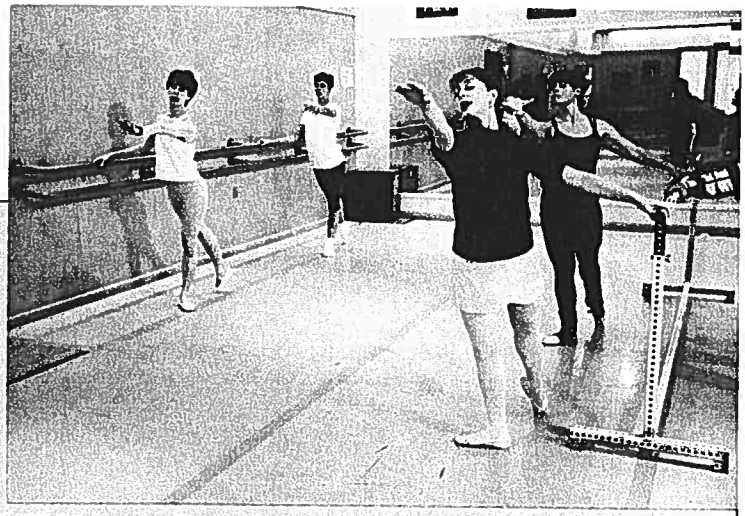
Wikander's first book, *The Play of Truth and State: Historical Drama from Shakespeare to Brecht,* was named an outstanding academic book of 1986-87 by *Choice,* the magazine for college and university libraries. His articles have appeared in such journals as *Shakespeare Survey, Shakespeare Quarterly, Modern Drama, Comparative Drama* and *Theatre Journal.*

Wikander received a bachelor of arts degree from Williams College in 1970. He received bachelor's and master's degrees as a Marshall Scholar from Christ's College at Cambridge University in 1972. He then received a doctor of philosophy degree from the University of Michigan in 1975.

Before coming to UT in 1987, Wikander was a lecturer in drama from 1974 to 1978 at the University of Michigan Residential College and an assistant professor of English at Columbia University from 1978 to 1987.

In 1992, he was named the inaugural Distinguished Humanities Lecturer by UT's Humanities Institute.

He is a member of the Modern Language Association (MLA), Midwest MLA, the Shakespeare Association of America and Phi Beta Kappa. He has served on the UT English department's undergraduate studies committee, the English departmental honors committee, and the Master of Liberal Studies program committee. He also is the director of the Master of Liberal Studies program.



Grace in motion. *Cassandra Macino (third from left) shows her class proper form at the ballet barre. Class participants are (from left) Liz Law, Jill Stager and Ann Fraser. The program is part of the University's spring dance workshop series.* *photo by Bill Hartough*

David Dollimore

The University of Toled

Barbara Floyd
Archives (2)
The University of Toledo
Toledo, OH 43606

June 23,1988

FROM: Les Roka

FOR IMMEDIATE RELEASE

, Ohio 43606-3390

of Public Information
(419) 537-2675

Dr. David Dollimore, professor of chemistry at The University of Toledo, will be honored in August at an international scientific conference in Jerusalem as the winner of the International Award for Thermal Analysis which is sponsored by Du Pont Co. and the International Confederation for Thermal Analysis (ICTA).

The award consists of a plaque, $1,000 prize and expenses to attend the ICTA Ninth International Congress on Thermal Analysis which will be held Aug. 21-26 in Israel. Dr. Dollimore will present the award lecture on the effect that temperature-dependent factors have on mechanical and surface properties of solids.

Dr. Dollimore has published more than 300 research papers dealing with surface chemistry, the behavior of suspensions, and the effect of heat treatment on solids. His research has involved thermal decomposition studies on inorganic and polymeric materials. Such research can be applied in cement technology, coal chemistry, the production of carbons, the glass fabrication process, water treatment systems, the development of fire retardant materials, pharmaceutical products, and industries that are based in geology.

He also has organized several international meetings, including European symposia on thermal analysis at the University of Salford in England and Aberdeen University in Scotland. Numerous other scientific conferences were held in Salford, where he served on the faculty before coming to UT in 1982. He also has organized symposia for the yearly conferences of the North American Thermal Analysis Society on geological materials, energy-related topics, and building industry materials.

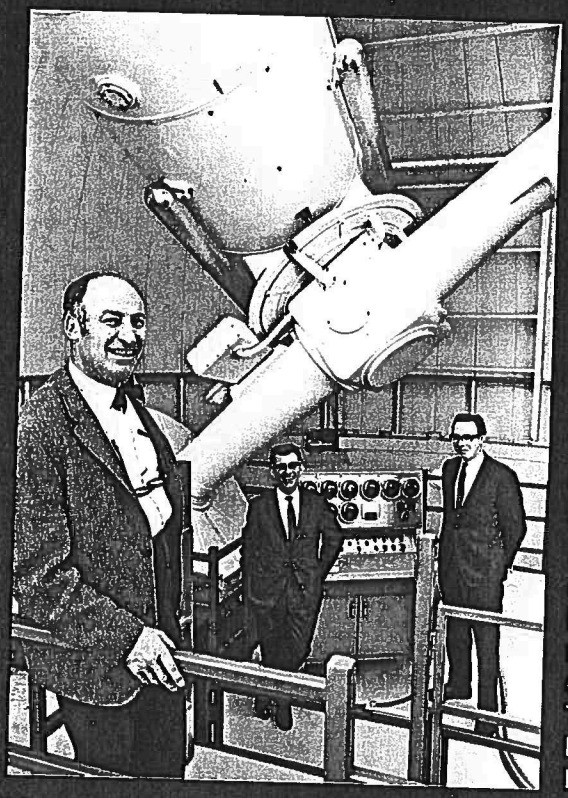
He has been chairman and committee member of Thermal Methods Group, a member of ICTA's nomenclature committee, a participant on the editorial board of the *Thermochimica Acta* journal. Dr. Dollimore regularly offers short courses to industrial audiences on surface chemistry, particle size effects and heat treatments of solids.

Dr. Dollimore has received numerous honors including the 1979 Mettler Award in Thermal Analysis, a silver medal in 1978 for his work on the surface characterization of cements by the management of *Il Cemento* journal and the University's first Wilhelm Eitel Research Award in 1985 for contributions to silicate sciences. He also received an award for his work in powder technology at an international conference on powder and bulk solids in 1985. He was named a fellow of the North American Thermal Analysis Society in 1986.

-30-

John J. Turin and the Department of Physics and Astronomy

John J. Turin, who came to The University of Toledo in 1946, was largely responsible for the formation and development of the Department of Physics and Astronomy. During his career at UT, Turin served as chair of the department, director of the Ritter Astrophysical Research Center, and dean of the Graduate School—all at the same time.



John J. Turin, with Armand Delsemme and Adolph Witt

Turin had a bachelor's degree from Wayne State University in mathematics and went on to graduate school at the University of Michigan. In 1947, he received his Ph.D. in nuclear physics from Michigan.

In the 1950s, Turin was one of only two faculty members who taught physics and astronomy. Turin began the planning for a graduate program in 1959, and in 1964, the astronomy program was transferred out of the Mathematics Department and into the Physics Department in preparation for the graduate program. By 1965, the department became one of the first two UT doctoral programs to be accredited by the North Central Association of Colleges and Secondary Schools and approved by the Board of Regents. Turin worked with local industries—particularly Owens-Illinois Inc.—to get needed funding for scholarships and fellowships.

He also encouraged local businessman George Ritter to donate the funds necessary to establish the planetarium and astrophysical research lab that would be named in Ritter's honor. The planetarium had been a dream of Ritter's, and Turin helped turn that dream into a reality. Ritter saw it as a way to establish an educational activity that would bring people in more intimate contact with the heavens. Designed by Helen Brooks and directed by her in its first years, the planetarium was dedicated in 1967. Today, it helps to educate thousands of school children each year and brings in community members through its public programming. Owens-Illinois provided the funding for the facility's 40-inch telescope, which was the largest in the state at the time.

To develop the Department of Physics and Astronomy, Turin recruited from the best schools in the country, and attracted several international experts to join the faculty. Dr. Armand Delsemme, a noted expert on comets, and Dr. Larry Curtis, a recognized scholar for his work in physics, were two of Turin's recruits.

Turin made other important contributions to the University. In 1951, he served as one member of the three-person Interim Operating Committee, which led the University while a search was conducted for a new president. Other members included Jesse R. Long, professor of journalism, and John B. Brandeberry, dean of engineering.

John J. Turin is an example of how one determined person can shape a college and an institution.

Helen Brooks

The University of Toledo

Toledo, Ohio 43606-3390

Office of Public Information
(419) 537-2675

May 4, 1987

FROM: Robin Gescheider

Former Faculty

FOR IMMEDIATE RELEASE

The first Helen and Elgin Brooks Observatory was at the Brooks home and the second was in a wheat field out in the country. Now the third is atop McMaster Hall, UT's new physics and astronomy building.

Helen Brooks loves star-gazing so much that after having two private observatories, she and her husband are making sure others who share a passion for astronomy will have access to the stars via the new observatory at UT.

The former director of UT's Ritter Planetarium and her husband, the president and CEO of Product Forwarding Corp., have donated $25,000 to equip the observatory on the sixth floor of McMaster Hall. The gift will buy two 10-inch telescopes, a special camera for astrophotography and photometry, darkroom equipment, and all the acceessories and attachments needed by undergraduate students working on serious research projects and course assignments.

Dr. David Ellis, chairman and professor of physics and astronomy, said the observatory will house a total of five telescopes. In addition to the two purchased with the gift, it will have the six-inch refractor from the University Hall observatory, the eight-inch Celestron telescope purchased by UT several years ago, and Mrs. Brooks' own four-inch refractor which she is donating.

"We felt that a department of physics and astronomy needs both strong undergraduate and graduate programs," Mrs. Brooks said. "And, to have a good undergraduate program to build on, we wanted something to offer new astronomy students. They need hands-on work, and you can't do it unless you have the instruments to do the observing."

UT's graduate astronomy students have used the one-meter Ritter reflector telescope, the largest in Ohio, since its installation in 1967, but undergraduates were hampered by a lack of equipment for celestial observations. And the new observatory will benefit the public, too. Brooks Observatory easily will accommodate twice as many people for public viewing nights as the Ritter dome, and the five telescopes will enable visitors to view 5 to 10 objects each evening, instead of 2 or 3.

The observatory was considered such an essential part of the new building that when the Ohio General Assembly appropriated less money than requested, the UT Faculty Senate wanted to delay construction until the observatory dome, equipment, and observation deck could be guaranteed.

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UT President James D. McComas was strongly committed to finding other sources of funding for equipment, and said, "We are very grateful to Mr. and Mrs. Brooks for their generous contribution. The Brooks Observatory will enable the department to continue to attract top-notch students and provide them with the tools to gain a solid foundation in astronomy research and observations."

The UT department of physics and astronomy is building a strong reputation for its world-class research and internationally known faculty. The department started to blossom in the mid-'60s, when UT made the transition from municipal to state university. The faculty doubled to 10 and permission was granted for UT to offer the Ph.D. degree in physics.

Helen Brooks was part of the department during those growth years, but her interest in astronomy began back in grade school when she became fascinated with the celestial navigation her family used on their sailboat. She peered through her telescope and read the few books she could find on the subject until her eighth grade teacher drove to the University of Michigan and came back with a hefty college astronomy text for her.

Mrs. Brooks received the bachelor of philosophy degree from UT in 1939, was married in 1943, and was involved with the Red Cross and Junior League of Toledo. She received the master of arts degree from UT in 1955 and joined the UT mathematics department faculty as an instructor.

That year she had a four-inch telescope and revolving dome installed on the airing deck of their Ottawa Hills residence, a home improvement that prompted the Blade to write an article, "Teacher Talks Stars, Men Students Gaze." Mrs. Brooks recalls with amusement the revolving dome was noisy and creaked and kept their neighbors awake.

In those days UT offered only one course on astronomy, and only once a year. She began teaching it in 1958 when the previous instructor, June B. Winslow, retired from teaching. Her first class had 13 students.

Within a few years the Brooks dismantled their home observatory and moved it into a farmer's wheat field on Raab Road west of Toledo, where they had a "good, black sky," Mrs. Brooks said. The Brooks and her UT students went there almost every clear night, staying until midnight or after. By 1960, the astronomy program at UT had grown considerably and she was teaching more classes.

When the George Ritters donated more than $400,000 to build the Ritter Astrophysical Research Center, Mrs. Brooks took an active part in planning and

(more)

designing the new planetarium, and her husband provided expertise in engineering, Mrs. Brooks said. "It took so much time we couldn't get out to the country observatory often enough," she said, and eventually it was dismantled.

She was director of the new planetarium during the 1966 academic year, and assistant professor of astronomy and associate director from 1967-72. It was a "seven day a week job," she said, and required her to write and produce four planetarium shows each year, including the music and special effects. "We did one for fall, one for Christmas, and two in the spring. They had to be educational and entertaining to keep the children in the audience interested."

Mrs. Brooks took early retirement in 1972 with emerita status to travel with her husband and follow the stars. The couple, now of Perrysburg, viewed the longest possible eclipse of the sun, approximately seven minutes of total darkness, in 1973 from on board a ship in the Atlantic off the coast of Africa near Dakar. They saw Comet Halley last year from the deck of a cruise ship 50 miles off the coast of Vietnam. "We were close enough to the equator so it was spectacular," she said. "It was easily visible with the naked eye, and the tail was as long as the distance between the pointers of the Big Dipper."

Women and astronomy were a novel combination in the '40s and '50s, Mrs. Brooks said. She often was the only woman in her graduate classes; sometimes the only student. Women weren't as accepted in the field, she said, but now wishes she had gone on for the doctoral degree. These days she attends weekly graduate astrophysics seminars at UT and maintains a keen interest in the latest discoveries including the new supernova in the Large Magellenic Cloud.

"It's an interest you don't lose," she said. And now the Brooks Observatory will open the door for others with their sights on the stars.

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BROOKS
Helen Luedtke

Helen L. Brooks was born on January 11, 1917 and died on August 31, 2011 in her Perrysburg home.

Mrs. Brooks was a professor emeritus of astronomy and mathematics and taught for 17 years at the University of Toledo, retiring in 1972. She received her bachelors and masters degrees from the university and was awarded an honorary doctorate in 2003.

After retirement Mrs. Brooks continued participation in the UT astronomy department. The Ritter planetarium and observatory at the university were, to a large degree, created through her efforts. Mrs. Brooks was the first director of the Ritter Planetarium. The Observatory was named in her, and her late husband, Elgin's, honor.

Beginning with a back yard telescope in her youth, Mrs. Brooks had a deep, life-long interest in astrophysics. She and Elgin cruised the world and her off shore navigation skills were always recognized on the ship's bridge. In 2008 the University of Toledo announced that Mrs. Brooks had established a $1 million trust gift for an endowed professorship of astronomy.

Mrs. Brooks was a member of Hope Lutheran Church, the Carranor Hunt and Polo Club, The Toledo Club and the UT Alumni Association.

Memorial services will be held at 11:00 A.M. on Wednesday, September 1, 2011 at the Witzler-Shank Funeral Home, 222 E.S. Boundary St., Perrysburg, OH. There will be no visita-

HELEN L. BROOKS, 1917-2011

UT educator 1st director of its planetarium

By MARK ZABORNEY
BLADE STAFF WRITER

Helen L. Brooks, the first director of the University of Toledo's planetarium and the namesake with her husband, Elgin, of an observatory on campus, died Wednesday in her Perrysburg home. She was 94.

The cause of death was not known, said Bill Fairhurst, a friend since high school. She had been in poor health recently.

Mrs. Brooks retired in 1972, but until this spring was a regular participant at the every-noontime-Tuesday bag lunch in which faculty and postdoctoral and graduate students present papers.

"She was always there in the front row," said Adolf Witt, UT distinguished professor of astronomy emeritus. She kept track online of developments in astronomy and each week contributed what she learned. "She was a very great inspiration to our graduate students."


Brooks

In 2008, Mrs. Brooks established a $1 million trust gift to create upon her death the Helen Luedtke Brooks endowed professorship of astronomy. In honor of her husband, an endhired to the faculty and helped develop an astronomy graduate program.

"If it hadn't been for her instrumental role, we wouldn't be here and the other subsequent astronomers who came," Mr. Witt said. "Toledo wouldn't be a place where astrophysics is being done and is recognized around the world."

The university granted her an honorary doctorate in 2003.

She was born Jan. 11, 1917, to Mayme and Rudolph A. Luedtke. Her father was a founder with J.A. Schultz of what became the Gerity-Schultz Corp., manufacturer of die castings and die-casting machinery.

She was a graduate of Scott High School. In World War II, she was a member of the American Red Cross motor corps in Toledo. She was a member of the Junior League of Toledo board.

She was a pioneer at a time when few women were in science departments of universities, Mr. Witt said.

"She was part of the social upper crust of old Toledo," he said. "The kind of career she pursued at the time was some-

Helen Brooks

Northwest Ohio or the charity of the donor's choice. Blessings on all of those who made Helen's last days so peaceful.

Elgin C. Brooks undergraduate scholarship in astronomy in 1999 after his death.

The couple's contribution in 1987 established the Brooks Observatory atop McMaster Hall on the UT campus.

She received bachelor's and master's degrees from UT, but her interest in astronomy started in grade school. In adulthood, she traveled the world to view total solar eclipses.

"If you stayed in one position on the Earth, you'd have a chance of one total eclipse in 350 years. That's why you have to chase them," she told The Blade in 2002.

In the mid-1950s, she became a part-time UT mathematics instructor who taught a noncredit course in popular astronomy. As the Space Age sparked interest in the cosmos, Mrs. Brooks taught astronomy courses exclusively.

In the 1960s, she introduced George Ritter, a lawyer interested in supporting education, to UT President William Carlson and physics Chairman John Turin, Mr. Witt said. With Mr. Ritter's financial gift, the result was a planetarium — the Ritter Planetarium — which she and her husband helped plan. Armand Delsemme and Mr. Witt were ing of. She was a person who knew her mind and was pursuing what she wanted to do."

The pioneering professor was photographed in 1969 smartly attired and umbrella in hand — with the Ritter Planetarium in the background — for a Toledo Times feature, "Lady of Fashion," in which she wore "a Bergdorf Goodman exclusive costume," the caption said.

Mr. Witt said: "Whenever she appeared in any sort of public role, she was dressed to a T. She was an example of a time gone by," he said. "She would only wear clothes that were absolutely perfect for her and elegant and of the highest quality. She was brought up that way."

Her husband, owner of a warehousing business and a plant manager for Electric Auto-Lite Co., died Aug. 5, 1999.

There are no immediate survivors.

Memorial services will be at 11 a.m. Wednesday in Witzler-Shank Funeral Home, Perrysburg.

Tributes are suggested to Hospice of Northwest Ohio or a charity of the donor's choice.

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