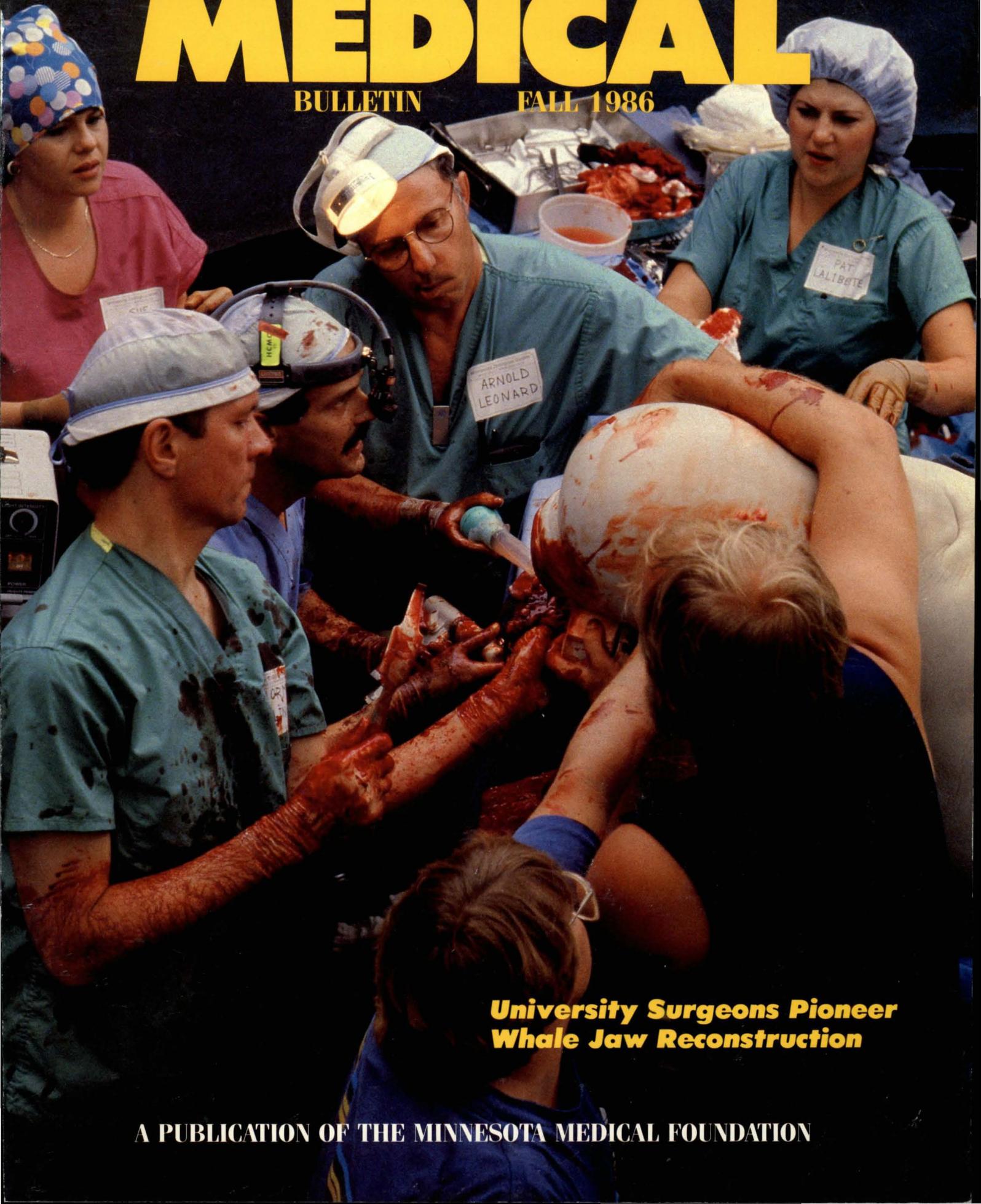


UNIVERSITY OF MINNESOTA

MEDICAL

BULLETIN

FALL 1986



**University Surgeons Pioneer
Whale Jaw Reconstruction**

A PUBLICATION OF THE MINNESOTA MEDICAL FOUNDATION

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The Minnesota Medical Foundation was founded in 1939 by a dedicated group of faculty members and medical alumni who saw the need for private support to build a strong future for the medical school. A non-profit organization, MMF raises and disburses funds for medical education and research at the University of Minnesota Medical Schools in the Twin Cities and Duluth.

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On the Cover: University surgeons remove a lesion from the Minnesota Zoo's beluga whale in a first-of-its kind operation. Photo © Tom Cajacob, Minnesota Zoo.



Faculty vitality is an essential ingredient in any academic setting; yet in a medical school, where the goals are excellence in education, in research and in patient care, it is a difficult objective to achieve and maintain. But achieve it we have, and maintain it we must!

It is generally agreed that all three parts of our school's mission (teaching, research, patient care) are essential. For the basic sciences faculty, the essence of intellectual inquiry, probing for new information through research, and the stimulation of both medical students and graduate students to become independent thinkers and scholars can best be achieved by their active participation in teaching and research throughout their careers. For the clinical sciences faculty, the excitement generated by bringing their patients' problems from the clinic and the bedside to the laboratory and to their students is enhanced by seeing the translation of laboratory work into beneficial results for the patient and by the excitement this patient-to-laboratory-to-patient exchange generates in their students. This dynamic and invigorating milieu has beneficial effects upon faculty, students and patients, and thus generates even more productive quests for further scholarship and research and for improved patient care.

The faculty of our medical school has performed extraordinarily well in all three arenas. However, the changing environment in which we pursue our missions has erected significant barriers and added tremendous stress. Biomedical research is increasingly complex, both conceptually and technically, and continued productivity of individual investigators and research teams requires large measures of adaptability coupled with the capability of using the newest research tools. At the same time, national competition has become more intense. Teaching requires the faculty to stay abreast of the literature and to

understand and effectively transmit to the students difficult concepts as well as to challenge those students to learn when they often feel overwhelmed by the dimensions of the expectations placed upon them. Patient care requires more time, more knowledge, concern for the financial implications of health care, and ethical value judgments in an environment of increasingly complex contemporary issues. Added to all of these problems are several compulsory and often distracting requirements such as effort reporting, protocol assurances regarding research and patient care, and other societally imposed concerns affecting a broad segment of our community.

Whereas none of these problems (nor the performance expectations) is likely to diminish in the foreseeable future, there are positive actions we can all encourage in order to facilitate the fulfillment of our faculty's goals. We must accept the existence and the impact of these problems on the faculty, students, patients and society at large, as well as the necessity for all of us to help overcome or, at least to minimize, the negative impact of change. We must seek to stabilize and improve the resources with which the faculty works, including improved research funding, salary stability and contemporary research and teaching facilities. We must stimulate and facilitate research and teaching collaboration, both within the departments of the medical school and with faculty in other parts of the university. Finally, we must enhance this community's awareness of "the jewel" this medical school represents. This can be done by improved communication with other professionals as well as with all segments of our society, all of whom share the common desire to improve health care and to extend vitality through better understanding of ourselves and of our environment, using every tool of research and education.

David M. Brown, M.D.
Dean
University of Minnesota Medical School

Drs. Leonard, Marentette, and Berlinger draw on their expertise with human patients to reconstruct the jaw of the 1,775-pound beluga whale.



Photos © Tom Cajacob, Minnesota Zoo

U Surgeons *make history* At The Zoo

Surgeons from the University of Minnesota successfully remove lesion and reconstruct the jaw of one of the Minnesota Zoo's most popular residents, Big Mouth the whale.

By Jean Murray

"I was surprised—no question about it," says Dr. Arnold Leonard of his call from the Minnesota Zoo. The head of pediatric surgery at the University of Minnesota Hospital, accustomed to working with small people, was being asked to perform surgery on a 1,775-pound beluga whale who had been suffering from a lesion on his lower lip for nearly two years. It had never been done before. There was no textbook to follow.

"Of course I agreed," says Dr. Leonard. "It was a challenge, and the whole community cared so much about the whale."

The entire procedure turned out to be a whale-sized undertaking, and was accomplished only through the efforts of a great many people dedicated to the health and well-being of a much-loved 15-year-old beluga named Big Mouth.

Some of the people who made it happen include Dr. Leonard, Dr. Norman Berlinger, associate professor of ear, nose and throat surgery at the university, Dr. Lawrence Marentette, director of maxillo-facial reconstruction at Hennepin County Medical Center,

university operating room nurses Marilyn Lande and Patty Laliberte, Ron Tilson, acting director of the zoo's biological programs, and, coordinating the whole effort, Dr. Frank Wright, head veterinarian at the zoo.

Dr. Leonard has high praise for Dr. Wright's skills in marshalling all the people and equipment. "It was Frank who brought it all together," he says. "We were convinced that the lesion was growing, and that we really didn't have any choice but to go ahead with the surgery."

Dr. Leonard was asked to perform the operation because of his extensive experience in reconstructive surgery. Dr. Marentette has studied facial reconstruction in Switzerland, and Dr. Berlinger is a specialist in ear, nose and throat surgery. All three volunteered their services, as did the veterinarians and operating room personnel. The surgical tools came from the university, and "even the central supply people got involved and were a vital part" of the monumental task, says Dr. Leonard.

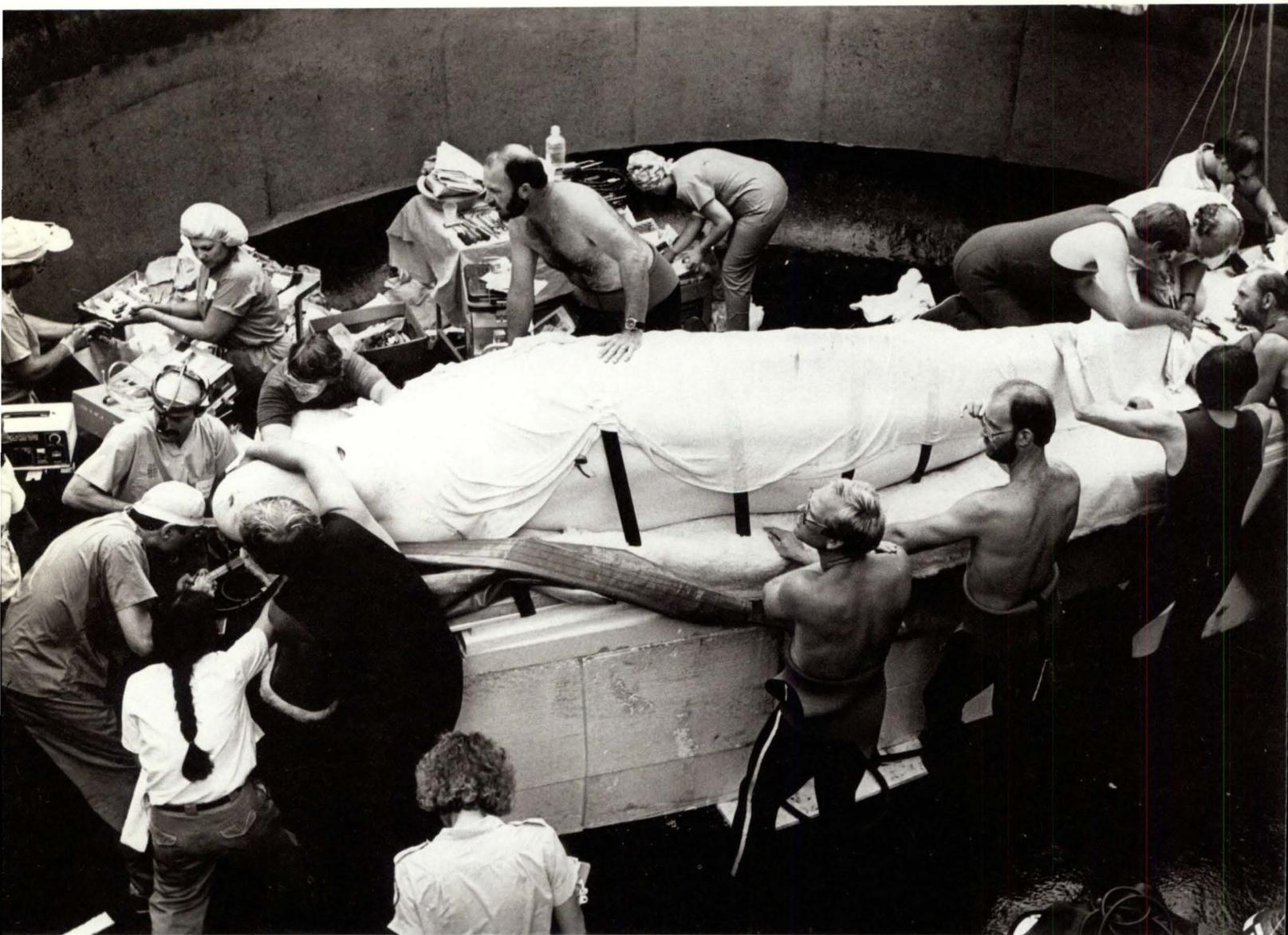
The decision to operate had not come easily. Many mammal experts,

brought in from around the world, said it wouldn't work and that the procedure would kill the whale. But previous, more conservative methods—including altering water temperature, electrolytes, and applying topical agents—had not been successful, and the open sore, measuring about 3 inches by 3 1/2 inches, had been worsening steadily.

"We knew Big Mouth was suffering," says Dr. Leonard. "He had stopped doing his tricks and maneuvers." Left untreated, a steady deterioration of the jaw could have disfigured the whale, or led to his death through infection or related problems. Let out to sea, the hand-fed animal would die.

The surgery was a pioneering effort, but the team did not go into it unprepared. They studied articles on marine animal physiology and examined a whale jawbone sent to the zoo from a Chicago museum. The most risky part of the operation involved administering anesthesia, and the surgeons spent considerable time studying the loaned whale mandible to locate nerve and blood vessel endings.

Three weeks prior to the major



Surgeons, nursing personnel and zoo employees work together to remove a lesion from Big Mouth's lower lip.

Cheer up. Don't feel blue. Wish hard and you will get well.



From Robyn

surgery of July 10, Big Mouth had his first experience in the makeshift operating room. His lower jaw was anesthetized while the surgical team removed tissue and bone samples from the wound for analysis at the university in preparation for the July operation.

In both procedures, performed in Big Mouth's drained holding tank, zoo workers led the whale onto a stretcher which was then hoisted by crane onto a plywood operating table created especially for the occasion by zoo employees. Workers kept him swaddled in wet towels to prevent sunburn and overheating, and an EKG and heart monitoring machine tracked his condition.

"He was monitored with intra-arterial pressures and blood gases just like a human being," says Dr. Leonard. "We could measure his reactions minute-by-minute and adjust his intravenous solution."

A team of veterinary anesthesiologists stood by ready to administer a general anesthesia with a large airway tube and modified Bird respirator if a series of local painkillers and Demerol did not sufficiently block the pain of the biopsy. They were also ready to revive Big Mouth if he stopped breathing, but neither action was needed. It was the first time pain-killing narcotics have been used for general anesthesia on a beluga whale.

Following surgery, Big Mouth was given a drug to reverse the effects of the anesthesia, and several minutes afterward was circling slowly around the holding tank.

"We didn't know what to expect," says Dr. Leonard. "We did this as a tune-up for the larger surgery procedure. It went very well." He noted that there were many similarities to surgery on human patients. "After all, a whale is a mammal. They have a pain re-

sponse too. The physiology of the whale is fairly close to ours."

Dr. Wright was pleased with the results of the surgery. "I had sharp people with good intuition," he says. "There is a limit to how much you can plan—you just need people who have barn sense, or in this case, pool sense."

In the main event on July 10, Dr. Wright injected Big Mouth with Demerol and Valium to sedate him, and then the surgery team numbed his jaw with the local anesthetic Lidocaine.

The surgeons, wearing miner's caps complete with lamps along with their green surgical gowns, then began the task of shortening and reconstructing Big Mouth's lower jaw. They found his skin unexpectedly tough. "He's built to last," commented Dr. Berlinger.

The team used a hammer and chisel to ease removal of the fourth tooth on the right side and the third tooth on the left side of the jaw. The 2 1/2-inch peg-like teeth were also more difficult to pull than the doctors had anticipated.

An oscillating surgical saw was employed to saw off the infected front arc of the jawbone—a wedge roughly 7 inches wide, 5 inches long and 4 inches deep. Two bone screws were installed to rejoin and stabilize the two sides of the jaw, and pearl-sized beads of bone cement, treated with the antibiotic Tobramycin, were implanted in the jaw to prevent reinfection and stop the bleeding from some of the larger arteries. Heavy surgical wire and 35-pound test nylon sutures were used to sew up layers of tissue and reconstruct the jaw.

A wedge measuring 7 x 5 x 4 inches was removed from the front arc of the jawbone.



About an hour after surgery, the zoo's star attraction was swimming groggily around the holding pool while the team sat poolside watching with satisfaction. By evening he had eaten about 10 pounds of fish and was well on his way to returning to his usual diet of 40 to 50 pounds per day. Since the two belugas at the zoo are always hand-fed, his newly constructed jaw did not affect his ability to eat.

Dr. Leonard has been in frequent contact with Dr. Wright in the weeks following the surgery, and concern for the sizable patient has remained high not only within the team but throughout the community. "If anything had happened to Big Mouth, I don't think I could have gone home," says Dr. Leonard. "I would have had 100 kids waiting in my front yard."

The whale has made steady progress, and has resumed his tricks, flips and whale-games. In fact, according to Dr. Frank Wright, his companion Little Girl has had to adjust to Big Mouth's renewed good health. She had assumed the dominant role during his two years of illness, and was assertively resisting his resumption of the leadership position.

"They'll adjust," says Dr. Wright, "but it takes awhile, just like people adjusting to a major change in their lives."

By their willingness to participate, the members of Big Mouth's surgical team have won a place in the hearts of the Minnesota community. In addition, they have gained knowledge not found in any textbook that may be valuable to humans and animals alike.

Dear Big Mouth,
My brothers and I have been watching your story with great interest. One of your doctors, Dr. Arnold Leonard, is also my doctor at the U of M. I was born with a cleft lip and palate and Dr. Leonard has done lots of surgeries on me. My last surgery was in June. I know that you will be fine because Dr. Leonard has always done a great job on me. I hope you're feeling better and I hope my brothers and I can come and see you soon.

Love,
Nicholas

Dear Big Mouth
I hope your mouth is healing fast Does it hurt? I hope not I like to watch you swim.
Shawn

Dear Big Mouth,
I hope you feel better! I had my tonsils out so I know how you are feeling. I will come + visit you soon!
Get well fast!
Love,
Lori and KYLE



Technology Explosion Impacts RADIOLOGY

By Virginia Perrot

Radiologist William M. Thompson pursues a specialty that he speculates has changed more in the last ten years than all other fields of medicine. And as the new head of radiology at the University of Minnesota Medical School, he is in charge of training residents who must practice in an area where much of current diagnostic and research information is already outdated by the time it first appears in print.

From Dr. Thompson's boundless enthusiasm, one would never guess that radiology was his second-choice specialty. As a medical student planning to become a pediatric cardiovascular surgeon, he realized that the demands of that position, coupled with his own love of medicine, would leave little time for his family. Newly married, he decided on radiology. "I thought I would read films with my dad (also a radiologist) and keep regular hours," he says with a laugh.

It never quite worked out that way, but Dr. Thompson doesn't seem to mind. In fact, he seems to love everything about his fast-changing field, where a fair amount of on-the-job training is the only way to keep up with new developments.

A graduate of the University of Pennsylvania Medical School in 1969, Dr. Thompson did his internship at Case Western Reserve Medical Center (1969-70) and his residency in radiology at Duke University Medical Center (1972-1975). He stayed at Duke until coming to Minnesota, becoming an assistant professor in 1975, an associate professor in 1977 and a full professor in 1982. He also served as chief of radiology at the Veterans Administration Hospital in Durham, North Carolina from 1979 to 1986.

It was during a two-year stint (1970-72) with the U.S. Public Health Service in Alaska that he

discovered an interest in teaching and academia, organizing the first grand rounds at the Alaska Native Medical Center, and publishing his first academic papers. Since then Dr. Thompson has published over 150 scientific articles and abstracts. He was a James Picker Scholar from 1975 to 1979.

In 1983 Dr. Thompson was elected a fellow of the American College of Radiology, and moderator of the Film Panel of the Radiologic Society of North America. He is editor of the abdominal section of the *Year Book of Radiology*, an associate editor of *Investigative Radiology* since 1984, editor of the gastrointestinal section of *Radiographics* and on the editorial boards of *Contemporary Diagnostic Radiology* and *Gastrointestinal Radiology*.

The vast changes in radiology today are almost all attributed to the explosion in computer technology. Ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), and positron emission tomography (PET) have all entered medicine in just the past decade—and these new technologies in turn continue to change.

"Today's radiologist is increasingly an integral part of the team that cares for the patient."

While high technology in some branches of medicine has sometimes interfered with the human touch, for the radiologist, the opposite is true. Explains Dr. Thompson, "We were once considered the 'physician's physician.' Today's radiologist is increasingly an integral part of the team that cares for the patient."

At the same time, the radiologist is also playing a stronger advisory role in helping other physicians decide which test is medically most appropriate and cost efficient in a given situation.

Perhaps most widely used—and oldest—of the new technologies is ultrasound, a non-invasive procedure that uses sound waves to create images of the body. Although it was not widely utilized in medicine 10 years ago, ultrasound today is used during pregnancy to evaluate the mother and fetus, and in the screening for birth defects in utero. Ultrasound is important in studying patients with heart disease, gallstones and suspected abnormalities of the liver and kidneys.

CT scans have also revolutionized radiology, rendering some diagnostic tests obsolete (i.e., the pneumoencephalogram) and providing physicians with computerized pictures so clear they could have been reprinted from anatomy textbooks.

The CT scan uses a pencil-thin beam of ionizing radiation to obtain an image of a slice of tissue in just a few seconds. Current generation CT scanners solve thousands of complex mathematical equations in seconds, making it possible to take several pictures of the body in a relatively few minutes. By stacking a series of CT slices together it is possible, in effect, to obtain

a 360-degree image of part of the body. This cross-sectional ability has made CT invaluable in discovering intracranial and spinal cord abnormalities as well as evaluating diseases involving the chest, abdomen and extremities. However, there are limitations.

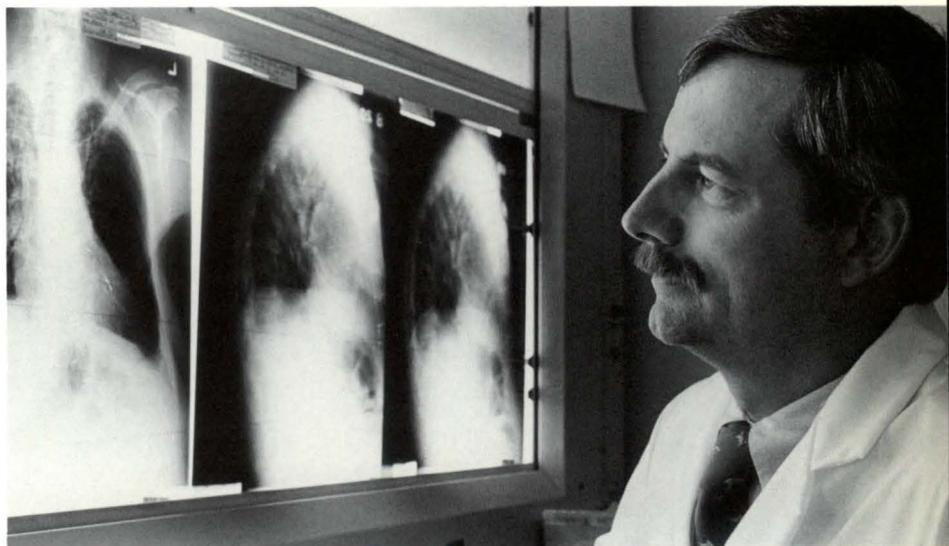
The CT scan can't tissue type, Dr. Thompson points out, although it can distinguish air from soft tissue from fluid; and by injecting a contrast material, the radiologist is able to identify blood vessels. Generally, however, it is difficult to see subtle differences in tissue density on a CT scan and in many instances—such as studying the GI tract, the skeleton or the chest—conventional x-rays still provide essential, important information.

MRI works on the same basic computer principle as the CT scan, and was developed as people realized that computers could solve hundreds of thousands of algebraic equations in seconds. MRI has only been used to study patients in the past five years.

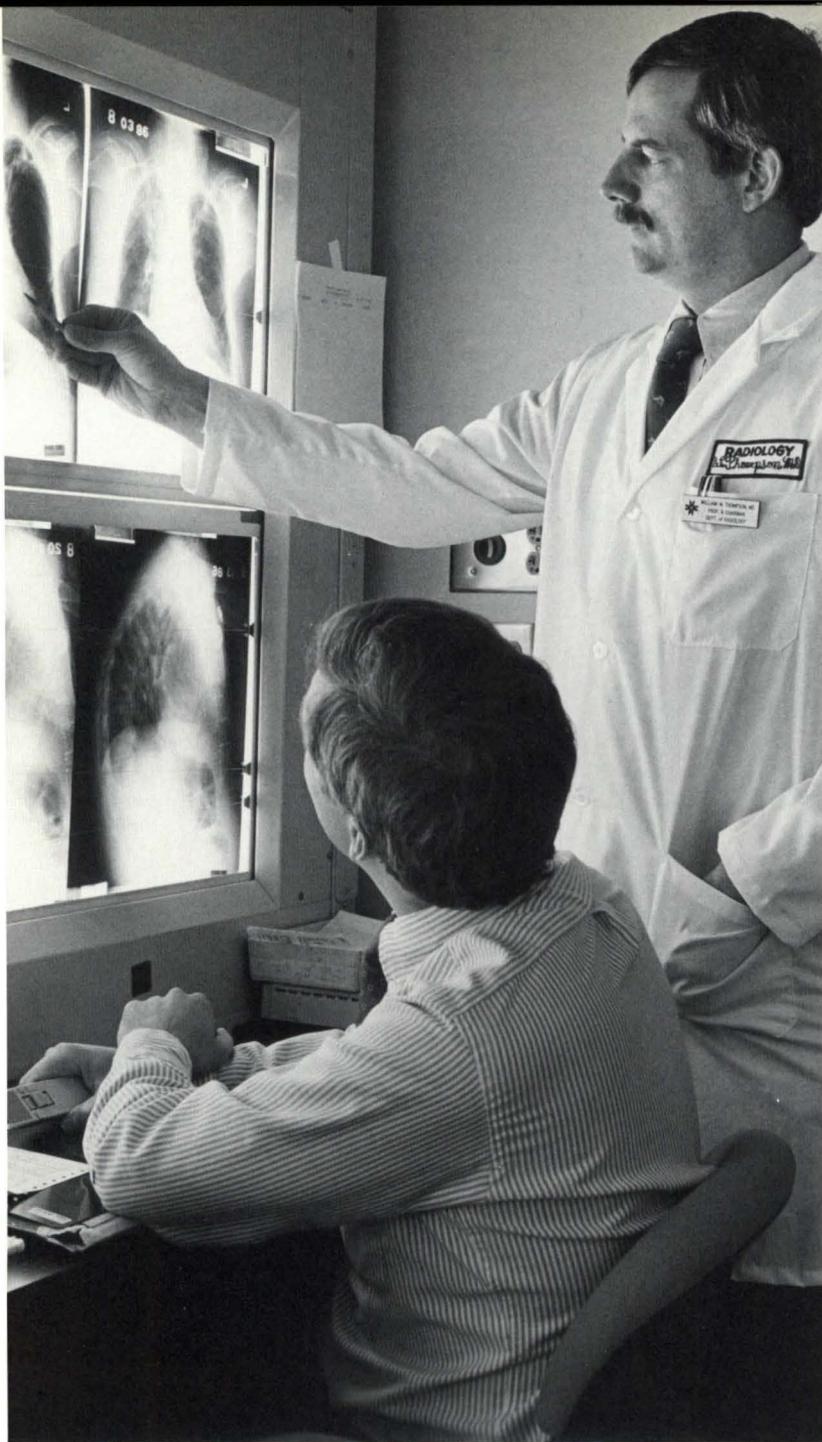
In the very simplest terms, MRI involves using the interaction between radio waves, static magnetic fields and atomic nuclei. By striking the nucleus of a hydrogen atom—known as a spinning proton—with a radio frequency different than the one it is normally accustomed to, the proton is knocked out of its normal axis. The MRI system records this process, including the time it takes for the hydrogen proton to return to its normal axis, and then creates a computer image of the body for the radiologist.

MRI does not use ionizing radiation, and because the radio frequency can be tuned at any angle, it is possible to record images of the body in any axis. MRI provides superior soft tissue contrast and already provides more information in some neurologic diseases than CT does. This superior contrast ability may also make MRI more diagnostically useful in the future, particularly in the liver, retroperitoneum and extremities.

To meet the demands of this new information, radiology residents entering the university program in 1986 will complete four years of training instead of three.



New radiology department head Dr. William M. Thompson sees exciting challenges and closer patient contact in this constantly changing field of medicine.



"In an academic center, patient care, teaching and research are inseparable."

There is also the possibility that future MRI systems will be able to perform sub-cellular analysis, determining the amount of a certain element in a body structure. And this possible capability could change the nature of diagnostic techniques greatly. "Could we tell a dying heart muscle from a healthy one, using MRI?" Dr. Thompson asks. "Or could we do chemical analysis without a biopsy or without drawing blood?"

The University Hospital and Clinic plans to have a sophisticated MRI system on line soon which will be used for this kind of basic science research, in collaboration with radiologists, scientists and clinicians, Dr. Thompson points out.

And in 1987, the Veterans Administration Hospital in Minneapolis (one location where radiology residents train) will have a PET scanner.

Using radioactive isotopes with short half lives, the PET scanner allows physicians to actually evaluate the metabolic processes of certain diseases as they occur, creating metabolic imagery via a computer.

"This opens up the possibility that one day we will understand why someone is schizophrenic or why someone contracts Alzheimer's or Parkinson's disease," Dr. Thompson explains.

But PET is very expensive, he adds—a MRI or CT-scan costs \$300 to \$400, while the PET scan could cost \$3,000 to \$4,000. "A key question will be whether PET will be practical to use in diagnosing and treating patients."

This vast array of new technology is creating new challenges and questions for radiologists, Dr. Thompson stresses, and the answers are not all in. "We are, for example, 10 to 15 years away from knowing when to order exactly what test," he says. "And that's only if the technology doesn't change—which it always does."

To meet the demands of this new information, radiology residents entering the university's program in 1986 will complete four years of training instead of three. And the department's capability for training more medical students will be expanded as well.

Dr. Thompson also wants to encourage other physicians to consult his department for an opinion before they order a particular radiology test. "Both the new technologies and rising health care costs make this process more important than ever before," he notes. To facilitate this process, the medical staff and the radiology residents and faculty will have daily radiology rounds on all in-patients, and each patient will have a place for x-ray films directly on the radiology service, to ensure easy physician access.

The new technologies, plus increasing health care competition, make it essential for the radiologist today to communicate more closely with patients, and in a more timely fashion with their referring physicians—both inside and outside of the hospital, Dr. Thompson believes.

In fact, one of his long-term goals is to have outpatients radiographed, and have their examinations read, dictated and typed in less than one hour—a feat he believes possible because he organized a system that accomplished just that at the VA Hospital in Durham, North Carolina.

"You can't have a patient sitting around for three hours," he says emphatically. "Even if you have to cut down on some aspects of teaching and research to accomplish faster service."

"In an academic center, patient care, teaching and research are inseparable, even though as physicians high-quality patient care must be our first priority. If we are performing excellent patient care, we are teaching excellent patient care," Dr. Thompson says.

"Residents will emulate what they see. And if we perform and teach high-quality patient care, there will be many questions that lead to good research. It's all one big circle."

Virginia Perrot is a St. Paul-based freelance writer.



Baby Born Through In Vitro Fertilization Program

Eric Benjamin Theisen was born on July 14, 1986, the result of in vitro fertilization through the University of Minnesota's Vital Initiation of Pregnancy (VIP) program.

And Eric is definitely a VIP in the eyes of the Theisen family. Even though he's the 17th grandchild on his mother Marie's side and the 7th grandchild on father Randy's side, "Eric is the star of the whole family."

Marie and Randy Theisen had been trying for six years to have a baby. During this time, Marie conceived twice and had two tubal pregnancies which resulted in the loss of one Fallopian tube and blockage of the other.

A friend recommended Dr. Theodore Nagel in the department of obstetrics at the university. In January of 1985 Marie first saw Dr. Nagel, who operated shortly thereafter to remove the obstruction in her remaining tube. Marie experienced a third tubal pregnancy in April and a fourth in July.

At this point, Dr. Nagel suggested in vitro fertilization. The process involves an initial stage of hormonal treatment to stimulate the ovary to produce more than one egg. When the eggs are ready to ovulate they are collected surgically using a laparoscope. The eggs are placed in a petri dish containing nutrients and are fertilized with the husband's sperm. A fertilized egg is transferred to an incubator and allowed to develop for 48 hours, then surgically placed inside the uterus where it attaches to the uterine lining and normal embryo development continues.

In October the Theisens began the in vitro process, and in July Eric was born.

The Theisens live in Delano, a small rural town in central Minnesota. Randy, 29, is a construction worker and Marie, 28, is a service clerk for a telephone company in Mound. The telephone firm's parent company fully insured the in vitro process.

The Theisens were on an adoption waiting list when they began the in vitro program, and on February 14, the day the university announced Marie's pregnancy, they received an acceptance letter from the adoption agency. The Theisens are happy they were able to make the adoptive child available to another childless couple.

Marie and Randy plan on being open with Eric about his conception. She has saved the petri dish where the eggs were fertilized, a photo of the fertilized eggs, and the news articles written about the in vitro experience.



By Cindy Huttner
Department of Obstetrics and Gynecology

Photos By Carol Ford

Minnesota's first Ojibwe physician has elected to return to the reservation to practice medicine, and in so doing has become a role model for many young Native Americans.

Dr. Kathy Annette: **MEDICINE FOR HER PEOPLE**

By Shahla Rahman

Growing up on the Red Lake Indian Reservation north of Bemidji, Kathy Annette dreamed of becoming a doctor.

The odds of her ever fulfilling those dreams were very small—less than 1 percent of all physicians in the United States at the time were American Indian, and very few of those were women. But that did not stop her.

All the time she was at Red Lake, she never once saw an Indian doctor. Even that did not stop her.

Her high school counselor advised her to forget her medical dreams and become a secretary, but she did not listen.

Annette wanted to become a doctor and doggedly pursued her dreams. Those dreams have finally become reality as Annette returned home this summer as Kathy Annette, M.D.—Minnesota's first female Ojibwe physician.

She is one of five doctors on staff at the Indian Health Service Hospital at Cass Lake, the largest community in the Leech Lake Reservation. She is also the first Native American doctor to work at the hospital on a full-time basis.

"It is very hard for the people on the reservations, because the doctors that do come usually don't stay for more



than two or three years. There is therefore very little continuity in the medical care that is provided to the Indian community. We need Indian doctors to take long-term care of their own people, and I am determined to do just that."

Dr. Annette earned her undergraduate degree at the University of Minnesota, Duluth (UMD) in 1977. She completed the first two years of her medical education at the UMD School of Medicine and transferred to the University of Minnesota, Twin Cities campus, to earn her M.D. degree with an emphasis in family practice. She joined the staff of the Indian Hospital following a three-year residency at the Duluth Family Practice Center.

Thirty-one year old Dr. Annette is the first to admit that her dreams did not come easily. However, she also admits that she was very lucky to have grown up with parents who early-on realized the value of an education.

Dr. Annette recalls when, in the early 1960s, her father finished a six-year stint in the Navy. "He couldn't get a job and he couldn't rent a house because at that time one did not rent 'to animals or Indians,'" she says. "He packed up all of us kids, moved us to the reservation and went to college at Bemidji (State University) where he finished his degree in sociology. Both my parents saw education as a way to advance our people, a way in which the Indian people could use their training to help each other."

"We need Indian doctors to take long-term care of their own people, and I am determined to do just that."

When she finished high school, Dr. Annette began her freshman year at Concordia College in Moorhead, but transferred to UMD shortly after that. "College is an adjustment for anybody, but being one of very few Indians at Concordia, it was especially difficult for me," she explains. UMD offered Indian students a "tremendous support system," and that is where Dr. Annette completed her undergraduate degree in chemistry. "With Ruth Myers (coordinator of the UMD medical school's Indian programs) there, how could I fail? In fact, I didn't dare fail," Dr. Annette comments.

She recalls those early years at UMD. "I received one blow after another, because I was studying twice as hard as the other students, and still barely passing my classes."

This she attributes to the fact that Indians have traditionally not received the proper training to go to college. "The first year of college was pretty much a catch-up game for me," Dr. Annette says.



She graduated from UMD in 1977, and was set to begin classes at the UMD School of Medicine, but her education would have to wait a year. When her father died shortly after she graduated she went home because "my family needed me."

She returned to UMD in 1978 for the first two years of medical school. In 1980-81 she again took a break and went home to her family. "It is sometimes very difficult for Indian students, because we are pulled from so many directions," she explains. "Those two years off made all the difference in terms of my personal growth."

During that second year off, Dr. Annette went to work for her tribe speaking to high school students about opportunities available to them for careers in medicine.

"It was a very good experience because it showed Indian students that you can make it, and it was also good for non-Indians to see the stereotype of the Indian broken," she says.



Finally in 1981 she went back to the university—this time to the Twin Cities campus—to complete her formal education. “The Twin Cities campus is very big and very exciting, and sometimes scary for a small-town person like me. But to me it was the mecca of the medical universe and I feel I received excellent medical training there,” Dr. Annette states. “The medical education system is marvelous in Minnesota, and I see that reflected in the quality of the physicians that are turned out.”

“Everyone knows there is an Indian doctor in town, and everyone has been very supportive.”

In 1983 she went back north for a three-year residency at the Family Practice Center in Duluth, which she describes as “a sterling time in my life. I worked with some very sensitive people who were receptive to new ideas. It was a very good experience for me.”

Last year she won the national Mead-Johnson Award for being an outstanding family practice resident.

Now that her formal education is complete Dr. Annette says she feels a great sense of accomplishment, but is looking forward to new challenges at the Indian Hospital.

“One of the reasons I enjoy family practice is that you get to do everything—from obstetrics to pediatrics. We are involved with patients from pre-surgery to post-surgery and keep track of everything in between.

“The medical profession is hard because you have to

commit a lot of time to it—in fact it requires a life-long commitment. When human life is in your hands everyone feels a certain amount of apprehension. But at the same time it is an exciting field of work because you never know what each day will bring.”

Her reception back in her home territory has also been very positive. “The ‘moccasin telegraph’ works very quickly and very well. Everyone knows there is an Indian doctor in town, and everyone has been very supportive. I am very excited and happy.”

However, Dr. Annette is not one to rest on her laurels. She was instrumental in setting up a rotation program for second and third year residents through the Duluth Family Practice Center and the Department of Family Practice and Community Health at the University of Minnesota.

“Nothing makes me happier then when a young person walks up to me and says ‘I want to be a doctor just like you.’ ”

That program brings residents to Cass Lake for a month to get a unique exposure to Ojibwe health practices and to learn to communicate more effectively with American Indian people.

She is active in the National American Indian Association and the Association of American Indian Physicians. “I’d like to someday be in a position where I can have some say in decisionmaking at a state or national level,” Dr. Annette says.

Whenever she finds time, she still makes it a point to visit high schools in the area and encourage students to pursue careers in medicine.

"For a long time Indians thought that education would turn their kids 'white' and discouraged their children from leaving the reservation and interacting with the outside world," Dr. Annette says. "It has taken a long time to change that attitude, but it is changing. No longer do you find Indian students sitting in the back of their classes. They are out in front asking questions just like everybody else."

Dr. Annette says tribal leaders today are very supportive of education and encourage all Indians to pursue their career goals, be it in medicine or some other field. She points out that Cass Lake High School ranks among the top 10 in the state in terms of SAT (Scholastic Aptitude

Test) scores. But with Red Lake close to the other end of the list, Dr. Annette emphasizes that there is still a long way to go.

"I realize that I am a role model for many young Indians," she notes. "Nothing makes me happier than when a young person walks up to me and says 'I want to be a doctor just like you.' The most happy and well-adjusted Indians are those who can take the best of both worlds and incorporate it into their lifestyle.

"There are so many young Indians out there asking 'Does anybody really care?' My answer to that is that people do care and that one individual can and does make a difference."

Shahla Rahman is news editor at the University of Minnesota, Duluth. Photographs are by Ken Moran, UMD.

UMD Medical School Offers Variety Of Programs For Indian Students

American Indian communities have a critical need for Indian health professionals to upgrade the health care provided to them and to improve their health status, say officials at the University of Minnesota, Duluth (UMD) School of Medicine.

With that in mind, the school currently offers four programs specifically targeted to Native Americans who want to pursue careers in the health care professions.

The year-long Native Americans into Medicine (NAM) program is available to students at both UMD and Bemidji State University. NAM is designed to identify and provide support to promising disadvantaged students interested in careers in medicine, optometry, dentistry, veterinary medicine, osteopathy, pharmacy, psychiatry, public health and health care administration.

Indians into Research Careers (IRC) is a two-year program for Indian students in their junior year who are interested in biomedical research.

The Howard-Rockefeller Program (HRP) is a six-week summer program emphasizing laboratory research in which high school students receive hands-on experience in a laboratory setting.

American Indians into Marine Sciences (AIMS) is a three-year undergraduate program of the Minnesota Sea Grant program to encourage Indian students to pursue a career in aquatic science research.

The UMD medical school is also in the process of establishing a Center of American Indian and Minority Health, which will address the critical need for improved health care within the American Indian populations and will provide all medical students instruction in the health-related problems faced by minorities.

Ruth Myers, who coordinates the medical school's Indian programs at UMD along with physiology head Robert Pozos, says that to her knowledge no other medical school offers programs as comprehensive as those available at the Duluth campus of the university.

According to Myers, the UMD programs seek to identify, recruit, retain and support American Indian students seeking careers in the health care professions.

"We are unique in that we are involved with high school and undergraduate students, as well as professionals. Another thing that makes us unique is

that we have very close working ties with members of the American Indian community," Myers comments.

"These programs have opened the door for Indian students interested in careers in the health sciences, which society as a whole had not encouraged before," she says.

Her sentiments are echoed by James Boulger, associate dean of the UMD School of Medicine. "We want to catch Indian students during the high school years and see them through college and pre-admissions counseling, so that they are ready when they enter medical school."

However, Boulger emphasizes that no student gets into medical school simply because he or she is Indian—they must meet the same admission requirements as any other student. "We want all students to be aware of the doors open to them, but they must walk in on their own two feet," he explains.

More information on the programs can be obtained from the:

**American Indian Programs
Room 114
UMD School of Medicine
University of Minnesota-Duluth
Duluth, Minnesota 55812**

Research by U microbiology professor is a key step in developing a vaccine and diagnostic test to combat Lyme disease.

HOPE FOR LYME DISEASE

By Michael Moore

Lyme disease researchers have some bad news and some good news about the tick-borne disease that's a major problem in Europe and the Eastern United States and is becoming more prevalent in the Midwest.

The bad news: Lyme disease is poorly diagnosed and sometimes improperly treated in its early stages. Without proper treatment it can progress to a chronic debilitating disease affecting muscles, joints, nerves and the heart. Cases are now being reported of it affecting the brain. In addition, recent journal reports have suggested that pregnant women can transmit the disease to their fetuses.

The good news: A vaccine, a diagnostic test and a more effective antibiotic treatment have shown promise in laboratory testing and may soon be available.

Lyme disease, first described 11 years ago in Old Lyme, Connecticut, is now the most common tick-borne illness in the United States. It is probably even more common than researchers suspect, because it is easy to misdiagnose, and physicians are not required to report cases to the Centers for Disease Control.

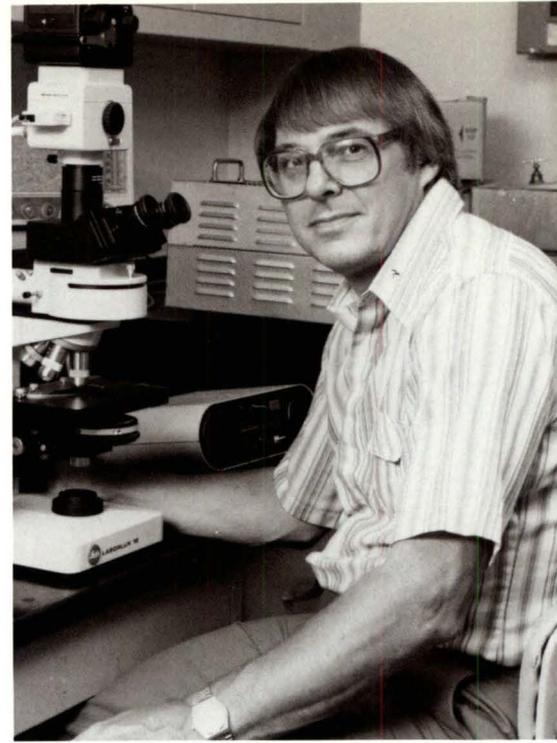
Early diagnosis and proper treatment of Lyme disease are extremely important, according to Russell C. Johnson, Ph.D., professor of microbiology at the University of Minnesota. The acute symptoms of a rash and flu-like illness may go away with or without treatment, but the disease leaves a type of bacterium in the host's blood that can cause severe symptoms to appear months or years later. "We are finding that proper treatment can halt the progress of the severe problems, but it cannot reverse neurological damage," says Johnson.

Johnson has been studying the Lyme disease bacterium—a spirochete called *Borrelia burgdorferi*—for four years. He and colleagues working in his laboratory in the department of microbiology have developed an animal model—the hamster—to study the disease. This has been a key step in developing a vaccine and diagnostic test and evaluating various antibiotics used in treatment. Johnson discovered that hamsters develop an infection, but not the more severe symptoms seen in humans, when exposed to the spirochete. He found that the success of antibiotics in ridding hamsters of any trace of spirochetes correlates with their success in humans.

Significant advances

If that correlation between hamsters and humans holds true, three significant advances in fighting Lyme disease are imminent. The first is a vaccine to prevent dogs from contracting the disease. Lyme disease causes arthritis and neurological problems in dogs, and positive tests for the disease have been reported for horses and livestock. Johnson can immunize hamsters against Lyme disease, and if the vaccine is successful in dogs, the development of a human vaccine will depend on whether there is a demand for one, "which I think there will be because we really can't control this disease," he says.

The second weapon against Lyme disease that has shown promise in laboratory trials is a diagnostic urine test. Johnson learned at a meeting in Europe that spirochetes were detected in the urine of mice infected with the disease. To his surprise, he found that this was also true in hamsters, dogs and humans. Johnson is working with



Dr. Russell C. Johnson has been studying the Lyme disease bacterium for four years.

3M and the Minnesota Department of Health to see if the more complicated blood tests for Lyme disease antibodies confirm positive urine tests in humans. If that is so, it would lead to a diagnostic urine kit that could be used by physicians and veterinarians to diagnose the disease.

The third positive sign emerging from Johnson's laboratory involves an evaluation of the antibiotics used to treat people with Lyme disease. Oral penicillin is often used to treat people with acute symptoms of the disease. Those with chronic signs of the disease are hospitalized and given high doses of intravenous penicillin for 14 days. But not everyone responds, and Johnson found that penicillin sometimes does not completely eliminate the spirochete from hamsters. He found that an antibiotic called ceftriaxone (Rocephin) is more effective and smaller doses are necessary, apparently because it penetrates into joints and the cerebral spinal fluid and is active in the blood longer than penicillin.

Tragic sequelae

During a recent visit to Europe Johnson heard a case report of spirochetes found at autopsy in an infant who died shortly after birth; the mother had received penicillin for acute Lyme disease in her first trimester. A report

from West Germany supported his antibiotic therapy evaluations.

Johnson says a blood test is most useful in the later stages of Lyme disease to confirm the diagnosis. The test measures how aggressively the person's body is producing antibodies to the spirochetes. If positive, it confirms the diagnosis of Lyme disease. If the test shows a significant level of antibodies in the blood of a person who has already been treated, it is possible that the person still harbors some spirochetes and may require additional treatment.

Johnson says that his laboratory and one at the Mayo Clinic in Rochester are the only two Minnesota sites offering the blood test for Lyme disease. He welcomes physicians to submit samples of blood and urine from patients who have contracted the disease, because they can provide useful information to the physician, as well as supplying research data that will speed evaluation of simpler diagnostic kits.

Improved diagnosis and treatment of the early and secondary stages of Lyme disease are crucial to preventing the tragically severe and enigmatic chronic effects of the disease. Several case histories illustrating those effects were presented in June by speakers at a conference sponsored by the University of Minnesota microbiology department and 3M. Allen C. Steere, M.D., professor of medicine at Yale University School of Medicine, told of a 27-year-old man who had been placed in a psychiatric hospital for three months because of severe personality changes suggestive of progressive dementia. Fortunately, a brain biopsy at Yale revealed spirochetes, and the man was treated for Lyme disease; two months later he was able to return to work.

Spread of the disease

Lyme disease first caused serious concern in the United States when an apparent outbreak of rheumatoid arthritis occurred near Old Lyme, Connecticut. But it was not until 1982 that the tick-carried spirochete was linked to the disease. Lyme disease has now been reported from more than half of the continental states.

The Lyme disease-carrying tick, *Ixodes dammini*, breeds on white-footed mice in wooded areas and adjacent grasslands. Its spread over the past decade has been linked to the proliferation of deer herds in the

states in which it is most common: New Jersey, New York, Connecticut, Rhode Island, Massachusetts, California, Oregon, Wisconsin and Minnesota.

The first Twin Cities-area ticks capable of carrying Lyme disease were recently discovered in North Oaks, a St. Paul suburb. North Oaks has the largest and most concentrated deer herd in the seven-county metropolitan area. Similar deer concentrations near communities in New England have resulted in epidemics of Lyme disease. Sixteen percent of 160 residents of Great Island, Massachusetts, tested positive for Lyme disease antibodies, and 50 percent of those individuals had symptoms of Lyme disease. Johnson and colleagues have begun working with North Oaks residents to evaluate the potential of the problem there.

Without a vaccine, the only prevention against Lyme disease is caution, says Johnson. The ticks are active in wooded areas from March through November. Wearing light clothing and long pants tucked into socks will help prevent ticks from reaching the skin before they can be removed. Insect and tick sprays for humans and tick collars for dogs may be helpful.

The Lyme disease tick is much smaller than a woodtick or dog tick. The bite is not painful, and the tick drops off after becoming engorged with the blood of its host. If a tick is found embedded in the skin, it should be gently removed by grasping it with a tweezers as close to the skin as possible. The tick should be saved in a jar and the date noted to aid in diagnosis in case symptoms develop.

In about 75 percent of infected persons, the first symptom is usually a red rash that starts at the site of the bite and grows in a circular, often ringlike pattern with central clearing. Some people develop flu-like complaints, severe fatigue and abnormal heartbeat. These symptoms will go away with or without treatment. If early symptoms do not appear, or if they are not properly diagnosed and treated, chronic symptoms may develop. These may include swollen joints, muscle pain, chronic arthritis, meningitis, neurological problems and brain disturbances.

The success with which we reverse the alarming spread of Lyme disease and prevent the severe disability it can cause depends on greater awareness on the part of the medical profession and the public, says Johnson.

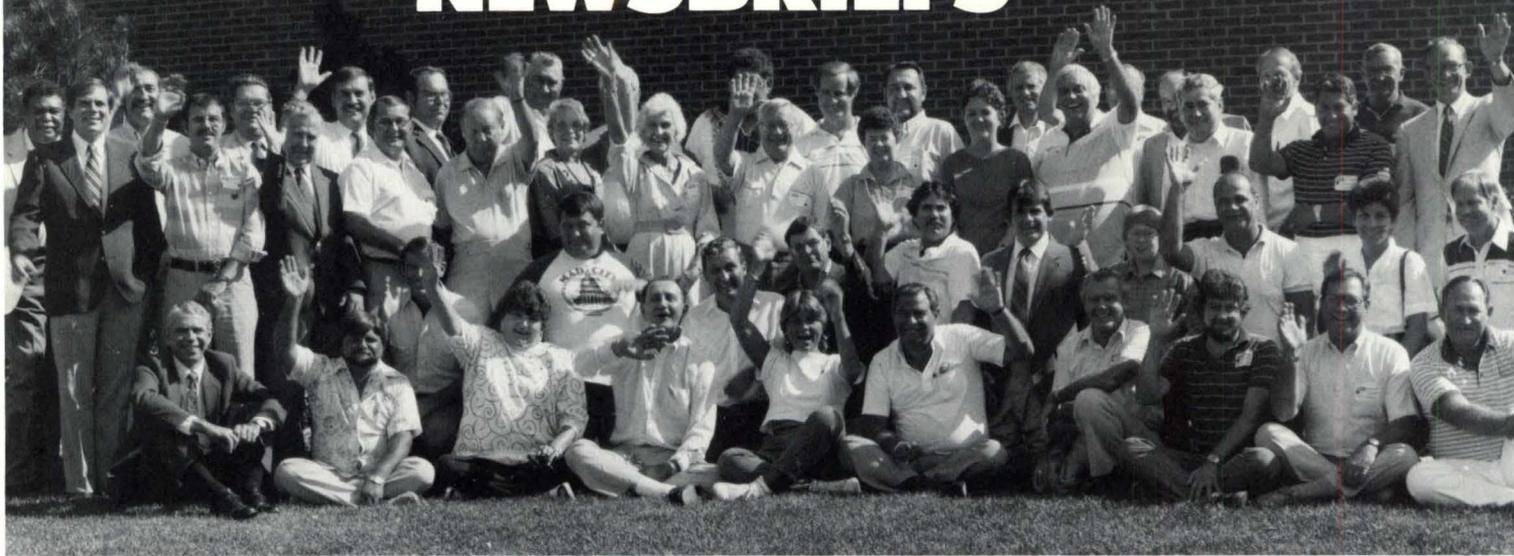
Improved diagnosis and treatment of the early and secondary stages of Lyme disease are crucial.

The *Ixodes dammini* tick in its adult, nymph and larval forms. It is considerably smaller than the common wood tick.



Michael Moore is a science writer for the University of Minnesota Office of Health Sciences Public Relations.

MEDICAL SCHOOL NEWSBRIEFS



Reunion Held For Heart Transplant

A very special reunion was held August 1 and 2—50 people who have received new hearts at the University of Minnesota Hospital gathered to compare notes, to praise their doctors and nurses, and to celebrate life.

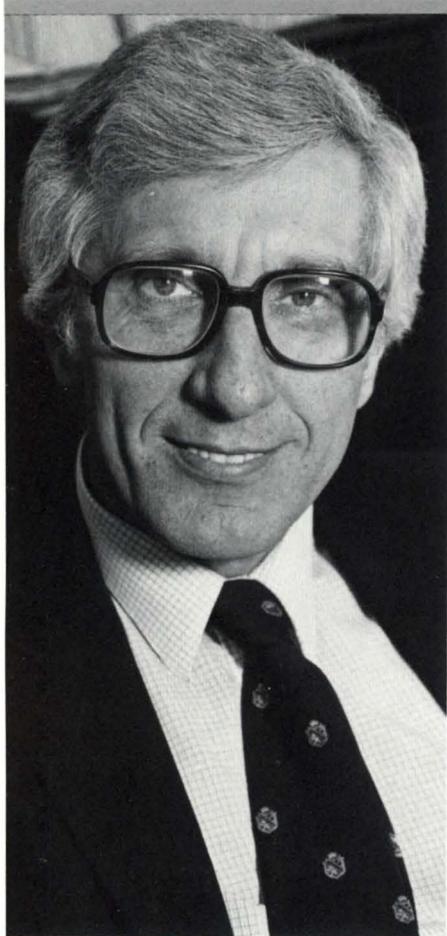
The two-day event included welcoming ceremonies, a tour of the new University Hospital, and a Twins game at the Metrodome. The first-of-its-kind celebration was held to express appreciation to both the patients and the hos-

pital staff, and to give recognition to the hospital as one of the nation's leading transplant centers.

Over 80 heart transplants have been done at University Hospital since the program began in 1978. According to transplant surgeon Dr. W. Steves Ring the success rate in the past few years is running above 90 percent, with most recipients back at work or school.

The youngest recipient at the reunion was Jamie Kocinski, 15, of Stoddard, Wisconsin, who received his new heart in July. He was accompanied by his brother Daniel, 22, who also had a heart transplant two years ago at the university. Oldest heart recipient Helen Hamm, 64, was also an active participant in the festivities. Speaking at the welcoming ceremonies she said, "I'd been active all my life until I developed congestive heart failure, and I wasn't willing to just sit there and wait for death." Hamm emphasized, "Sixty-four is only a number—it doesn't mean anything. I know people who are 30 and are 'older' than I am." Just six weeks after her surgery she was walking a mile a day and said she'd be doing much more soon.

Irv Schwartz, 51, of Omaha, Nebraska, emphasized the need for donors as he shared his comments: "I have something that money can't buy—my life, and I love, live and appreciate every minute of it. The impact of the transplant has made me keenly aware of the needs of other human beings because, of course, someone out there



Dr. Alfred F. Michael Named Regents' Professor

Dr. Alfred F. Michael, chief of nephrology and interim director of the pediatrics department at the University of Minnesota Medical School, has been named a regents' professor, the highest honor given faculty members.

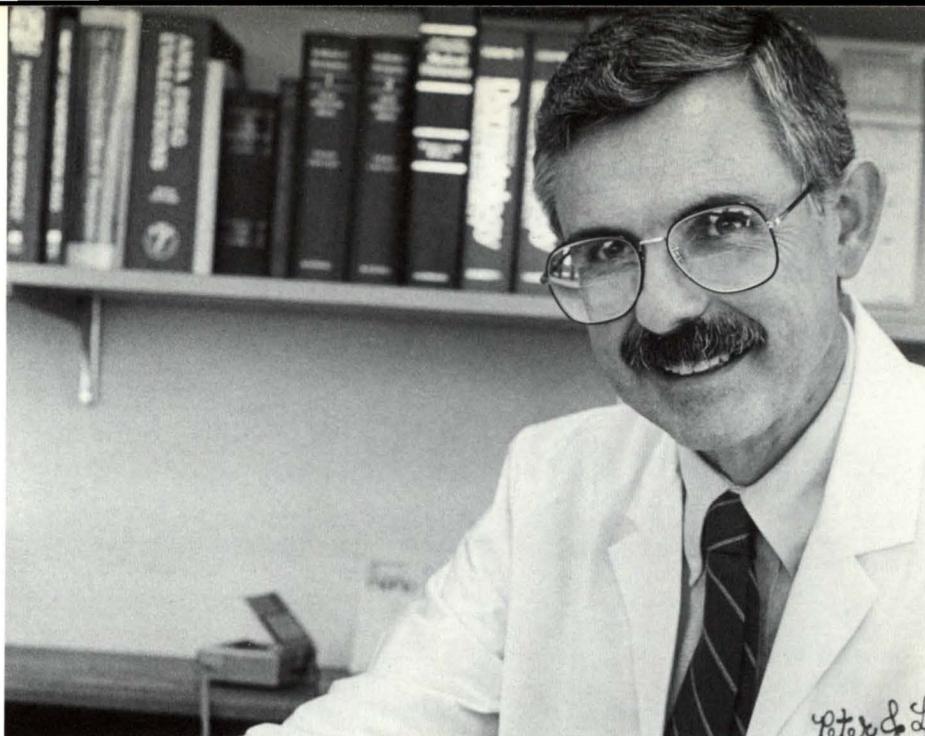
Dr. Michael joined the university in 1963 and became a leader in research of kidney disease and its treatment. He has directed research sponsored by the National Institutes of Health and the American Heart Association.

Author of more than 300 scientific articles, Dr. Michael is currently investigating the immunopathology of kidney disease. He has served as professor and chief of the medical school's immunopathology laboratory since 1979. Dr. Michael became chair of the scientific advisory board for the Viking Children's Fund, supported by the Minnesota Vikings and a major supporter of the pediatrics department research, in 1978. He was a John Simon Guggenheim Fellow and Visiting Investigator in Copenhagen, Denmark, from 1966 to 1977.

Dr. William R. Kennedy Elected To AMA Council

Dr. William R. Kennedy, professor of neurology at the University of Minnesota Medical School, has been elected to a three-year term on the Council on Scientific Affairs of the American Medical Association. Dr. Kennedy is a Fellow of the American Academy of Neurology, a 9,000-member medical specialty society headquartered in Minneapolis, and has been the Academy's delegate to the American Medical Association for six years.

The Council on Scientific Affairs is responsible for advising the AMA on all aspects of biomedical research and formulates AMA policy on scientific issues.



Dr. Peter J. Lynch Faces Challenges In Dermatology Field

Twenty-five years after graduating from the University of Minnesota Medical School, Dr. Peter J. Lynch returned this fall as head of the department of dermatology.

Dr. Lynch, 49, comes to Minnesota from the University of Arizona, where he was associate head of internal medicine and professor and chief of dermatology. A Minneapolis native, he served his residency at the University of Michigan. He was a clinical instructor in dermatology at the university from 1965 to 1966 and was on the University of Michigan's faculty from 1968 until 1973, when he went to the University of Arizona.

Dr. Lynch looks forward to a stronger investigative component being added to the teaching and clinical strengths of his department, and sees his role as primarily one of a facilitator.

"My intent is to provide an environment for the people around me to do their best work," he says.

The field of dermatology is facing both new challenges and traditional problems, according to Dr. Lynch. New challenges involve the unraveling of molecular mechanisms responsible for skin disease while old challenges remain in developing better therapies for chronic, disabling cutaneous conditions. Some specific areas of interest in the department include study of pigment and hair diseases, immunologic disorders and the exploration of the possible connection between the wart virus and some kinds of cancer.

New therapies include the use of

the laser in removing skin growths and the use of vitamin A derivatives—retanoids—in the treatment of certain diseases.

In fact, the specialty of dermatology in general is exploring with increased interest the way in which certain skin conditions may signal systemic diseases. One example is seen in the skin rashes and pigment changes that accompany graft versus host disease in bone marrow transplant patients.

"The skin may be the first sign that something is going on inside the body or may develop," Dr. Lynch explains, and understanding this relationship may in turn provide a key to understanding some of the other medical problems that develop in graft versus host diseases.

The university's expertise in bone marrow transplantation makes this an excellent place for dermatologists and other specialists to study this problem, Dr. Lynch points out.

He cites other strengths of the department to be the diagnosis and treatment of genital diseases, and a real expertise in the surgical handling of certain skin diseases, particularly in the precise microscopic evaluation of tissue samples, which results in greater success in removing skin cancer.

Dr. Lynch says he is particularly pleased to be returning to his alma mater, to a position his father, Francis Lynch, once held, and to what he says, "is one of the few institutions in the country where the administration understands the need for protecting and advancing academic excellence."

Patients

thought of my needs and donated the organs for my transplant. God bless them."

The university's first heart-lung transplant patient, Ken Jones, 37, commented that he is walking, biking and swimming, and said it was fun coming to the first reunion, "but I'll feel a lot better when I can come to the 20th."

The group had high praise for Drs. Ring, Stuart Jamieson, Maria Teresa Olivari and the entire staff at University Hospital. The special bond between the medical staff and the patients was evident throughout the two-day event, and with their new lease on life, the guests of honor went home eagerly anticipating the next reunion.

Dr. Jorge J. Yunis Honored

Dr. Jorge J. Yunis, professor of laboratory medicine and pathology in the University of Minnesota Medical School, has been named Visiting Professor of the Year at Dana-Farber Cancer Institute, Harvard Medical School, Boston. He will give a series of lectures on the biological and clinical importance of chromosomes, oncogenes and fragile sites in human cancer.

Dr. Yunis was also honored by his native Colombia during a July, 1986, symposium in Bogota. He was inducted into the Colombian Academy of Medicine and presented to a joint session of the Colombian parliament. Dr. Yunis' family has distinguished itself in Colombian politics, science and medicine.



Changing Medical Environment Seen By New OB/GYN Head

The opportunity to practice and teach in the forefront of a changing medical economy helped bring Bruce A. Work, Jr. to the University of Minnesota Medical School in May as head of the obstetrics and gynecology department.

Dr. Work, 52, was formerly professor of obstetrics and gynecology at the University of Illinois in Chicago. A 1959 graduate of the University of Michigan Medical School, Dr. Work also served his residency at Michigan and held a variety of faculty positions there from 1967 until 1980, when he went to the University of Illinois.

Dr. Work sees the 1980s as a time of rapid change for physicians and hospitals, and believes Minnesota will be in the forefront of the changing economic climate of medicine. He feels the training of new physicians must include not only the knowledge of how to care for certain illnesses, but also an awareness of how to practice in this new environment.

This presents many yet-to-be-answered questions for professors and administrators like himself. "As an example, almost every one of the doctors training today will be sued at least once in his or her career," Dr. Work points out. "How do you prepare your student—the young specialist—to practice in that kind of climate?"

Dr. Work also wonders about balancing quality education against concern over higher costs. "We, as taxpayers, generally don't want to spend money on education," he says. "We want it as cheap as possible. At

the same time, we want quality care when we are ill. How do you reconcile the two?"

Obstetrics and gynecology is a specialty that has seen some amazing successes and also faces many serious problems still to be solved. For example, 95 percent of all patients with choriocarcinoma can now be cured, Dr. Work points out. And the survival rates for ever-younger premature infants continue to increase. At the same time, there is still no screening test for ovarian cancer, AIDS poses a deadly new threat to mothers and infants, and infertility among American couples continues to challenge the specialty.

And in the face of increasing medical sophistication, there are many basic questions that remain unanswered. "What, for example, causes premature labor, and how can it be prevented?" Dr. Work asks. "What causes some babies to be too small, and how can we make them grow? And there is the whole area of reproductive physiology being explored."

One of the challenges for Dr. Work in coming to Minnesota was in planning a new obstetrics unit at the University of Minnesota. "This specialty is a constantly changing one, and it's fun to plan a new unit, because it forces us to consider what we will be doing five or ten years down the road," Dr. Work says.

In addition to his teaching duties, Dr. Work is on the editorial board of the Perinatal Press and is a special reviewer for the professional journal *Obstetrics and Gynecology*.

Dr. Lois Heller Receives Two National Institutes Of Health Grants

Dr. Lois Heller, associate professor of physiology at the University of Minnesota, Duluth (UMD) School of Medicine, has recently received two research grants from the National Institutes of Health.

The first grant is for \$172,000 over a three-year period and is entitled "Direct Determination of Cardiac Interstitial Adenosine." The grant is in collaboration with Dr. David Mohrman, associate professor of physiology at the School of Medicine.

"We have developed a technique for determining the interstitial levels of adenosine and we will examine the relationship of interstitial adenosine and cardiac function in a variety of physiological conditions," Heller said.

The second grant is for \$167,000 over a three-year period and is entitled "Adenosine Modulation of Cardiac Anaphylaxis." This grant is in collaboration with Dr. Jean Regal, associate professor of pharmacology at the School of Medicine.

"Cardiac function is adversely affected during a severe allergic attack. Heart rate increases, contractile force ultimately decreases, blood flow to the heart muscle decreases and irregularities of heart beat occur. During this episode, a substance called adenosine is released from the heart. This substance is a metabolic product of the energy-supplying ATP molecules and has important effects upon the heart that could either protect the heart or increase the damage. The proposed studies will determine what role adenosine plays in modulating this allergic (anaphylactic) reaction," Heller said.



Chinese Herbal Medicine Improves Oxygen Delivery To Tissues

Thanks to a rare collaboration between a Chinese physiologist and an American cardiologist, a Chinese herbal medicine which has shown the potential for preventing damage from reduced blood flow to tissues may turn out to be an invaluable gift from East to West.

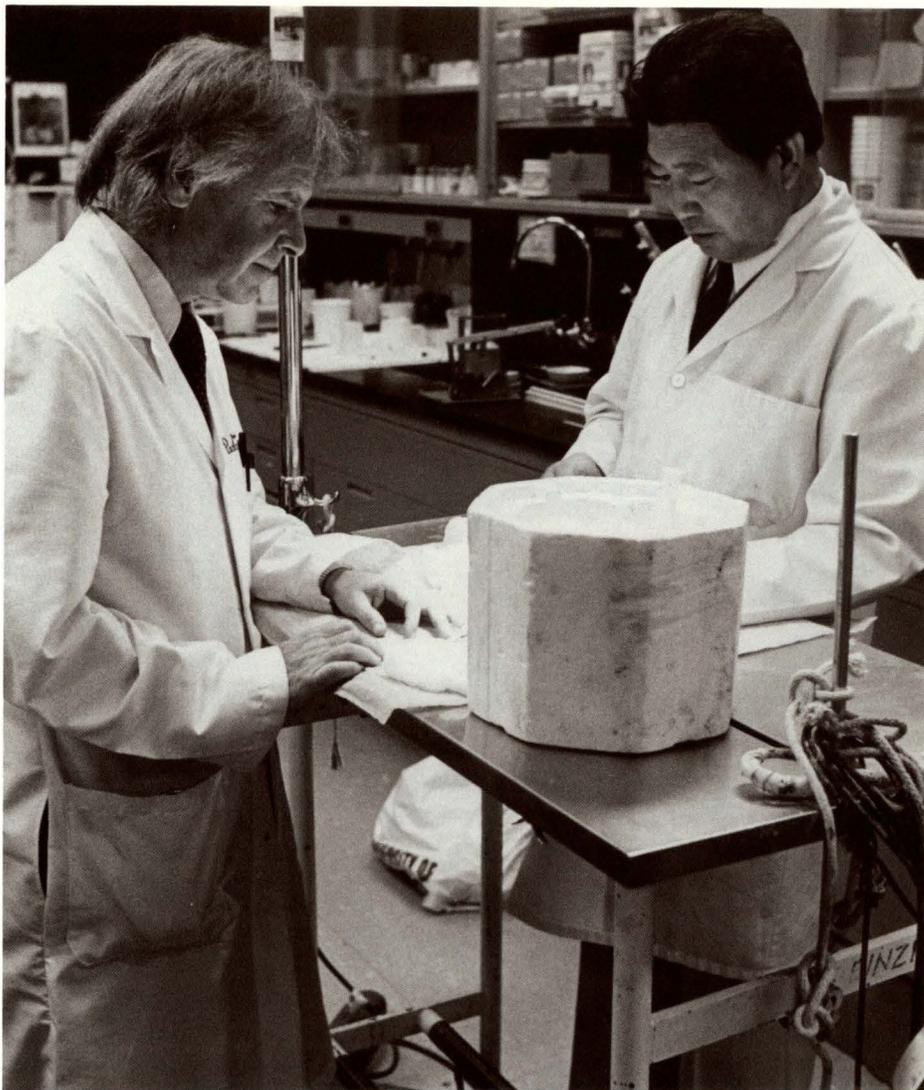
The herbal medicine was originally obtained from a plant that grows only in the Chinese mountains near Tibet. Its active ingredient, anisodamine, has been synthesized and is widely used to treat various states of shock in China, the only country in which it is used.

Chinese medical workers and Dr. Shu-Lun Zhang, director of the laboratory of microcirculation at the Capital Institute of Pediatrics in Beijing, China, have already seen the clinical value of anisodamine. In China, it has reduced mortality from meningitis from 67 to 12 percent, and from 25 percent to 1 percent from toxic dysentery. For his work in microcirculation and oxygen transportation to tissues, Dr. Zhang has received several scientific achievement awards from the Chinese Academy of Medical Sciences and was named "Model Medical Science Worker" in 1985.

Similar research on tissue oxygenation was being conducted simultaneously at the university by Dr. Stanley Einzig, associate professor of pediatric cardiology. Dr. Einzig uses a technique to measure tissue blood flow in which microspheres—tiny beads slightly larger than red blood cells—are tagged with radioactive isotopes. The oxygen content of blood is measured, and the amount of oxygen that has been carried by blood flow to a specific area of the body is determined.

Dr. Zhang's sister visited Dr. Einzig in 1984 while she was a research associate in the university's oncology department. She suggested that the techniques used in Dr. Einzig's laboratory would be ideal for investigating Dr. Zhang's use of anisodamine. With support from the Women of Variety, Dr. Zhang was offered a two-year position as visiting professor of pediatric cardiology at the university's Variety Club Cardiovascular Research Center.

The first year of that collaboration has yielded data on anisodamine's effects and possible applications. Dr. Zhang presented some of these results at the annual meeting of the Society for Pediatric Research in Washington, D.C., in May.



Dr. Stanley Einzig and Dr. Shu-Lun Zhang

In one research project, Drs. Zhang, Einzig and colleagues used the microsphere technique to test the hypothesis that anisodamine's therapeutic benefits were related to reversal of hypoxia, a deficiency of oxygen reaching body tissues. Five lambs were studied in five different physiologic states each: during normal breathing, after 15 minutes of breathing a reduced-oxygen mixture to induce hypoxia, after 30 minutes of recovery from hypoxia, 10 minutes after receiving anisodamine and 15 minutes after receiving anisodamine and breathing reduced-oxygen air. Each lamb served as its own control for the study, and none appeared harmed by the treatments.

The study shows that anisodamine does improve blood flow and oxygen delivery to certain tissues during hypoxia, the doctors said. "It is especially effective in increasing oxygen to the heart, brain and gut, which suggests that it may be effective in reducing damage from a heart attack or other causes of reduced blood flow to vital

organs," said Dr. Einzig.

No similarly acting drug is available in the United States.

The researchers' experiments show that anisodamine can even increase blood flow above normal in some tissues. This was especially evident in capillaries of the pancreas and retina, which are especially susceptible to damage from diabetes.

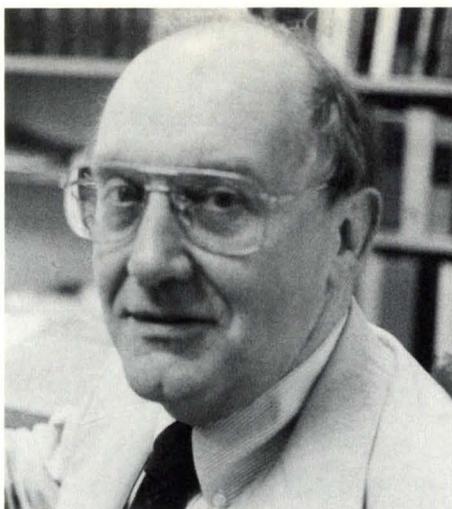
"I hope that anisodamine will be studied as a treatment for diabetes, especially for diabetic retinopathy," Dr. Zhang said. Diabetic retinopathy, damage to retinal capillaries, is a major cause of blindness.

Drs. Zhang and Einzig are willing to let others pursue the possible medical applications of anisodamine; they are now collaborating on more basic research and have turned their attention to studying oxygen free radicals, which are unstable molecules involved in oxygen metabolism. They hope to find clues to explain tissue damage when oxygen metabolism is impaired.

Dr. Harry Hogenkamp Receives U.S. Senior Scientist Award

Dr. Harry Hogenkamp, head of the department of biochemistry, University of Minnesota Medical School, is the recipient of an Alexander von Humboldt Foundation Senior U.S. Scientist Award from the Federal Republic of Germany.

Dr. Hogenkamp left September 1 to spend a sabbatical year with Professors Follmann and Thauer of the Phillips Universitat in Marburg, West Germany. During this year he plans to study the ribonucleotide reductase system in the archaeobacterium *Methanobacterium thermoautotrophicum*.



University Participating In Major Heart Disease Study

A study to determine whether drug intervention can prevent heart failure and the progression of heart disease in people with decreased heart function has begun at the University of Minnesota and 23 other medical centers worldwide.

The study, sponsored by the National Heart, Lung and Blood Institute, is examining the effect of drug treatment on left ventricular dysfunction in people who have decreased heart function but don't yet have symptoms of heart failure, said Dr. Jay N. Cohn, professor of medicine and head of cardiology at the university. Dr. Cohn is directing the study.

Patients include individuals who have had high blood pressure for a long time, people who have had heart attacks and recovered, and individuals who have been found to have enlarged hearts during routine physicals.

Patients are divided into two groups. One group is given a placebo and the other a drug called enalapril, an angiotensin-converting enzyme inhibitor. This is a relatively new type of vasodilator, which encourages blood vessel dilation when tightening of the blood vessels occurs. Such tightening can put an unnecessary burden on the heart and hasten heart failure. The drug has been very effective in some people with heart disease and hypertension and has also been used with some success in those already afflicted with heart failure.

Study participants take either the placebo or enalapril at home and will be monitored for heart failure development or worsening heart failure for up to five years. Patients also continue to see their private physicians during the study.

"This study is probably the largest study ever undertaken by the National Heart, Lung and Blood Institute and is very important because we already know that drugs can help patients already symptomatic for heart failure," Cohn said.

The Veterans Administration Medical Center, St. Paul Ramsey Medical Center, Hennepin County Medical Center, Park Nicollet Medical Center, Mount Sinai Hospital and the Minneapolis Heart Clinic are also participating in the study.

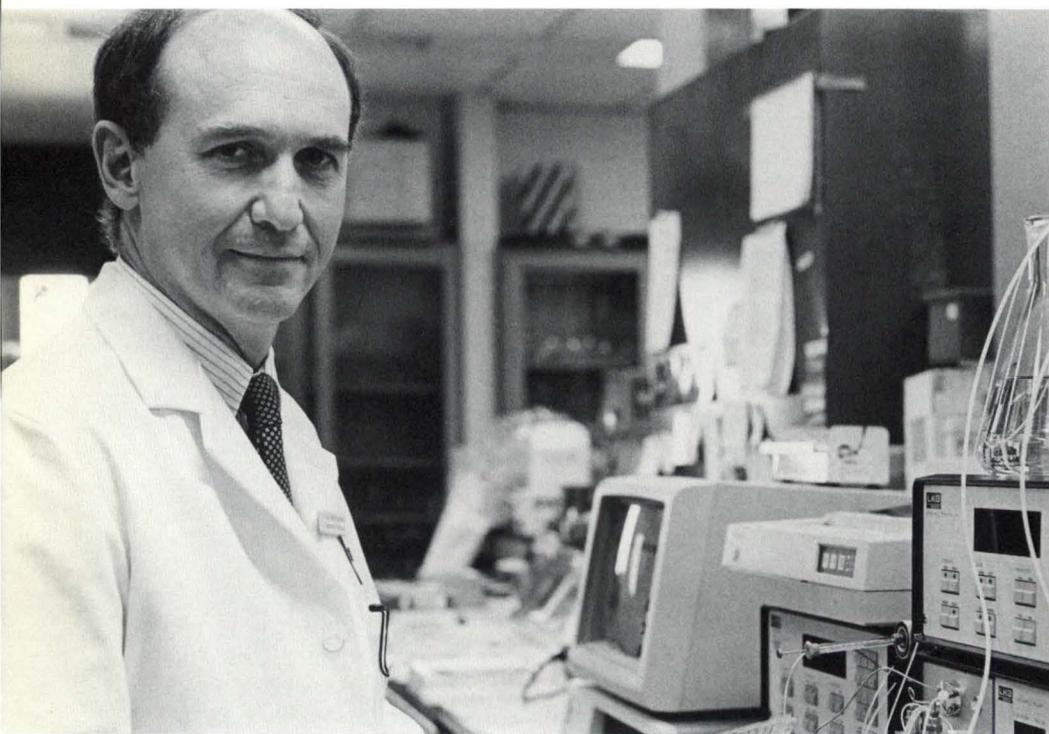
Dr. Paul Robertson Named To Head Diabetes And Clinical Research Centers

Dr. R. Paul Robertson has joined the department of medicine as director of the new Diabetes Center and Clinical Research Center. He comes to the University of Minnesota from the University of Colorado, where he was director of the Clinical Research Center. Prior to that he was professor of medicine and pharmacology at the University of Washington.

In an additional announcement, Dr. Robertson has been appointed editor of *Diabetes*, the journal of the American Diabetes Association, which will

be published in Minneapolis for the next five years. The publication receives 6,000 to 7,000 submissions each year, with 45 percent coming from Europe.

Dr. Robertson plans to develop a program of consensus with the university physicians already involved in diabetes study, emphasizing patient care and research related to patient care. "We will build on the excellent program that is already here," says Dr. Robertson, "with a new orchestration to make the public aware of our capabilities."



Immune System Impaired By Lack Of Copper

Copper, only recently added to the National Research Council's list of nutritional Recommended Daily Allowances (RDA), is now thought to be another powerful component in the body's fight against disease.

Conversely, researchers at the University of Minnesota, Duluth (UMD) School of Medicine, have shown that mice marginally deficient in dietary copper have an impairment of the immune response. The results of that study appeared recently in *Science*.



Joseph Prohaska

"The immune system of copper-deficient mice is much impaired," says Joseph Prohaska, associate professor of biochemistry, and Omelan Lukasewycz, assistant dean of curricular affairs and associate professor of medical microbiology and immunology.

The two researchers think the findings have an application to human health, particularly in developing infants. "Copper is most important in the development stage. During the last trimester of pregnancy, copper is transferred from mother to child. The real problem occurs in premature births, before this transfer occurs, since copper is very low in breast milk and a baby has no reserve," they point out.

Prohaska and Lukasewycz have just received a \$418,241 grant from the National Institutes of Health's (NIH) National Institute of Child Health and Human Development to find out when, during development, copper is involved in the immune system. They also hope to determine precisely what copper

does on the molecular level. The title of the grant is "Nutritional Copper Deficiency and the Immune Response."

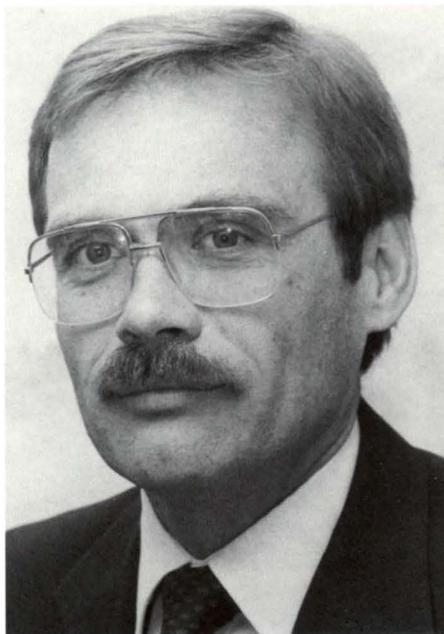
Menkes' disease, a relatively rare genetic disease, occurs among infants who cannot absorb copper. "These children cannot live past two years of age. It's the most dramatic evidence we have for copper being essential," Prohaska says.

Copper is clearly important in the developing brain, the researchers say. The damage is not reversible if copper is depleted while cells are being laid down during development.

Copper deficiency has not received a lot of attention, they say, because it is difficult to diagnose. One of the first symptoms is anemia. If anemia is not corrected by an iron supplement, copper deficiency should be suspected, particularly if there is also a decrease in white blood cells. "If this combination occurs, it should indicate to a physician that a copper-level test is needed. If positive, the person should be given a copper supplement."

As part of their research, Prohaska and Lukasewycz hope to develop a test for marginal copper deficiency, a test presently lacking in the clinical community. "Right now, we don't have a scientific test for copper deficiency. We can tell that the immune system is down—but not why."

The researchers do point out, however, that it is tough to be deficient in just copper. "A person is rarely deficient in just one nutrient. We all need a well-balanced diet."



Omelan Lukasewycz

Enzyme Production Restored With Bone Marrow Transplants

Doctors at the University of Minnesota's Variety Club Children's Hospital have successfully used bone marrow transplants to treat a group of genetic enzyme deficiency diseases, some of which can cause progressive mental retardation.

Known as lysosomal storage diseases, the approximately 30 disorders are caused by the lack of one of the enzymes that every cell needs to break down and recycle excess cellular material.

"If genetic engineering is going to work, it (enzyme replacement) first has to work in bone marrow transplantation, because that is most likely to be the procedure by which genes will be transplanted," said pediatrics professor Dr. William Krivit.

Dr. Krivit visited England in 1983 to see children who had received bone marrow transplantation for these diseases. He returned this June to visit two of those children, who were treated five years ago for Hurler syndrome. They are now 6 years old, have IQs over 100, are doing well in developmental tests and are attending school.

This is especially encouraging because progressive mental retardation is one of the hallmarks of Hurler syndrome. Whether restoring enzyme production could normalize cells in the brain and thereby prevent the mental deterioration caused by the disease had been unclear. The British experience—plus data gathered at the university showing that levels of abnormal storage material remain low in cerebrospinal fluid of Hurler patients after bone marrow transplantation—is an optimistic sign for the children's long-term health, said Dr. Chester B. Whitley, a geneticist and assistant professor in pediatrics and at the university's Dight Laboratories.

The university's pediatric bone marrow transplant team, headed by professors Norma K.C. Ramsay and John H. Kersey, has treated 10 patients with lysosomal storage diseases—the most of any U.S. center.

Blindness Research Grant Received

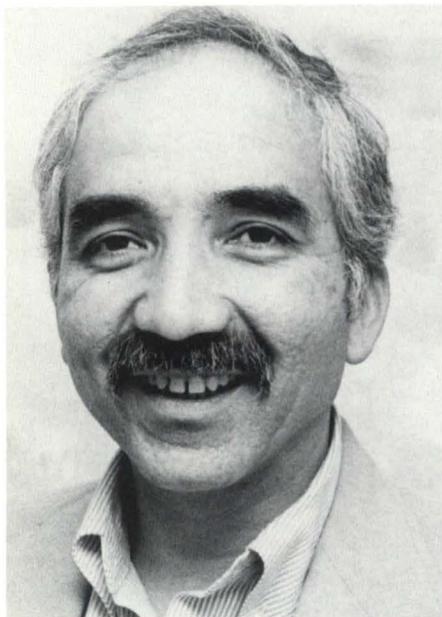
Research to Prevent Blindness (RPB) has granted \$30,000 to the University of Minnesota's ophthalmology department to support research into the causes, treatment and prevention of blinding diseases.

"We can't emphasize enough the importance of these grants," said Donald J. Doughman, ophthalmology

chair at the university. "They provide freedom for our scientists and their impact is felt at every level of our research program. We've received \$288,000 from RPB over the past 27 years, and this year's award is 20 percent greater than last year's. This type of support is especially welcome now during these times of federal budget cuts."

RPB is the world's leading voluntary organization supporting vision research. It has given more than \$60 million to promote research on the eye and its many diseases. Grants are made annually to more than 50 ophthalmology departments nationwide to assure the continued progress and vitality of eye research.

Dr. Robert Pozos Receives Grants To Study Hypothermia



Dr. Robert Pozos, associate professor and head of the physiology department at the University of Minnesota, Duluth (UMD) School of Medicine, has received two grants for research into hypothermia.

The first grant is funded by the Office of Naval Research (ONR). The title of the grant is "Hypothermia Studies in Human Subjects." The one-year grant of \$60,000 is the third year of five that the research has been funded. Co-investigator in this research is Dr. Edward Stauffer, UMD School of Medicine associate professor of physiology.

The second grant is funded by the United States Coast Guard and the title is "Effects of Various Stressors in Temperature Regulations on Human Subjects." This is also a \$60,000 grant and is the second year of the two-year funding. Co-investigators in this funding are Lorentz Wittmers, School of Medicine associate professor of physiology, and Richard Hoffman, School of Medicine assistant professor of behavioral sciences.

Heart-Lung Institute Co-Director Named

Dr. Carl W. White, formerly professor of medicine at the University of Iowa, has been named co-director of the University of Minnesota Heart and Lung Institute. White was also named director of clinical cardiology services and director of the heart catheterization laboratory at the university.

"This is an exciting time to join a dynamic group of physicians and scientists in their quest for pre-eminence in treatment and research in cardiovascular diseases," said White. "I look forward to helping the University of Minnesota Heart and Lung Institute achieve its goal as one of the premier centers for cardiovascular disease treatment in the country."

A 1964 University of Nebraska

Medical School graduate, White completed his internship at the University of Oregon and his residency at the University of Iowa. He stayed at Iowa until accepting the Minnesota job. White became an assistant professor in 1973, an associate professor in 1978 and a professor in 1986. He was director of the coronary care unit at the Veterans Administration Hospital in Iowa City from 1976 to 1981. He directed the Heart Catheterization Laboratory and Interventional Cardiology Service at Iowa from 1978 to 1986.

White has written numerous scientific publications and is a reviewer for the *New England Journal of Medicine* and the *American Journal of Cardiology*.

Max Seham Student Award Announced

The department of pediatrics has announced the Max Seham Student Award, conceived by the Max Seham Committee to enhance the sensitivity of medical students to needs of the underprivileged for medical care.

Dr. Max Seham was a beloved physician and pediatrician who practiced in Minneapolis. He had concerns about society in general and about the needs of the underprivileged for medical care. At the time of his death a fund was established from contributions in his honor.

The committee has recommended that any student in any year from the University of Minnesota Medical School or Mayo Medical School should be eligible. The award will be \$500.

The criteria for selection will follow a definition of social medicine: "Organized investigation of social, genetic or environmental factors influencing human disease or disability or promotion of methods of prevention of disease or health measures protective of individual and community."

Examples of commitment to activities of social medicine could include: volunteer work in a clinic or related research experience setting (Indian reservation) for an extended period of time, tutoring disadvantaged medical or undergraduate students, or development of excellence in areas of ethics, law or organizational medicine concerning the social welfare of disadvantaged children (relating to poverty or child abuse).

Application forms are available from the secretary to the Max Seham Committee of the department of pediatrics.



Research Grants Given To Medical School Faculty

The University of Minnesota Medical School is among the national leaders in the number of principal investigators (the lead investigators on grants) and in the amount of

outside funded research expenditures per faculty member. Following are some of the recipients of new grants.

Department	Principal Investigator	Grant Agency Amount	Research Project
Biochemistry	Birmachu, Woubalem	Minnesota Heart Association \$23,500	Spectroscopic Studies of the Cardiac Calcium Transport System
Laboratory Medicine and Pathology	Tsai, Michael Y.	Minnesota Heart Foundation \$18,270	Patent Ductus Arteriosus and Drugs Used in Pregnancy
	Bach, Marilyn	Minnesota Department of Energy and Economic Development \$37,000	Professional Services Contract
	Butkowski, Ralph	National Kidney Foundation of the Upper Midwest, Inc. \$1,700	Characterization of the Target Antigen Involved in an Autoimmune Renal Disease
Medicine	Homans, David C.	Minnesota Heart Association \$24,000	Transmural Variations in Function of Ischemic Myocardium
	Robertson, R. Paul	National Institute of Arthritis Disability and Diagnosis and Kidney Disease \$80,230	PGE Receptor—Liver and Fat Metabolism
	Hunninghake, Donald	Boehringer Ingelheim Limited \$31,796	Reflotron Cholesterol Screening
	Meryhew, Nancy L.	Lupus Foundation of America \$3,000	Immune Complex—RBC Binding Rate and Equilibrium Studies in SLE
	Thomas, Thekkumkatil	Arthritis Foundation \$72,000	Molecular Aspects of the Production of Antinuclear Antibodies
Microbiology	Bohach, Gregory A.	Minnesota Heart Association \$17,500	Molecular Analysis of Bacterial Pyrogenic Toxins
Otolaryngology	Berlinger, Norman T.	American Otological Society, Inc. \$17,724	Osteoinduction in the Feline Middle Ear Using Demineralized Bone Matrix
Pediatrics	Klein, David	American Diabetes Association - Minnesota Affiliate \$4,500	Beta Cell Function, Glucose Disposal, PICA in Cystic Fibrosis
Psychiatry	Halikas, James	Eli Lilly and Company \$160,200	Tomaxetine/Placebo Fixed Dose Depression
Surgery	Lillehei, Theodore J.	Minnesota Heart Association \$17,500	Ventricular Function During Cardiac Allograft Rejection

MMF REPORT

Tierza Wiese awarded \$10,000 Medtronic Fellowship

Tierza Maria Wiese has been selected as the 1986 recipient of the Medtronic Fellowship. She is the third recipient of the \$10,000 award, offered to high-ability Minnesota minority students to encourage their matriculation at the University of Minnesota Medical Schools.

The Medtronic Foundation, the charitable arm of Medtronic, Inc., established the Medtronic Fellows Program three years ago through the Minnesota Medical Foundation.

It is hoped the Medtronic gift will influence other corporations and foundations to increase their support of scholarships. The University of Minnesota Medical Schools need scholarship support to ease the ever-increasing financial burdens incurred by medical students and to gain the competitive edge in recruiting high-ability minority students to the medical profession.



Tierza's mother was born in Ecuador and raised in Panama. Tierza was a League of United Latin American Citizens scholar during her undergraduate years at Carleton College in Northfield.

She has not yet selected a specialty, but is interested in family practice with a special concern about medical care for the elderly. "With the growing older population, more and more physicians will be needed to serve that group," says Tierza. "As a young person participating in Scouts and church activities, I always enjoyed the contact with the elderly that came through nursing home visits and other events."

Tierza feels it is becoming increasingly more difficult for medical students to find funds to help finance their educations. She is delighted with the scholarship and very thankful to all those involved in her selection.

UMD Awards Announced

Jean Regal, Duluth School of Medicine associate professor of pharmacology, has been named UMD School of Medicine Basic Science Teacher of the Year.



Named as Clinical Science Teacher of the Year was **Thomas Elliott**, an oncology and hematology physician with the Duluth Clinic and associate professor of clinical medicine at the UMD School of Medicine.

The winners received checks for \$500 each from the Minnesota Medical Foundation.

In addition to the Teacher-of-the-Year awards, the following student awards were also presented: Reino Puumala Award to the Student Who Best Exemplifies the Characteristics of the Family Physician, **Joel Zamzow**, St. Cloud; Memorial Award to the Student Who Best Exemplifies Care and Concern for Others, **Todd Dehli**, Montevideo; Herbert Lampson Award for Outstanding Contribution to the Class and School by a Female Medical Student, **Dawn Schissel**, Brainerd; Upjohn Award for Excellence in Microbiology and Immunology, **John Erie**, Crookston; and Outstanding Student in Pharmacology Award, **Jeff Balke**, Hutchinson.

Medical School Awarded \$1.35 Million

Dr. Lester R. Drewes, UMD School of Medicine associate professor of biochemistry and associate director of UMD's newly-formed Chemical Toxicology Research Center, has been notified

that funds totalling \$1,353,989 will be awarded over the next four years to support studies of "Metabolism, Seizures and Blood Flow in Brain Following Organophosphate Exposure: Mechanisms of Action and Possible Therapeutic Agents."

The research is funded by the U.S. Army Medical Research and Development Command. It is the largest research funding award ever received at the medical school.

With the award, Dr. Drewes will investigate the effect of organophosphates on the biochemistry of the brain and evaluate selected, potentially therapeutic drugs. Organophosphates form a large group of compounds. Since World War II, more than 50,000 different organophosphates have been manufactured, primarily as pesticides and insecticides.

Some 2.3 billion pounds of pesticides are sold to U.S. farmers each year. And, each year, as many as 313,000 farm workers suffer the effects of pesticide-related illnesses, according to a 1985 study by the World Resources Institute. Organophosphates act on the body's central nervous system. They can cause permanent brain damage and even death. Acute, accidental overexposure to these compounds is not an uncommon occurrence.

The group of organophosphates of particular concern to the military is sometimes referred to as nerve gas. In the event that U.S. soldiers or civilians were ever exposed to such agents, government and medical officials need to know how to counter the drug's toxic effects, Dr. Drewes says.

Besides the potential benefits of the research for agricultural workers and military personnel, the research may also have significant relevance to an understanding of the mechanisms that underlie epilepsy, Alzheimer's Disease, and other diseases of the central nervous system, Dr. Drewes says.

"What we learn about the brain, about seizure metabolism, neurotransmitters, and cerebral blood flow regulation, are of universal importance to human health," he points out.

Back in 1976, Dr. Lester Drewes received a grant of approximately \$6,000 from the Minnesota Medical Foundation to help him get started in his research program.

Minnesota Campaign Tally

Minneapolis philanthropist Jay Phillips, a longtime friend of the University of Minnesota, has donated \$1 million to the medical school for endowment of the Jay Phillips Chair in Surgery. Dr. John Najarian, Regents' Professor and head of surgery, will be the chair's first holder.

The Cargill Foundation has announced a \$1 million gift to the university. Of that gift, \$400,000 will go to the medical school. The gift will be specified at a later date, and will be directed toward the medical school priorities established by Dean David Brown.

The gift is part of Cargill Inc.'s continued commitment to the university. Stressing the

importance of private support of public institutions, Gordy Alexander, president of the Cargill Foundation, stated, "As president of the Cargill Foundation and as a graduate of the University of Minnesota in 1941, I take double pleasure in being involved with this pledge to the university. The foundation has long realized that private financial support is of critical importance if this great institution is to continue to maintain its position of leadership."

Since January, 1985, all gifts made to the university have been counted toward the \$300 million Minnesota Campaign goal. As of July 16, 1986, \$139.5 million had been tallied.

MMF Approves \$133,480 In Research Grants

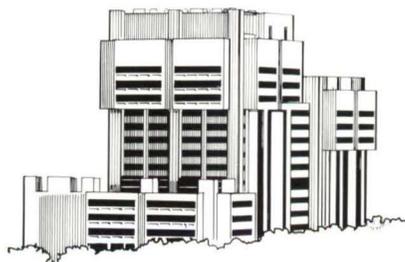
The Minnesota Medical Foundation Board of Trustees approved \$133,480 in research grants at its summer quarterly meeting. The amount includes \$54,500 in faculty research grants, \$15,300 in student research grants, and \$63,680 in special grants for research equipment and salary support.

Faculty grants include: **Anthony G. Bottini**, neurosurgery, \$4,900 to study the use of hyperbaric oxygen in limiting infarct size in experimental stroke; **Jeffrey R. Crass**, radiology, \$1,600 for research into computer modeling of chest radiographs from CT images; **Laurie S. Fouser**, pediatric nephrology, \$3,500 for evaluation of the hypothalamic-pituitary-gonadal axis in young children with chronic renal failure; **David W. Hunter**, diagnostic radiology, \$500 to study radiographic/anatomical relationships in the inguinal region; **William B. Kinlaw**, medicine, \$7,000 for equipment and supplies to research localization and characterization of a thyroid hormone responsive protein in rat liver; **Philip McGlave**, medicine, \$4,000 to research removal of malignant cells from bone marrow of patients with chronic myelogenous leukemia in vitro; **Lillian A. Repesh**, biomedical anatomy (UMD), \$7,500 to study generation of monoclonal antibodies which prevent the adhesion of tumor cells to endothelial cells; **Miriam Segall**, lab medicine/pathology, \$7,500

for pilot study of immunologic consequences of immunization in habitual spontaneous abortion of unknown etiology; **Coleman Smith**, medicine, \$7,000 to study duck hepatitis B animal model for human hepatitis B; **David M. Steinhorn**, pediatrics, \$2,500 for classification of physiologic stress in infants; **Daniel A. Vallera**, therapeutic radiology and lab medicine/pathology, \$5,000 in salaries for in vivo use of immunotoxins in human bone marrow transplantation; and **Keith Willard**, lab medicine/pathology (VA Hospital), \$3,500 for supplies and reagents to study mechanisms of cephalosporin resistance in both inducible and non-inducible gram negative rods.

Student grants include: **Tracy Fuchs**, year 3, \$600 to study nuclear uptake of 1-25-dihydroxyvitamin D3 in activated peripheral blood lymphocytes from children and adults with alopecia areata and normal controls; **Paul Goering**, year 3, \$600 to research invasive mycoses in leukemia and

bone marrow transplant patients; **Jessica Heiring**, year 3, \$800 for longitudinal study of outcome in patients with primary dementia; **Grace Heitsch**, year 4, \$1,200 for survey of student learning preferences; **Donald Klippenstein**, year 3, \$1,200 for radiopharmaceuticals in position emission tomography; **Peter R. Loewenson**, year 3, \$1,200 to study effects of hyperglycemia on the covalent binding reaction of the third component of human complement; **Cary H. Mielke**, year 3, \$1,200 for an age, sex and curve matched analysis of methods of surgical correction of adolescent idiopathic scoliosis; **Jane C. Pederson**, year 3, \$1,200 for porphyrin and bile pigment studies, with special reference to gastrointestinal bleeding; **Julee Richards**, year 4, \$1,200 to research thermogenic mechanisms and dietary manipulations in experimental obesity; **Robert M. Roach**, year 3, \$1,200 for optical imaging of cerebellar neuronal activity; **Tami Sellman**, year 3, \$700 to study the effects of hypoxia on human organ cultured corneas; **Lorie Skibness**, year 4, \$900 to research melanocytotoxicity and IgA deficiency; **Jacqueline A. Tessen**, year 3, \$1,200 for the study of the chromosomes of human sperm using the hamster ova test; and **Cynthia Wetmore**, year 1, \$900 to study improved maternity/family planning care for Hmong women.

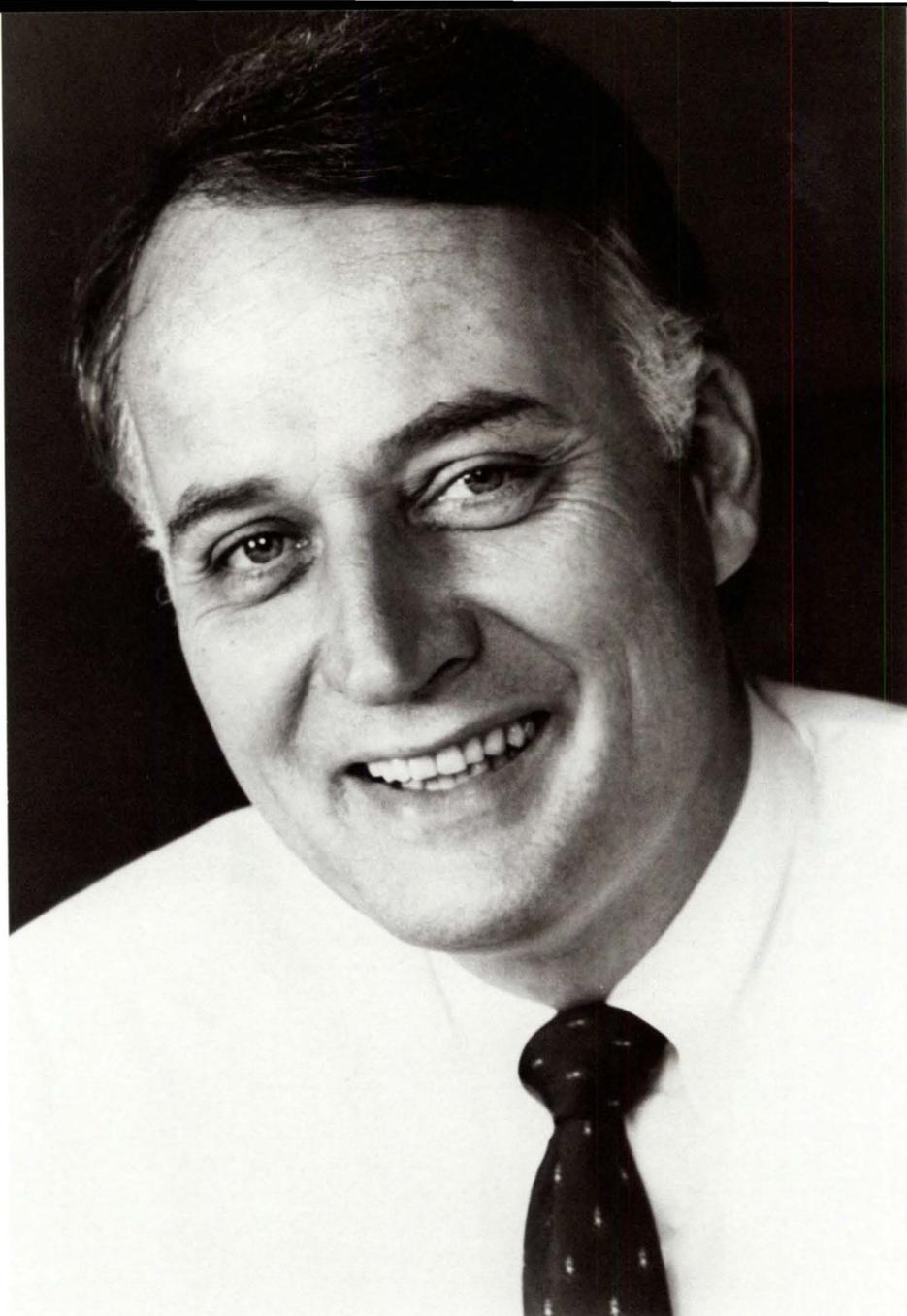


Durenberger To Speak At MMF Annual Meeting

The Minnesota Medical Foundation will hold its Annual Meeting on October 21, 1986, at the Town and Country Club, St. Paul. Featured speaker will be Sen. Dave Durenberger. He will address the subject of "Government and Medicine: Their Changing Environment."

Dave Durenberger was elected to the U.S. Senate in 1978. The 99th Congress is Durenberger's fourth term on the Finance Committee, where he chairs the Health Subcommittee. Sen. Durenberger has led the drive to improve the nation's health care system through increased efficiency, competition and consumer choice, as well as more comprehensive preventative care.

He was instrumental in adoption of the Medicare "prospective payment" system, which encourages efficiency in hospitals by reimbursing them for Medicare patients based on a preset fee. He also worked for implementation of the new Medicare "voucher" program that allows senior citizens to trade traditional Medicare coverage



for a private health plan. And he has authored legislation to provide incentives for Americans to have good health habits to discourage preventable illnesses.

Sen. Durenberger is currently working on a book concerning health policy reform. He has been honored with

awards from numerous organizations, including the American Hospital Association, the Minnesota Hospital Association, and the National Association of Children's Hospitals.

For more information on the Annual Meeting, call the Minnesota Medical Foundation, 625-1440.

MMF Teaching Awards For 1986 Announced

The Minnesota Medical Foundation presents \$1,000 cash awards each year to medical school faculty members who have been selected for this distinction by the medical students. Distinguished Teaching Awards for 1986 go to **Dr. Morris Smithberg**, professor, anatomy, University of Minnesota, elected by first year students; **Dr. Morris Davidman**, associate professor,

medicine, University of Minnesota, elected by second year students; **Dr. Susan Fuhrman**, assistant professor, laboratory medicine/pathology, Mt. Sinai, and **Dr. Tracy Steeper**, instructor, laboratory medicine/pathology, Mt. Sinai, elected by third and fourth year students.

In two new awards, **Dr. Barbara Armstrong**, surgical pathology fellow,

laboratory medicine/pathology, University of Minnesota, was elected by third and fourth year students in the resident category, and **Dr. Charles Moldow**, chief, department of medicine, VA Hospital, was selected from nominations by members of the medical school community as Outstanding Teacher of 1986.



MMF HIGHLIGHTS

Fiscal year 1986 was a time of tremendous growth and expansion for the Minnesota Medical Foundation—a growth that comes in response to urgent needs for funds for medical education and research at the University of Minnesota Medical Schools. Some highlights include:

- \$8.4 million was received in private support, an 80 percent increase over 1985.
- \$9.4 million was received in new expectancies (planned gift commitments and pledges).
- Over \$7 million was distributed on behalf of the medical schools for student and faculty research projects, student aid, awards and other related programs.
- MMF became a full participant in the Minnesota Campaign, which has a goal of raising \$300,000,000 for the University of Minnesota, including \$40,000,000 for the medical schools.

Students Selected For Zagaria Fellowships

Each year the Zagaria Fellowships provide talented students with the opportunity to broaden their experience in medical research. For 1986, **Grace Jiang Goggin** has been awarded the oncology fellowship of \$1,200. She will study the long-term psycho-social sequelae of childhood leukemia and its treatment under the supervision of Dr. Leslie Robison in the department of pediatrics, oncology division.

Stacy F. Davis has been selected for the cardiology award of \$1,200. She will develop an educational computer-based program for teaching cardiac auscultation under the supervision of Dr. James H. Moller in the department of medicine, cardiac division.

Beat the tax reform bill! Unlock your capital gains before December 30! With an MMF trust that pays you an income for life!

The closing weeks of 1986 offer an extremely favorable tax environment for you to help yourself—and help programs supported by the Minnesota Medical Foundation.

Now is the time to consider transferring appreciated securities or real estate to the Minnesota Medical Foundation in exchange for an income for life for you and/or your spouse.

Why now? Because current tax laws greatly favor gifts of appreciated property. These gifts are fully deductible, avoid capital gains tax and are not subject to the Alternative Minimum Tax. After January 1 appreciated gifts will still avoid capital gains tax but very likely will be subject to the stringent requirements of the minimum tax.

You can establish a "Life Income Trust" in the remaining weeks by transferring stock or real estate to the Minnesota Medical Foundation.

- *Your life income will be based on the full market value of the gift*
- *The income paid to you and/or your spouse will be tax favored*
- *Even though you receive an income for life, you will be entitled to a substantial 1986 Charitable Contribution Deduction against this year's higher tax bracket*
- *You can designate your gift for any specific purpose that serves the University of Minnesota Medical Schools*

If you would like to *unlock* your capital gains by converting appreciated assets into a substantial life income, please let us know.

Please provide me with information on the following:

- Gifts that pay an income for life*
- How to make a gift of appreciated real estate to the Minnesota Medical Foundation*
- How to make a gift of stock to support the Medical School*

Name _____

Address _____

City, State, Zip _____

Telephone (____) _____

Mail To: Lowell A. Weber
Director of Development
Minnesota Medical Foundation
Box 193 UMHC
University of Minnesota Medical Schools
Minneapolis, MN 55455
Phone (612) 625-7976

_____ I/we have included the Minnesota Medical Foundation in my/our will.

ALUMNI UPDATE

Dear Colleagues,

As President of the Medical Alumni Society, I want to share with all medical alumni of the University of Minnesota some significant changes that have occurred in our organization this past year.

In the past, the Medical Alumni Society has received staff support from the Minnesota Alumni Association in Morrill Hall. The alumni programs of the medical school are now staffed by the Minnesota Medical Foundation with offices located in the medical library building, 535 Diehl Hall. For you, this means that telephone calls or letters about our alumni programs should now be directed to:

Medical Alumni Society
c/o Minnesota Medical Foundation
420 Delaware Street Southeast
Box 193 UMHC
Minneapolis, MN 55455
Phone: (612) 625-1440

The Board of Directors moved carefully through each stage of discussion on this change during the past year. We recommended approval in March and the society membership voted acceptance at the annual meeting in June.

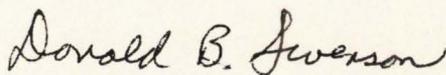
Why did we recommend the change? First of all, we wanted to make communication between the medical school and you--its alumni--as effective and easy as possible. With this reorganization, the sometimes complicated process of getting information will be made easier with one phone number and one address for medical alumni information. You have received two separate phone/mail solicitations from your medical school each year--one to join the Medical Alumni Society and another from the Minnesota Medical Foundation for an annual contribution. We are exploring the possibility of a combined request for your support.

Also, we are updating the class lists and alumni addresses so the correct data can be entered in a new computer system installed at MMF this summer. The system will allow us to list alumni in the appropriate class for reunions, keep addresses current, and coordinate mailings. We're excited about the advantages of this new system--the simple job of inviting alumni to a class reunion will finally be simplified.

Finally, consolidating the outreach programs for the Medical Alumni Society and the Minnesota Medical Foundation will avoid duplication and strengthen each activity. We'll use volunteers more effectively and serve each of you better.

I wish to thank the past presidents--George Tani '50 and Richard A. Carlson '72-- for the leadership that has brought about this reorganization of our society. The changes offer greater opportunities and challenges to serve you--our alumni. I welcome your suggestions and your involvement.

Sincerely,



Donald B. Swenson, M.D., '51
President
Medical Alumni Society

CLASS NOTES

1932

Dr. Clayton T. Beecham received the Professor Emeritus Award in obstetrics-gynecology on May 24, 1986, from Temple University School of Medicine, Temple, Texas, in recognition of significant achievement and service as innovator and organizer in gynecologic oncology; authority on malignant pelvic disease; distinguished surgeon and educator. Dr. Beecham is active as senior consultant in gynecology at Geisinger Medical Center, Danville, Pennsylvania.

1942

Dr. C. Walton Lillehei, St. Paul, received an award in late 1985 for achievement and service from the Institute for Space, Science and Technology of the Congress of the United States "in recognition of innovative contribution to the field of bio-medical technology." In January, 1986, Dr. Lillehei attended the inaugural meeting of the "Lillehei Surgical Society" in Washington, D.C., established by trainees and friends of C. Walton Lillehei and Richard C. Lillehei from the United States and 40 other countries. In February, 1986, Dr. Lillehei was awarded the degree Dr. Honoris Causa, conferred by the Sorbonne University, Paris, France.

1943

Dr. Paul S. Blake has been named recipient of the 1986 Bolles Bolles-Rogers Award, given annually to Minnesota area physicians who through medical research, medical achievement or leadership are selected by their peers as outstanding members of the medical profession. Dr. Blake is a prominent neurosurgeon and has been mentor to many physicians during the 40-year span of his medical career. Dr. Blake has held many offices, including president, in the Hennepin County Medical Society, and served as president of the Minnesota Neurological Society from 1977 to 1979.

Dr. A. Boyd Thomes has been presented with the Harold S. Diehl Award for 1986 by the Alumni Society of the University of Minnesota Medical School. Dr. Thomes has been a prominent internist in the metropolitan community for several decades, a teacher of internal medicine to several generations of medical students and residents, a leader of professional medical organizations, hospital staffs and public service activities, and an enthusiast for the study of medical history. The Diehl Award is given annually to a physician who has made outstanding contributions to the medical school, the university, the alumni and the community.

1951

Dr. James P. Akins, La Habra, California, has retired after 33 years of general practice in La Habra. Dr. Akins has four grown children. He plans to travel, fish and hunt in his leisure time.

1952

Dr. Nicholas C. Hightower, Temple, Texas, has retired from the practice of medicine after 42 years, and is working to endow the J.K.G. Silvey Chair in Biological Sciences at North Texas State University, where he received his bachelor's degree in 1941. He is also co-owner with his son, Jim, of a restaurant called Louis Echerman's Cajun Cafe, which opened in June. Other current projects include the restoration of a 1923 Chandler touring car and a fishing trip to Wyoming.

1954

Dr. Donald Woodley, Eden Prairie, has recently accepted a position as medical director of Health Partners, a new statewide HMO formed to unite the efforts of primary care physicians, referral specialists and the University of Minnesota faculty and hospital. Dr. Woodley previously practiced internal medicine at the Bloomington-Lake Clinic in Minneapolis, and from 1973 to 1985 was the first full-time medical director of Blue Cross-Blue Shield of Minnesota.

1959

Dr. Carl G. Evers, Jackson, Mississippi, has been named a delegate to the American Medical Association. He is also a speaker of the House of Delegates, Mississippi State Medical Association.

1960

Dr. Michael D. Levitt, associate chief of staff for research, Minneapolis V.A. Medical Center, and professor of medicine, University of Minnesota, received the 1986 Distinguished Achievement Award from the American Gastroenterological Association on May 20, 1986. This is the highest award given by this 6,000-member organization, and is presented annually to one investigator in the world for outstanding research accomplishments in the area of gastroenterology. Dr. Levitt received the award for his studies of the intestinal tract and the pancreas.

1962

Dr. John E. Sutherland, formerly of the University of Minnesota department of family practice and community health, has accepted the position of professor and chairman of the department of family practice at Southern Illinois University School of Medicine in Springfield, Illinois, effective September 1, 1986.

1964

Dr. Donald Asp, an associate professor of family practice at the University of Minnesota Medical School, has been elected president of the Minnesota Academy of Family Practice.

1967

Dr. Allen L. Lechtman, Thousand Oaks, California, is director of anesthesiology at the new Westlake Eye Surgery Center in Westlake Village, California. The facility is specifically designed for cataract treatment and removal, lens implants, myopic and astigmatic surgery, in addition to emergencies or treatments requiring only local anesthesia.

1970

Dr. Noel K. Dysart, Jr. (Captain, USN), has been reassigned to the Naval Hospital at Roosevelt Roads, Puerto Rico, where he is executive officer. The hospital has an average census of 30 to 40 and is staffed by 24 physicians and 300 other staff. In addition, he has been assigned additional duty as the medical officer on the staff of the Commander, Naval Forces, Caribbean.

1977

Dr. Arthur Carrizales, (Lt. Col.), Fort Worth, Texas, has been promoted to Colonel. He was recently named Family Physician of the year 1985-86 by the residents at Carswell Regional Hospital, Ft. Worth. Dr. Carrizales is presently associate director of the family practice residency program at Carswell. He will be reporting to Torrejan Air Force Base, Madrid, Spain, in October where he will become chief of the family practice department.

1978

Dr. Bryan Kent Lee, Rochester, New York, has begun a year as chief resident in general surgery at Strong Memorial Hospital, and in July, 1987, he will begin a cardio-thoracic surgical fellowship.

1984

Dr. Mary Wilkens, Golden Valley, a second-year resident in the Methodist Hospital-University of Minnesota family practice residency program, has been named recipient of a \$1,500 Mead Johnson Award for graduate education in family practice medicine. Twenty family practice residents across the country receive this award annually. Dr. Wilkens is the only Minnesota recipient.



In Memorium

Dr. William Hodgson Anderson,

Class of 1941, Edina, died of cancer on June 28, 1986, at the age of 71. Dr. Anderson was an anesthesiologist at Metropolitan Medical Center before his retirement. He served as an army physician in the South Pacific in World War II. He became chief of the medical staff at Swedish Hospital in the late 1960s and supported the merger with St. Barnabas. The two hospitals merged in 1970 to form Metropolitan Medical Center, where he worked until retiring in 1979. He helped modernize Swedish Hospital by establishing a recovery room and an intensive care unit. He also introduced endotracheal tubes for surgery. Dr. Anderson is survived by his four children, Larry of Lewistown, Idaho, Julia, Isabel and Bill of St. Paul, one sister and three brothers.

Dr. Raynold N. Berke,

Class of 1928, Menlo Park, California, died February 5, 1986, at the age of 84. Dr. Berke interned at Kansas City General Hospital, and was a Fellow at the Mayo Clinic in 1929. He practiced at Wills Eye Hospital, Philadelphia, was an instructor of ophthalmology at Columbia

University, and was acting professor of ophthalmologic surgery at Stanford University Hospital. Dr. Berke is survived by his wife, the former Margaret Helvig, a nephew and a niece.

Dr. Joseph Thomas Delougherty,

Class of 1925, San Antonio, Texas, died July 1, 1986, in Shakopee, Minnesota, at the age of 86. Dr. Delougherty was stationed in Saudi Arabia with Aramco as the associate medical director for 10 years. He served as a Fellow in geriatrics for 15 years. He is survived by his wife, Helen, and one brother.

Dr. William Harold Ford,

Class of 1930, Minneapolis, died June 22, 1986, at the age of 90. Dr. Ford was a general practice surgeon in Minneapolis for more than 50 years. He raised money for medical school by working as a part-time fireman. He was a 50-year member of the Minnesota Medical Association and a member of the American College of Surgeons. Dr. Ford is survived by a son, William, Jr., of San Jose, California, and a daughter, Audrey Ford, of Knoxville, Tennessee.

Dr. LeRoy William Hanson,

Class of 1947, died July 15, 1986, at the age of 62. He served his internship at Minneapolis General Hospital, and did his residency at Baylor University College of Medicine and the Shriners Crippled Children's Hospitals, Methodist Hospital, Memorial Hospital Systems, Herman Hospital and Shrine Hospital. He served in the U.S. Navy from 1941 to 1946 and the U.S. Army Medical Corps from 1949 until his discharge in 1951, achieving the rank of Captain. He is survived by his wife, Bette Ann Smith Hanson, sons Lee Wayne Hanson, Atlanta, Georgia, Gregory William Hanson, M.D., Houston, and Brian Roland Hanson, College Station, daughter Ruth Ellen Guild, Houston, two brothers and four grandchildren.

Dr. Thomas K. Krezowski,

Class of 1944, St. Paul, died July 31, 1986, of a brain tumor at the age of 67. Dr. Krezowski began his practice in St. Paul after serving as a statewide doctor during World War II and practiced obstetrics and gynecology for more than 40 years. He is survived by his wife, Patricia, sons John of St. Paul and Phillip of Great Falls, Montana, daughters Ann Osmolak of River Forest, Illinois, and Barbara Albertson of Glencoe, Minnesota, two brothers, two sisters and five grandchildren.

Dr. Benjamin J. Singer,

Class of 1928, St. Paul, died August 22, 1986, of cardiac failure at the age of 86. Dr. Singer practiced more than 50 years and was on the staff of United, Children's and St. Joseph's Hospitals in St. Paul. He was a member of the American Medical Association, the Minnesota Medical Association, and the American Academy of Family Practice. He is survived by daughters Marlene Garvis of Minnetonka and Suzanne Nemer of St. Louis Park, a sister and five grandchildren.

Dr. Archie Merle Smith,

Class of 1929, died of cancer on August 27, 1986, at the age of 81. Dr. Smith was a family physician for 50 years. He was an intern at Midway Hospital in St. Paul, and began his practice at the Batrud Clinic in Thief River Falls. In 1937 he moved his practice to St. Louis Park, and was the physician for the high school athletic program for many years. Dr. Smith twice was chief of staff at St. Barnabas Hospital, a charter member of the Fairview Southdale staff, and on the staff at Methodist Hospital. He was also a clinical assistant professor at the university medical school. Dr. Smith is survived by his wife, Eileen, sons Dr. John E. and Archie M. Jr. of Minneapolis, daughters Suzanne Meland and Maryellen Smith of Minneapolis, a sister, 13 grandchildren and eight great grandchildren.

We have also received notice of the following deaths:

Mary Bechik,

of Highland Chateau, St. Paul, died in August, 1986, at the age of 94. She is survived by sons Anthony, a member and past president of the MMF Board of Trustees, and Walter, Minneapolis, four grandchildren and eight great-grandchildren.

Dr. Lawrence R. Boies, Sr.,

of Hopkins, Minnesota, died July 5, 1986, at the age of 87. Dr. Boies was emeritus professor and former head of otolaryngology at the University of Minnesota, and was a former member of the MMF Board of Trustees. He is survived by his wife, Louise M., sons Lawrence R. Jr., and David B. and three grandchildren.

Dr. Irwin J. Fox,

Golden Valley, died June 15, 1986, of cancer at the age of 59. Dr. Fox was a professor of physiology at the University of Minnesota, and was internationally known for his cardiovascular research. Dr. Fox was born in Germany in 1926 and came to the United States in 1935. He earned a bachelor's degree from Princeton and received his medical degree from New York University. He did post-graduate work in internal medicine and physiology at Michael Reese Hospital in Chicago, the Mayo Clinic and the University of Minnesota. He is survived by his wife, Leone, daughters Rebecca and Marisa, and a son, S. Daniel, all of Golden Valley, his mother Ester of St. Louis Park, and one brother.

Dr. Shirley Mink,

clinical psychologist, St. Paul, died July 28, 1986, at the age of 61. Dr. Mink had been associated with Abbott-Northwestern Hospital in Minneapolis and was recognized as a diagnostic and therapeutic expert in her field. Dr. Mink earned a bachelor's degree from Hamline University, a master's degree from Washington State University, and a doctorate in clinical psychology from the University of Minnesota. She taught at Macalester College and the College of St. Catherine, and was in private practice in both St. Paul and Minneapolis. Dr. Mink was instrumental in the development of hospital-based mental health treatment at Abbott-Northwestern, and was adjunctive therapy director at the Mental Health Center there. She is survived by her husband, Macalester College psychology professor Walter D. Mink, two sons, Jonathan of St. Louis, Missouri, and David of St. Paul, two daughters, Leslie of Chicago, and Pamela of Atlanta, Georgia, and one brother.

Mrs. Gertrude Kulberg Shapiro,

widow of Dr. Morse J. Shapiro, died May 30, 1986, in Los Angeles. She is a former president of the National Council of Jewish Women. She is survived by a son, Dr. Marvin J., Los Angeles, Class of 1943, a daughter, Jeanne Bamberger, Cambridge, Massachusetts and four grandchildren.

Eunice Sigurdson,

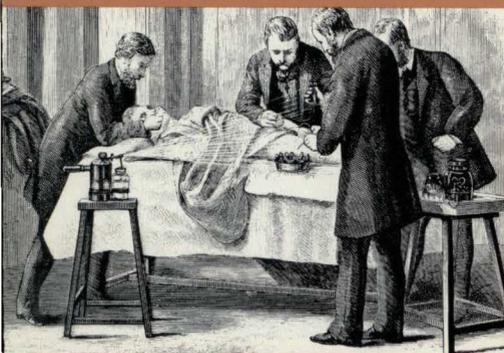
an epidemiologist from Minneapolis, died June 17, 1986, at Walker, Minnesota. She specialized in cancer research at the Minnesota Department of Health, and was working on a doctorate in epidemiology at the time of her death. She was a registered nurse until 1962, when she joined the staff of the School of Public Health at the University of Minnesota as a researcher and supervisor of epidemiologic studies. She directed the Minneapolis and St. Paul portion of the Third National Cancer Survey from 1969 to 1971. Survivors include sons Stefan of St. Paul and Egill of Iceland, daughters Carla Schwartz of Robbinsdale and Anita Sigurdson of San Francisco, a brother and a sister.

HISTORICAL PERSPECTIVE

In 1886

surgeons in the Twin Cities were still performing operations in the old way. The surgeon wore an old frock coat, blood-stained from previous operations, and took no precautions to see that his instruments or dressings were sterile. Surgical wounds almost invariably became inflamed, and quantities of pus flowed from them. As a result, surgical operations were performed only as a last resort to save the life of the patient. The most frequent operation was amputation, but at least a quarter of the patients who underwent amputation died of infection following the operation. The death rate from compound fractures and other accidental injuries was similarly high.

Nearly twenty years before, in Scotland, Joseph Lister had announced his method of antiseptic surgery, based upon Louis Pasteur's demonstration in 1861 of the presence of germs in the air. Lister sought to exclude germs from wounds by using dressings soaked in carbolic acid. To the astonishment of surgeons, Lister was able to get surgical wounds to heal directly without inflammation and without the formation of pus.



Antiseptic surgery in 1886 made use of carbolic acid to combat germs.

Nevertheless, Lister's antiseptic methods were resisted by other British surgeons, particularly in England, and American surgeons tended to follow the British example. By contrast, during the 1870s German surgeons adopted Lister's methods with wholehearted enthusiasm, improved upon them, and demonstrated their power to eliminate the terrible epidemics of pyaemia, septicemia and erysipelas that had made surgical operation in some German hospitals equivalent to a sentence of death.

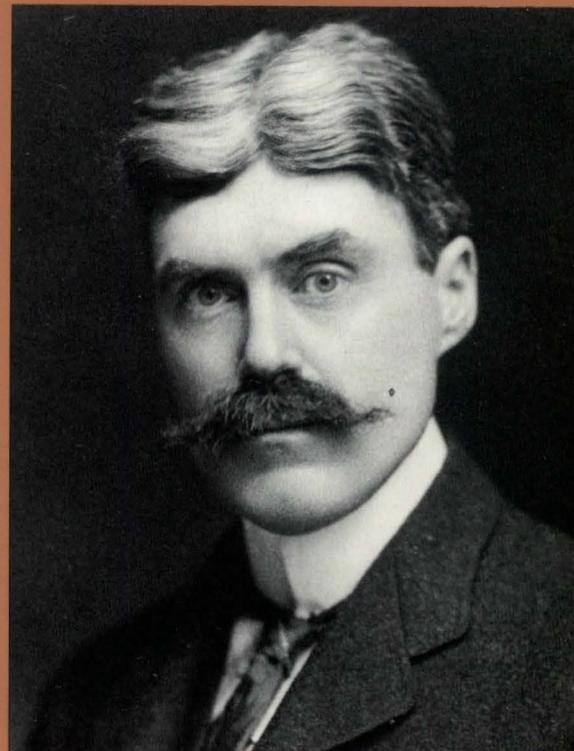
In 1886, a 33-year-old Minneapolis surgeon, James Henry Dunn, was introducing in Minneapolis the methods of antiseptic surgery that he had learned in Germany during a sojourn of nearly two years from 1883 to 1885. Dr. Dunn had spent months in Berlin, Munich and Halle, not so much observing surgical operations as observing the dressing and progress of wounds after operation.

On his return to Minneapolis, Dunn was shocked by the prevalence of surgical infections. He saw more erysipelas in Minneapolis than he had seen in all the great clinics and hospitals of Germany and Austria. Said Dr. Dunn, "A filthy, extensively suppurating wound I do not remember to have seen in Berlin; in Minnesota I have seen torrents of pus."

During 1886 James Henry Dunn proceeded to show that methods of antiseptic surgery could be used as successfully in Minneapolis as in Berlin. By 1887 he had performed antiseptically 61 major operations without a single occurrence of erysipelas, pyemia or septicemia.

Although Dunn was a particularly vigorous and articulate advocate of antiseptic surgery in Minneapolis, and

By Leonard G. Wilson, Ph.D.



Dr. James Henry Dunn

his individual success was outstanding, he was not alone. In St. Paul Dr. Charles Wheaton, and in Stillwater, Dr. Perry Millard, were using antiseptic surgery, while in Rochester Dr. William Worrall Mayo and his son Dr. William Mayo were following the new antiseptic techniques with keen interest. Perry Millard, Charles Wheaton and James Dunn were all members of the first faculty of the University of Minnesota Medical School, and each in succession occupied the chair of surgery—Dr. Millard from the founding of the school in 1888 until his death in 1897, Dr. Wheaton from 1897 to 1899, and Dr. Dunn from 1899 until his untimely death from a heart attack in 1904 at the age of 50.

Leonard G. Wilson, Ph.D., is chairman of the History of Medicine Department at the University of Minnesota



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St. Paul-Ramsey Medical Center, Ramsey Clinic, St. Paul
CME (612) 221-3991

October 9-10

Current Concepts in Cardiology of the Elderly

Pillsbury Auditorium, Hennepin County Medical Center, Minneapolis
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October 17

Office Management of Ear, Nose and Throat

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October 17-18

Annual Autumn Seminar on Obstetrics and Gynecology

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Emergency Medicine for Primary Care Physicians

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October 24

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November 7

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November 8-9

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November 15

Cardiopulmonary Medicine

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December 4-6