

# The NIH Record

## Cavities in Kids Getting Rarer, NIDR Says

By Susan Johnson

Half of the schoolchildren in the United States have no tooth decay, according to the results of a new survey by the National Institute of Dental Research.

"This is remarkable, especially when you consider that almost all of their parents suffered from tooth decay as children," said Dr. Harald Löe, director of the institute.

The evidence that one out of two youngsters is caries-free comes from a nationwide survey of almost 40,000 children conducted by NIDR during the 1986-87 school year. Institute epidemiologists compared the survey's results to those of a 1979-80 survey.

American children have 36 percent less dental caries than they did at the beginning of the 1980's, they found. That decline follows a similar drop in the prevalence of tooth decay during the 1970's.

"What we're seeing is the beginning of the end for a disease that has plagued mankind throughout history," said Löe.

In both the 1980 and 1987 surveys, NIDR-

(See **NIDR**, Page 8)

## Wyngaarden Dedicates 'Sky Horizon' Sculpture

The aspirations and origins of the esteemed artist Louise Nevelson were eloquently joined with those of NIH on June 9 when her last major outdoor sculpture—*Sky Horizon*—was dedicated in front of the Clinical Center.

On permanent loan to NIH, the 30-foot-high black Corten steel artwork was purchased in commemoration of the NIH centennial by Edwin C. Whitehead, a businessman and philanthropist whose ties to NIH extend back 40 years. His wife, Rosalind C. Whitehead, is an advisor to the Fogarty International Center.

"I wish that Louise Nevelson could be here to see the dedication," said Dr. James Wyngaarden, NIH director, who presided over a ceremony that officially closed NIH's centennial observation. "She would have felt at one with the research community here."

Though she was born in the Ukraine and emigrated to this country in 1905, Nevelson, who died recently at age 88, was considered "one of a handful of truly American artists," said Frank Hodsoll, chairman of the National Endowment for the Arts.

Hodsoll was one of four speakers who both

(See **SCULPTURE**, Page 2)

## Cloister Party Boosts Alumni Association Membership

A wine and cheese party held recently at The Cloister attracted several hundred new members to the Washington chapter of the nascent NIH Alumni Association.

Open to current and past NIH employees, the association is currently gathering new members and planning an agenda that will carry it into the future.

"This is a great place to hold the first meeting," observed Dr. Jim Duff, who retired in 1983 as an NCI branch chief. "On a scale of 1 to 10, we're starting off at 10."

The occasion attracted current NIH'ers, including guest speakers Dr. James Wyngaarden, NIH director, and Dr. Anthony Fauci, NIAID director, as well as alumni from as far away as Pennsylvania.

"NIH was a very enjoyable place to work," said Bob Lauder of Fairfield, Pa., who ended a 22½-year career at NIH in 1979 as budget officer for the Division of Engineering Services. "I always tried to impress on new people considering careers here that NIH had the feel of a college campus."

Lauder counts three fellow NIH alumni as neighbors in Pennsylvania.

"We live there because retirement income isn't taxed in Pennsylvania, and the property



NIH director Dr. James Wyngaarden (l) addressed guests at the alumni gathering, including Dr. Christian Anfinsen, one of NIH's Nobel laureates (Chemistry, 1972).

tax is about half of what it is around here," he confided.

Lauder learned about the alumni gathering from Cal Baldwin, past NIH associate director

(See **ALUMNI**, Page 4)

## The Art of Seeing Microscopes Yield Beautiful Science

By Carla Garnett

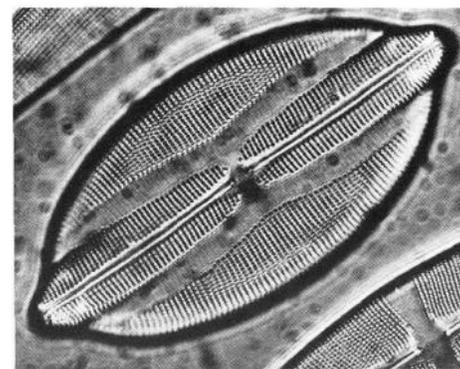
For centuries, it has been a symbol of science and, historically, the single most important diagnostic and research tool. Now it is also an art form.

Photomicrography is the challenging technique of capturing images seen through a light microscope. It sounds simple. In fact, many scientists and researchers do it everyday. Peering at an ordinary object or organism magnified through a microscope does not require talent or a detailed understanding of optics.

So what makes photomicrography special these days? By creating aesthetically pleasing images through manipulation of an increasing variety of lenses or contrast systems, scientists are ushering photomicrography into the art world. And that does require talent.

"I try to see things so that they are visually pleasing as well as scientifically useful," said Dr. Cecil Fox, a senior researcher in experimental pathology. "A very intimate part of science is being able to appreciate what you see on an aesthetic basis."

To illustrate his point, Fox, who is currently trying to identify HIV-infected cells in



By focusing on the tiniest details of this *Navicula Lyra* diatom, Dr. Makio Murayama assures the quality of his microscopic images.

human tissues by *in situ* hybridization and by the polymerase chain reaction, looked at an ordinary sample of brain tissue from a person with AIDS.

When a reporter looked through the microscope, the brain tissue looked like a few

(See **ART**, Page 6)

## SCULPTURE

(Continued from Page 1)

eulogized Nevelson and compared her creative vision to that of researchers.

"Like many of our finest scientists, Louise Nevelson was an immigrant," observed Wyngaarden. "She was in many ways a fellow researcher, a fellow observer. What her sculpture has to teach us as researchers is a way of seeing. This sculpture . . . is part of her observational research—how light and shadow play, how silhouette and shape reveal, how form and void converse."

Like the artist herself, Nevelson's sculpture is frequently considered shocking and unusual, two characteristics that were more fully explained by other speakers.

Rosalind Whitehead credited Nevelson with "bringing mystery back into sculpture." Quoting a critic, she said Nevelson's works were considered both "appalling and marvelous." She concluded, "NIH and Louise Nevelson are the best examples of American creativity, productivity and contribution."

"At times she was hard to really know at all," said Daniel J. Terra, a friend of the artist and the U.S. ambassador-at-large for cultural affairs. "But she was very easy to talk to and listened attentively to what others had to say. This quality was natural, not deliberate. She was as loved by her neighbors on the lower East Side (of New York City) as she was by the famous people she met after she had become an international success."



Louise Nevelson

Departing briefly from reminiscences of the artist, Edwin Whitehead recalled an early experience he had selling medical equipment to the CC Clinical Pathology Department. When one of his new machines failed to impress the chief of CPD, he was asked, in no uncertain terms, to leave the building.

"I've never been thrown out of a better place," he quipped; the company he and his father founded went on to produce equipment



Dr. James Wyngaarden (r), NIH director, presents certificates and medallions to Edwin Whitehead and his wife Rosalind, who purchased the sculpture *Sky Horizon* and then lent it permanently to NIH. Created by artist Louise Nevelson, the artwork was dedicated June 9 in front of the Clinical Center.



Enjoying remarks at the dedication were Daniel Terra (l), U.S. ambassador-at-large for cultural affairs, and Frank Hodsoll, chairman of the National Endowment for the Arts.

used at many medical institutions, including NIH.

Wyngaarden concluded the ceremony by presenting the Whiteheads with centennial medals and certificates, "small tokens of our immense gratitude to you." A luncheon in the Stone House followed the dedication. □

## Tube the Shenandoah

Float down the Shenandoah River with the NIH R&W. An all-you-can-eat steak dinner cooked over open fires culminates the outing scheduled for Saturday, July 23. Sign-up deadline is July 15 (or until trip is filled), so reserve your tube today at the R&W activities desk, Bldg. 31, Rm. B1W30, 496-4600. Payment required upon reservation. □

NIH Photos by Ernie Branson

## The NIH Record

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## Experimental Concentrate Prevents Travelers' Diarrhea

By Laurie K. Doepel

A concentrate of infection-fighting proteins taken from cows' milk completely prevented travelers' diarrhea and caused no adverse side effects in 10 human volunteers, Dr. Carol Tacket and colleagues reported in a recent issue of the *New England Journal of Medicine*. Encouraged by the ideal safety and efficacy record of their preliminary results, the scientists plan further experiments to determine the feasibility of developing this concentrate as a preventative medicine for travelers' diarrhea.

The research was carried out by Tacket and coworkers at the University of Maryland School of Medicine's Center for Vaccine Development in Baltimore, which receives funding from the National Institute of Allergy and Infectious Diseases. Scientists from the Nestle Research Center in Lausanne, Switzerland, collaborated on the project.

Between 30 and 50 percent of all Americans who travel to less-developed countries contract travelers' diarrhea. Numerous infectious organisms can cause the illness, but the most common culprit is enterotoxigenic *Escherichia coli* (ETEC), harmful forms of the normally helpful *E. coli* bacterium found in the gut. ETEC colonize in the small intestine, where they multiply and produce substances toxic to the intestinal lining. Among other effects, these toxins stimulate fluid secretion, which causes diarrhea and actually helps flush out the toxins.

The concentrate used in the study was taken from nursing cows that had been immunized during gestation with various types of ETEC and one form of ETEC toxin. The expectation was that immunizing cows with this concoction would stimulate production of infection-fighting proteins, or antibodies, to the variety of virulence markers, or antigens, found on the surfaces of the bacteria and the toxin. Antibodies were produced as expected, and these were isolated from the milk and dried into a powder.

Other scientists have used the same strategy to develop antibody concentrates that have proved effective against three agents of infant diarrhea. The idea to conduct such studies arose from the knowledge that human breast milk contains antibodies that protect infants against diarrhea as well as a host of other pathogens.

In the experiment, 10 volunteers mixed the dried material with water and drank it prophylactically three times a day, 15 minutes after each meal, for 7 days. A control group of 10 volunteers received a similar-looking concentrate and followed the same regimen. Neither the volunteers nor the scientists knew

who received which concentrate.

On the third day all 20 participants were challenged with ETEC. They drank an additional dose of their concentrate 15 minutes after the challenge. Nine of 10 control volunteers and none of those who received the anti-ETEC concentrate developed diarrhea. All control group volunteers also experienced some symptoms of anorexia, malaise, cramps, fever, and vomiting, whereas none of the other volunteers did.

While the study demonstrated the effectiveness of passive immunity—antibodies introduced from outside the body—it also showed that anti-ETEC concentrate permitted individuals to develop some degree of active immunity—stimulation of their own immune systems. ETEC antibodies not present before the experiment developed in about half of the volunteers who received anti-ETEC. In contrast to the transient effects of passive immunity, active immunity provides protection against an organism for many years.

Current guidelines for preventing and treating travelers' diarrhea are somewhat controversial. Bismuth salicylate tablets can effectively prevent travelers' diarrhea, but

some people risk salicylate intoxication. Antimicrobial agents can also be effective taken prophylactically or for treatment, but these drugs pose an even greater risk.

The search for alternatives to antimicrobial therapy for travelers' diarrhea received a boost after NIH convened a national panel of medical scientists in 1986. This panel issued a consensus statement on travelers' diarrhea concluding that "Antimicrobial agents are not recommended for travelers' diarrhea. Such widespread usage in millions of travelers would cause many side effects, including some severe ones, while preventing a disease that has had no reported mortality." Such usage would also contribute to the development of resistant bacterial strains, rendering these therapies impotent.

Tacket and colleagues are uncertain whether the anti-ETEC concentrate they have developed would have to be taken immediately after a contaminated meal, or whether a less frequent dosage would be just as effective. This is one among several questions they will try to resolve in their continuing studies. □



Dr. Michael Heidelberger (r), distinguished scientist at New York University School of Medicine, accepts a Special Achievement Award from NIAID for a lifetime of outstanding research accomplishments. Dr. Elvin Kabat, expert with NIAID, and one of Heidelberger's first post-doctoral students, presented the plaque at a luncheon held recently to celebrate Heidelberger's 100th birthday. The centenarian's early research on pneumococcus bacteria became the foundation of the science of immunochemistry. Heidelberger's colleagues believe he may well be the oldest active scientist working in the U.S. Summing up his extraordinary career, he said, "It has been rewarding, very rewarding, all my scientific life."

## ALUMNI

*(Continued from Page 1)*

for administration, at a recent luncheon for PHS retirees. Other guests learned about the event through the mail; the addresses of about 7,000 alumni were compiled during NIH's centennial year by the Division of Personnel Management.

There are perhaps more than 20,000 NIH alumni around the world, said Dr. Abner Notkins, director of NIDR's intramural research program and leader of the year-old effort to create an alumni association here. Current NIH'ers are welcome to join the association too, he emphasized.

"We envision a national organization as well as an international one," he said. "But the heart of the organization will be local alumni chapters in the major cities and academic centers. They will have their own meetings, and perhaps invite current NIH scientists and administrators to speak. It will be very much like a university alumni association."

Notkins said the success of the venture will depend not only on the number of members—he expects several thousand to join—but also on the commitment of the local chapter leaders.

The purpose of NIHAA is "both social and scientific," said Dr. Robert Friedman, a former NIDDK laboratory chief and currently chairman of the pathology department at the Uniformed Services University of the Health Sciences. "We plan to meet formally at least twice a year and to publish a newsletter."

When it is fully operational, the NIHAA will hold dinners, receptions and other types of gatherings, said Notkins, as well as sponsor events at major national meetings.

"The alumni association will also help identify promising young researchers and post-doctoral fellows who might wish to come to NIH," he said. "We also hope to provide speakers to community groups."

An attempt was made in April 1975 to establish an alumni organization at NIH, noted Wyngaarden in his address to the alumni, but the effort eventually petered out. An NIH reunion held that year provided the impetus to create an alumni club; the past year's centennial observation gave rise to the current NIHAA initiative.

"We need to develop a more active constituency," said the director, adding that NIH today is looked at far more critically by the media and Congress than when many of the alumni worked here.

"There was a time when things were fairly casual at NIH," he reminisced of the days when he was a young NHLBI investigator on campus. "They are not casual any more."

Problems were far from the minds of guests



*Dr. Abner Notkins (l), director of NIDR's intramural research program and chairman of the group organizing the NIH Alumni Association, shares a moment with NIAID director Dr. Anthony Fauci, who spoke on AIDS. Fauci credited the 15 to 20 years of basic research preceding the AIDS crisis with giving medicine an advantage in understanding the illness.*

at the wine and cheese gathering, where the atmosphere was decidedly convivial.

"I'm very gratified with the turnout tonight," said Dr. Leon Jacobs, co-chair of the local organizational committee. "I'm sure we're going to get more members when we go outside to the regions where there are so many NIH alumni. It gets to be a big thing."

For Dr. Fred Sperling, the evening offered a chance to meet old friends and reflect on his career in science.

"I started (in 1948) at the Laboratory of Physical Biology, which was a direct descendant of the original Laboratory of Hygiene," he said. "I worked with W.F. von Oettingen, a very famous toxicologist whose specialty was inhalation toxicology. Nowadays, you don't hear anything about him, though he was quite well known at the time. It bothers me that once a well-known scientist is dead, he's gone

and so is his science. No one ever hears about him again. Why should your contributions die with you?" he mused, only half seriously.

"We oldtimers shouldn't be put on a shelf and left to wither away," added the former professor emeritus at Howard University, who retired in 1978 after 30 years at the school. "I like the idea of the alumni association."

"I'm surprised that it took this long for NIH to have an alumni association," said Jim O'Donnell, DRR deputy director and 20-year NIH veteran. Looking around the room at old friends, he said, "It's very nice to see these people."

Also pleased to meet old friends was Dr. Joe Gainer, currently working in Beltsville as an FDA veterinarian. He was with NCI when he began his NIH career in 1966 as a research microbiologist. He subsequently spent six years at NIEHS in North Carolina.

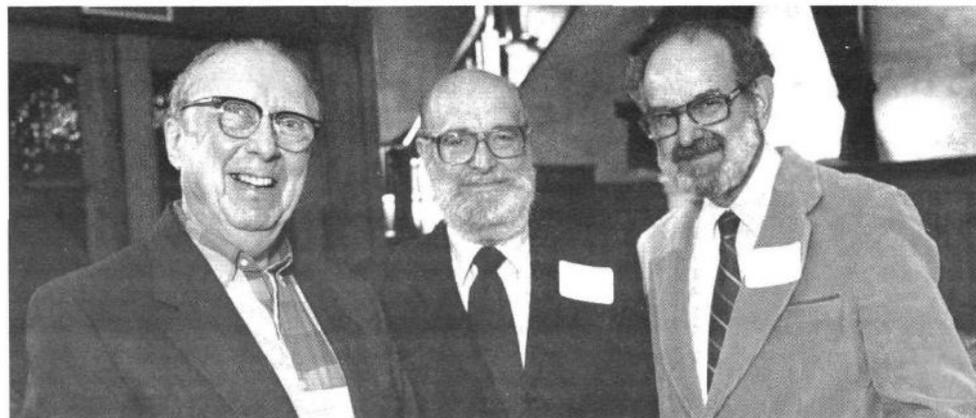
"I'm interested in meeting old acquaintances," he said, adding that he intends to join one of the NIHAA subcommittees.

"I think the alumni association is a great idea," enthused Dr. Jim Duff, who explained



*Dr. Jim Duff, former chief of NCI's Biological Carcinogenesis Branch, retired in 1983 after a career that began in 1965 at NIH. "I'm a recent graduate," he noted.*

Photos by Bill Branson



*Dr. Fred Sperling (l) was at NIH from 1948 to 1956, working as a pharmacologist/toxicologist. With him at the alumni reception were Dick Irwin (c), who retired in 1985 as associate director for intramural research, NINCDS, and Bob Resnik, who spent 23 years at NIH before retiring in 1977 as chief of NHLBI's Reports and Evaluations Branch.*

that he would gladly come out of retirement if only he could occupy the pleasant new Execu-



Susan Theut (l) and Lisa Koby are child psychiatrists with ties to NIH. They came to the party to meet fellow alumni and to visit The Cloister. "For many people, NIH is a great place to do research that can't be done anywhere else," Theut said.

Plaza offices of his successor as chief of the Biological Carcinogenesis Branch, NCI. "That alone would encourage me to come back to work," he joked.

Also enjoying the environs and the company were child psychiatrists Lisa Koby and Susan Theut, both of whom are recent NIH alumni.

"I wanted to see what the convent looked like," said Koby, who studied obsessive-compulsive disorder in children and adolescents under an NIMH protocol in 1985-86. "It's neat."

"I was curious to see what a gathering of alumni would be like," said Theut, whose project at NICHD during 1985-87 was examining the bereavement of parents who experienced a pregnancy loss.

Both women said they "absolutely" intend to remain members of NIHAA.

Membership is available for \$25 per year, or \$250 for life membership. For further information about the association, or to join NIHAA, call 496-7976. □

### Prize-Winning Brochure Reprinted

*Then & Now: Biomedical Science in 1887 & Today*, the award-winning brochure that was prepared by NIGMS in honor of the NIH centennial, has been reprinted. Single copies are now available from the institute's Office of Research Reports, Bldg. 31, Rm. 4A52.

The brochure, written by Doris Brody, won first place in the National Association of Government Communicators' Blue Pencil Award competition, an award of excellence from the Washington, D.C., chapter of the Society for Technical Communications, and an award of achievement in the International Society for Technical Communications' Technical Publications Competition. □

## Drug Treatment Benefits Borderline Personality Disorder

By Pamela Jones

In one of the first studies to provide empirical evidence of the value of pharmacotherapy for borderline personality disorder (BPD), National Institute of Mental Health intramural scientists compared the efficacy of four different psychoactive medications. Two of the drugs proved to have clear-cut beneficial effects.

BPD is characterized by sudden mood changes, unstable personal relationships, and other unpredictable patterns of behavior. Patients also may exhibit depression, anxiety, rage, brief psychotic episodes, or self-injurious behavior. Although clinicians frequently prescribe psychoactive medications for this disorder, until now they have had little or no scientific rationale for choosing specific drugs.

Dr. Rex Cowdry, acting deputy director, NIMH, and Dr. David Gardner, office of the clinical director, NIMH intramural research program, tested the effectiveness of four psychoactive medications representing the classes of drugs believed to be effective in BPD patients.

### Four Drugs Tested

Given in consecutive 6-week trials to 16 severely ill patients, the drugs—alprazolam (an anti-anxiety medication), carbamazepine (an anticonvulsant), trifluoperazine hydrochloride (a neuroleptic), and tranylcypromine sulfate (a MAO antidepressant)—were compared to a placebo. The study results were published in a recent issue of *Archives of General Psychiatry*.

The investigators found that carbamazepine and tranylcypromine brought about a statis-

tically significant improvement in the mood and behavior of the patients. Trifluoperazine taken for the full trial period also proved effective in some women. However, many patients could not tolerate this drug because of side effects. Alprazolam worsened behavior in most patients, although two reported that alprazolam helped them more than any of the other medications. There was no improvement when patients took the placebo.

### Limitations Noted

The scientists note several limitations of their study. The relatively homogeneous population was small and did not include patients with less severe BPD or with prominent schizotypal symptoms. Therefore, the current findings may not be generalizable to other BPD subgroups.

In addition, although the short-term pharmacotherapy used in this study benefited the patients, the question of long-term drug treatment was not addressed. The investigators also pointed out that the drugs tested in this pilot study can have significant side effects, necessitating close and careful supervision by the physician.

Nonetheless, the researchers believe that their study provides much needed evidence supporting the use of pharmacotherapy for BPD. Drug treatment can reduce some of the negative symptoms of the disorder such as unrelieved dysphoria (a state of anxiety, depression, and restlessness) and may even allow patients to benefit from ongoing psychotherapy. □

## Disabled Celebrate at Washington Hilton

The annual meeting of the President's Committee on Employment of the Handicapped, held recently at the Washington Hilton, opened with a lively procession featuring members of the armed forces.

Many without disabilities learned what it is like to be in the minority as canes, crutches, seeing eye dogs, and wheelchairs were the rule rather than the exception.

Nearly 20 workers from the NIH Handicapped Employees Committee (HEC), along with colleagues from such federal agencies as the Food and Drug Administration, Centers for Disease Control and NIMH, staffed an information booth for 3 days. Exhibitors from the private sector included General Motors, Merck and Co. and AT&T.

Led by HEC Chair Susan Rae, OD, ORS,

and Joan Brogan, handicap program manager, DEO, some employees spent their time in the exhibit hall where NIH provided sign language interpretation. Others attended seminars designed for the disabled, their employers, and the companies that provide special equipment or services to them.

Seminars on topics such as marketing oneself for job interviews, AIDS in the workplace, and minorities with disabilities were interspersed with dancing, theater presentations and awards assemblies.

More than halfway through the decade of the disabled, this meeting made clear the message that disabled persons are on the move and as ready as ever, if given the chance, to pull more than their own weight in the work-a-day world. □

## ART

(Continued from Page 1)

brown specks on a lighter brown field. Very unexciting.

Through Fox's eyes, and with a few adjustments to the light path of the microscope, the brain tissue suddenly resembled the sky in Van Gogh's "The Starry Night." The brown specks were glimmering stars on a midnight blue backdrop, and infected cells became tiny galaxies.

"I have a serious interest in technical innovations in medicine," admitted Fox. "With microscopes we have the ability to see things that otherwise can't be seen. We can see not just forms and shapes, and how they function, but the microscope can also be an instrument for quantitative analysis. The microscope was an invention that revolutionized medicine, but for a century conventional wisdom in medicine thought it a toy."

An authority on the history of microscopes, Fox has been invited to show his photomicrographs in various museums and art exhibitions worldwide. Recently, his work was recognized in *Sky*, the in-flight magazine for Delta Airlines.

He has also worked with antique microscope collections at the Science Museum in London and with the Billings collection (named for the National Library of Medicine's founder John Shaw Billings) in the U.S., which contain microscopes dating back to the 17th century.

"I wanted to see what people could have seen when the microscope was first invented," he said. "I took samples of tissues that we now use for diagnosis and I looked at them as a 17th century scientist would have seen them back then."

The results of Fox's trek backward in time were displayed at an IBM exhibition a few years ago. "What I discovered," said the researcher, "was that scientists and physicians from the 17th century had microscopes sophis-



Dr. Cecil Fox

icated enough to diagnose the same pathological disorders we recognize today."

Researchers back then were not yet prepared to analyze tissues, he said. Even though they had the necessary instruments, "technological innovations such as slides and staining really had to be developed," he continued.

"What took only 20 years for the telescope has taken more than 250 years for the microscope," Fox said. Where the telescope found its proper application within a few decades of its invention and its development proceeded rapidly, the microscope has taken far longer to discover its vocation.

For Dr. Makio Murayama, photomicrography is a means to an end. The beauty of it may be just a fringe benefit, an extra reward included in a job he already enjoys.

"To be able to resolve very fine details that couldn't be resolved by other people is the challenge of working with the microscope," he says. "That the images created are beautiful to look at only enhances the challenge."

Murayama is a chemist. He readily, adamantly accepts the title. Sometimes, however, the solution to a problem needs to be approached from a perspective different than that of a chemist.

"If there's a problem to be solved, I'll use physics, chemistry, microscopy or any other method to solve it," remarks Murayama, who is currently using physical models consisting of glass funnels, rubber tubing, compressed air and pingpong balls to demonstrate the decompression by fluid dynamics that induces the clotting abilities of blood platelets.

In the past, he has also used microscopy to demonstrate his scientific discoveries. "Dr. Murayama is a great scholar and a super photomicrographer," Fox said.

"Photomicrography has been a hobby of mine since about 1959," says Murayama, who has worked at NIH for almost 30 years.

His interest in creating images with the microscope grew out of necessity. "I needed to make sure I was using the machine correctly

and getting accurate results," said the veteran researcher. "I started looking at diatoms, trying to capture clearly the smallest details in them."

Diatoms are unicellular organisms found near moisture, especially in seawater. When magnified about 1,000 times, the microscopic view is similar to that found when looking through a kaleidoscope.

Murayama has also taken moving pictures through the microscope (Cinéphotomicrography) for *Smithsonian World*.

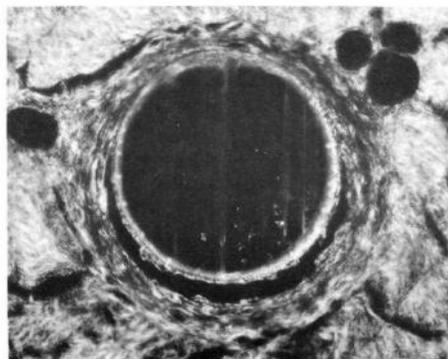
In his early years at NIH, Murayama was hailed for his achievements in the research of sickle cell disease. For the past 15 years, he has been recognized in *Who's Who In America* and *Who's Who In the World*.

The septuagenarian takes his success in stride. "As long as I am enjoying what I do, I will continue to do it," he said.

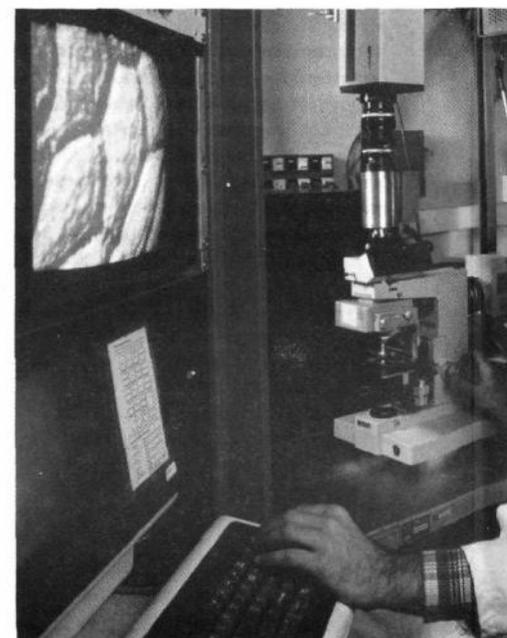
In yet another form of microscopy, scientists at NHLBI are using videocameras to analyze the size and shape of cells found in kidneys and gall bladders.

Videomicroscopy, a previously seldom used technique, works under the same principles as photomicrography. A video camera is attached to the top of a light microscope and images are recorded and viewed on a screen similar to a television monitor.

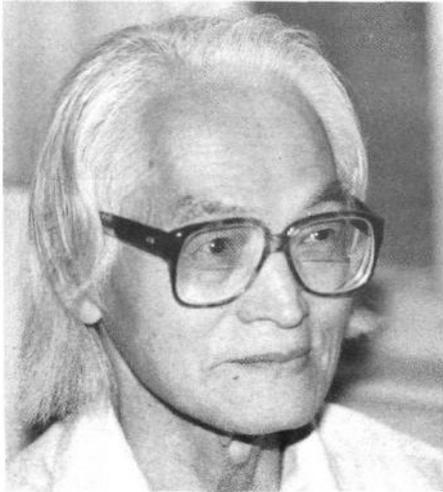
The images can be measured by using a joystick to control a cursor in the video image to trace the outlines. It is also possible to slice the cells into layers optically, allowing a scien-



Photomicrograph taken by Dr. Cecil Fox of a cross section of a nylon suture in muscle.



Dr. Kenneth Spring, NHLBI researcher, uses a videocamera to document the size and shape of gall bladder cells. By adding density and capacity of the cells.



Dr. Makio Murayama

tist to analyze not only the surface of the cell but also the core.

Dr. Kenneth Spring, a 13-year veteran NHLBI scientist, turned to videomicrography after discovering that photomicrography was impractical for his projects.

"We were producing about 800 to 1,000 pictures a day using photomicrography," he said. "We had huge volumes of data and it was just impractical to continue that way."

After deliberating over various techniques to solve the problem, the now-defunct television engineering section of the Clinical Center sug-

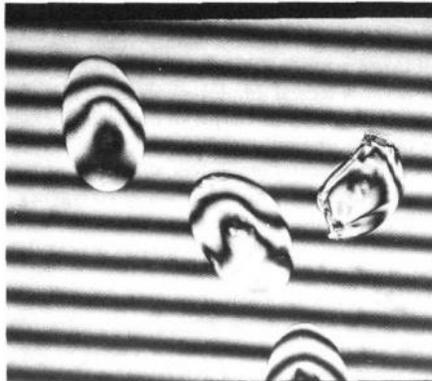
gested videomicroscopy as a possible solution.

"We needed the speed and simplicity of video," admitted Spring, whose current project involves videotaping, through the microscope, gall bladder cells of the *Necturus*, a tadpole-like creature approximately 10 or 11 inches long.

By using videotaping techniques coupled with microscopy, Spring and his research team can capture the movements of living cells noninvasively.

Through this technique, they have seen how gall bladder and kidney cells work together as a tissue to maintain and transport the body's fluids. "Large amounts of fluids cross the cells," the scientist explained. "And the cells are constantly faced with the problem of maintaining their volume and internal composition."

By treating the cells with certain drugs, the



*Amphibian amphiuma, the largest red blood cells in the animal kingdom, was photographed using an interferometer. Dr. Kenneth Spring uses this process to measure the speed of light as it hits objects under the microscope.*

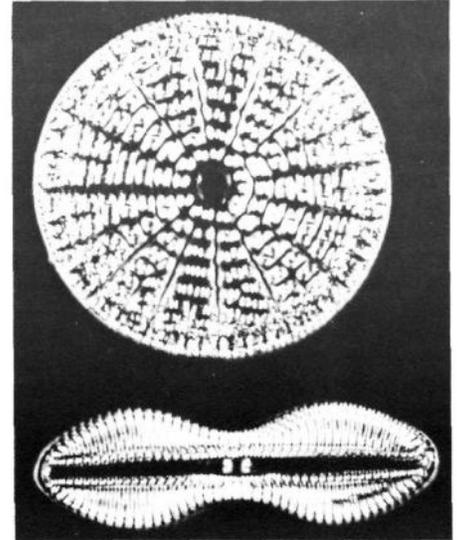
size and shape of the cells can sometimes be manipulated to study the control of cell geometry. Videomicroscopy allows the viewer to monitor and document the changes.

"The clarity and symmetry of the images is scientifically revealing as well as aesthetically pleasing," Spring commented.

Although Spring's videomicrographs have been featured on bookcovers and in magazines, they have not been in many formal displays. This may be due in part to the poorer quality of images associated with videomicrography.

"There's been a recent explosion of interest in light microscopy," said Spring. "It's become less expensive and with newer, better quality recording and display equipment, it's possible for a lot more scientists to become involved in it."

The fact remains that many scientists,

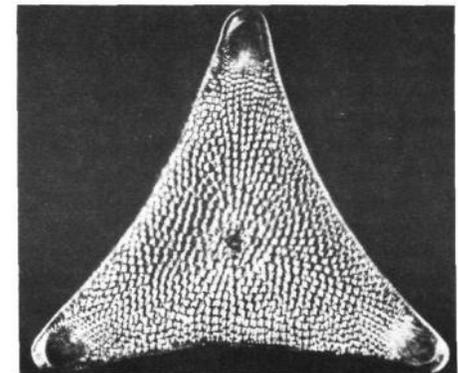


*Murayama's microscopic view of Arachibodiscus, a diatom from Flume Creek, New Zealand.*

researchers, and even art enthusiasts are discovering the "renaissance" of light microscopy. Photomicrography, as well as videomicroscopy, though by no means new techniques, are launching into new applications and being recognized by new and more diverse publics.

"Science depends on instruments to see the unseeable and to understand things that aren't obvious," said Fox. "We have to use tools in science to know things, and the more tools you can master, the better scientist you become."

Appreciation of the techniques is as diverse as the techniques themselves and the audiences they serve. The value of microscopy, photo and video, for scientific revelation, assurance of technical accuracy or research documentation has never been in doubt. Now, the aesthetic merit of microscopy is also clear.



*This triceratium is one of thousands of diatoms Murayama has photographed through a light microscope.*



*By adding contrasting colors to the image, he can see the*

## NIDR

(Continued from Page 1)

trained dentists performed oral examinations on children aged 5 to 17 at schools located throughout the continental U.S. The sample populations were selected to represent the approximately 43 million schoolchildren in the country.

The new survey shows that 49.9 percent of all children have no decay in their permanent teeth. In 1980, 36.6 percent of U.S. schoolchildren were caries-free. An estimated 28 percent had no tooth decay in the early 1970's.

Not only are fewer children getting cavities today, but those who do are getting fewer of them. In 1980, children had an average of almost five decayed, missing or filled surfaces on their permanent teeth (out of 128 possible surfaces in youngsters with a full set of permanent teeth). In 1987, they had an average of only three decayed, missing or filled tooth surfaces. The average number of decayed or filled surfaces on the baby teeth of 5- to 9-year-olds also dropped from more than five in 1980 to fewer than four in 1987.

The NIDR survey did not address the question of what is causing the decline in dental caries, but officials say they believe the widespread use of fluoride—in community water supplies, toothpastes and other forms—is mainly responsible.

Decay on the smooth surfaces of teeth—the surfaces that benefit most from fluoride—is disappearing, the survey results show. Today, two-thirds of caries is found on the occlusal, or chewing, surfaces of teeth. Decay on these rough tooth surfaces could be eliminated, NIDR officials say, by the combined use of fluorides and adhesive sealants—plastic films painted onto teeth to seal out decay.

Interproximal caries, or decay on the surfaces between adjoining teeth, is approaching eradication, the survey results show. The prevalence of interproximal caries dropped 54 percent between 1980 and 1987, while the prevalence of decay on the chewing surfaces and the exposed smooth surfaces of teeth dropped 32 percent.

The new survey results suggest that the level of dental care has improved somewhat since 1980. Today, 82 percent of decayed, missing or filled tooth surfaces (DMFS) are filled, about 13 percent are decayed, and 4 percent are missing. In 1980, only 76 percent of DMFS were filled, 17 percent were decayed and 7 percent were missing.

Children in the Northeast and Pacific Coast regions of the country continue to have the highest prevalence of tooth decay, while youngsters in the Southwest have the least caries, the survey showed. Females have

slightly more decay than do males—a pattern also seen in earlier surveys.

With the new survey results in hand, NIDR now has reliable data on the oral health of some 150 million Americans aged 5 to 85-plus. Two years ago, the institute conducted a national survey of oral health in adults. The overall picture from the survey was one of continuing improvements in the oral health status of Americans. Toothlessness has been almost eliminated in middle-aged adults, the survey showed, and tooth decay is on the decline, at least in adults under age 35. □

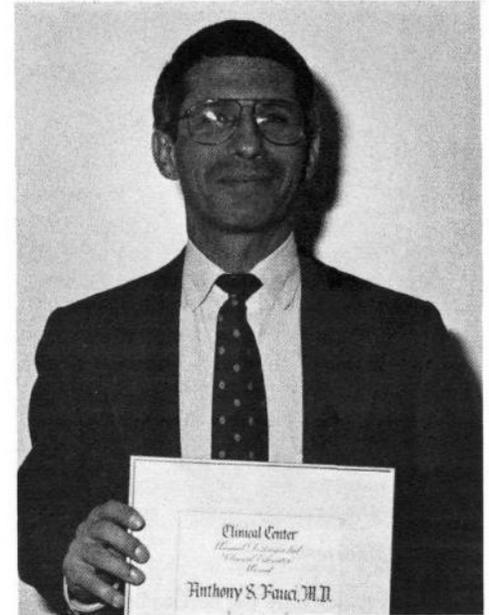
## 'Lend Leave' Policy Takes Effect

The Office of Personnel Management has established a temporary leave transfer program that permits federal employees (except officers of the Commissioned Corps) to donate a portion of their unused accrued annual leave for use by other federal employees who need such leave because of a medical or family emergency or other hardship. This is a temporary program the authority for which expires Sept. 30, 1988.

To be a leave recipient, you must have been affected by a personal emergency on or after Dec. 22, 1987, and have used or expect to use 10 or more consecutive or intermittent days of leave-without-pay because of the emergency. Your written application to be a leave recipient must be submitted to your immediate supervisor who will recommend approval/disapproval to your BID executive officer. If your application is approved and you do not have a leave donor, an effort will be made to find one or more for you.

As a leave donor, you may donate the lesser of (1) one-half of the amount of annual leave you will earn during the leave year or (2) all or a portion of your annual leave balance as of the date of the donation. You may donate leave to any qualified leave recipient except your immediate supervisor. Your SF-71 Application for Leave Form indicating the amount of annual leave you wish to donate must be signed by your immediate supervisor.

Your BID executive officer serves as the official responsible for monitoring and administering the temporary leave transfer process for leave recipients within their respective organizations. For additional information on how to apply to become a leave recipient or donor, contact your executive officer. □



*Dr. Anthony Fauci, director of NIAID, recently received the "Distinguished Clinical Educator Award" for excellence in teaching clinical medicine. The award is given annually by the Medical Staff Fellow Committee at the Clinical Center.*

## Kamen To Lecture on Engelmann

Dr. Martin Kamen will deliver four evening lectures in the Stone House conference room (Bldg. 16) beginning Tuesday, July 12, on the unique and fascinating career of German scientist T.W. Engelmann (1843-1909).

Although hardly remembered today, Engelmann was a founder of the modern science of cell physiology. He was trained in Germany but lived and worked mainly in The Netherlands, where he was a prominent scientist and a musician.

Kamen, a scholar-in-residence at the Fogarty International Center, says his lectures will undoubtedly raise one's level of science trivia knowledge as well as provide pleasant diversion from the July heat. The lectures will be illustrated with slides and music.

Lecture dates and titles:

T.W. Engelmann: Life and Times  
Tuesday, July 12

Contributions to Muscle Physiology  
Thursday, July 14

Adventures in Microbiology  
Tuesday, July 19

His Musical Life  
Thursday, July 21

All lectures will be held from 7:30 to 8:30 p.m. □

## Patterson Retires From NIDR Executive Post

John P. Patterson, executive officer at the National Institute of Dental Research, retired recently after 35 years of government service, 31 of those years with NIH.

"It was a pleasure to be able to work with and support people who have made great contributions to biomedical science. In that way, I feel that I've made contributions also," he said.

Patterson began his NIH career in 1957 as an inhalation therapist in the Clinical Center. One year later he was promoted to the position of administrative aide. In less than 10 years, he rose to the position of administrative officer at the National Institute of Mental Health of the Alcohol, Drug Abuse, and Mental Health Administration. In 1970 he became the administrative officer for the Division of Cancer Cause and Prevention at the National Cancer Institute. Three years later he arrived at the NIDR as executive officer.

Except for a 3-year interval when he was the deputy associate commissioner for management operations at the Food and Drug Administration, Patterson has been the executive officer at NIDR since 1973. Prior to his career at NIH he served in the United States Navy.

As executive officer, Patterson was responsible for the Office of Administrative Management, including financial management, personnel management and management analysis while providing leadership and guidance to the administrative officers in the extramural and intramural programs. He was also the institute's representative and consultant on management policy committees within NIH and DHHS.

During his career at NIH, Patterson served on several committees including the subcommittee for in-house management intern recruitment, the personnel advisory committee, the NIH financial management committee and the board of the NIH Credit Union, where he was chairman. He was also the NIH coordinator for the Combined Federal Campaign.

Among his many awards are a PHS Special Recognition Award, an FDA Commendable Service Award and several Quality Step Increases. On June 6 Patterson received the NIH Director's Award in recognition of his "outstanding career in administrative management and for exceptional commitment and significant contributions to the programs of the NIDR, the NIH and the Public Health Service."

What do retirement plans include? "I would like to do the things I never had time to do while I was working," he said. High on that list are golf and being a "beach bum."



John P. Patterson

The first thing he'll do though is visit Hawaii with his wife and then think about what's in store for the future. He hopes to be able to work as a consultant.

A party was held in his honor in Bldg. 30, NIDR's research building. □

## New Performance Award Program

The Department of Health and Human Services recently established a new award program for employees whose performance is appraised under the Employee Performance Management System (EPMS). The program will apply to approximately 9,000 civilian employees at NIH.

Under this program, employees will be evaluated on their performance each calendar year and may be eligible for lump sum cash awards if they receive a performance rating of Fully Satisfactory or higher (some organizations may limit eligibility to those employees who are rated Excellent or Outstanding). The first awards will be given to employees in early 1989 for their performance during the 1988 performance year.

Each bureau, institute and division (BID) is currently developing policies and procedures for the implementation of this program. As soon as this has been completed, information about the operation of the program will be provided to supervisors and employees.

In addition, the Division of Personnel Management will be providing more detailed information about the major features of this program in a forthcoming desk-to-desk announcement. □

## Security Branch Moves

The Security Branch, Division of Safety, has moved to a new location in Bldg. 31. The new quarters, which have been completely renovated, are located on the ground level just inside the entrance of 31C. For the first time, all the functions of the Security Branch are consolidated in one location; this will provide better coordination of services to the NIH community.

The phone numbers for each section and unit will remain unchanged as will the police emergency and non-emergency numbers. The new room numbers are as follows:

Office of the Chief, Security Branch	B3B12
Chief, Police	B3B19
Parking Office	B3B04
Chief, Crime Prevention Section	B3B16
Locksmith Office	B3B18

The Security Branch now has state-of-the-art equipment from video cameras to modular furniture and can be described as a model security/police facility: □



Dr. Joseph F. Gallelli, chief, CC Pharmacy Department, recently gave the inaugural scientific address at the National Congress of Italian Pharmacists in Verona, Italy. He spoke on the latest pharmacological advances in clinical research in the U.S.

## Therapeutic Recreation Week

In honor of National Therapeutic Recreation Week, July 10-16, the Patient Activities Department, CC, will host a performance by Gallaudet University's Dance Troupe in Masur Auditorium from noon until 1 p.m., July 14.

The program will include various styles of dance—modern, tap, inspirational, sign, and more. The troupe has performed worldwide. All are welcome to attend. For more information, call the Patient Activities Department, 496-2276. □

## GA/HSA Seminar Series To Begin in September

Each year, the Health Scientist Administrator Development Programs (HSADP) Office in the Office of Extramural Programs (OEP) organizes a series of seminars to complement the working assignments of the GAs and HSA trainees and the working experiences of HSAs. The HSADP Office is accepting applications for its 1989 GA/HSA Seminar Series, scheduled to begin on Friday, Sept. 16, 1988. These weekly seminars of 10 months duration are held on Fridays in Bldg. 31, generally in the mornings. However, approximately 10 Fridays during this series will be full days.

The Seminar Series is designed to address a broad spectrum of philosophical, political, and policy issues relevant to the administration of federal programs in support of biomedical and behavioral research. The series is *not* designed as an orientation or introduction to extramural programs. Topics to be covered include: the roles and interactions of DHHS, NIH, other PHS and non-PHS agencies; policy and ethical considerations in biomedical and behavioral research; factors affecting extramural programs and their administration; program planning and evaluation; and the legislative/budget process.

HSAs with 1 to 3 years' experience are expected to profit most from and contribute to the series. This does not imply that non-HSAs, including intramural scientists, would not benefit. Those nominees with less than one year's NIH extramural experience must have taken the "Fundamentals of NIH Extramural Activities" course to be considered.

Deadline is July 26, 1988

Interested individuals should forward a memo stating their interest, as it relates to their current duties, through their immediate supervisor to their BID director, together with a current CV, with emphasis on their present responsibilities. *Please be sure to include your current title, BID organizational component and current room, building, and phone number.* Each BID director is being asked to forward no more than three nominations with the above noted information and any other supporting documents, *no later than Tuesday, July 26, 1988*, to A. Robert Polcari, director, HSA Development Programs, Bldg. 31, Rm. 1B-62.

Only a limited number of participants can be accommodated. Selections will be made by Dr. George J. Galasso, associate director for extramural affairs, OEP. All nominees whose documents reach the HSADP Office by July 26 will be notified of final action approximately in late August.

Participants will receive training credit hours in their official personnel files after completing the series. However, a request to participate in the series carries a commitment on the part of the applicant and an endorsement by the supervisor to full attendance throughout the 10-month long series. *Those missing more than 10 seminars will not receive any credit.*

For further information, contact A. Robert Polcari, director, or Roberta Light, program assistant, HSA Development Programs, 496-1736. □

## DRR Supports Gene Study

The Center for the Study of Gene Structure and Function at Hunter College, City University of New York, recently held a 1-day symposium on "Molecular Approaches to Development: From Gene to Organism."

Funding for the center, established in 1986 with a 5-year \$2.5 million grant from NIH's Research Centers in Minority Institutions (RCMI) Program, is administered through the Division of Research Resources. Included among its research studies are multidisciplinary investigations in developmental genetics. Dr. Sidney A. McNairy, Jr., director of the RCMI program, helped to introduce the symposium.

Six speakers gave lectures that illustrated the diversity of genetic strategies available to living organisms for regulating their development. Defining genetic mechanisms responsible for cell specialization can provide rational strategies for understanding disease processes.

The speakers and topics were:

Dr. Richard Losick, Harvard University, "Developmental Genetics of a Simple Organism";

Dr. Gerald Fink, Whitehead Institute/Massachusetts Institute of Technology, "Global Regulatory Proteins in Yeast";

Dr. Robert Dotti, Hunter College-CUNY, "Regulation of Gene Expression in Dicotyledonium by Signal Transduction";

Dr. Matthew Scott, University of Colorado, "The Structure and Function of the Antennapedia Homeotic Gene of *Drosophila*";

Dr. Bernardo Nadal-Ginard, Harvard Medical School, "Alternate Splicing in the Generation of Protein Diversity from Single Genes: Mechanistic Complications"; and

Dr. Frank Ruddle, Yale University, "Organization and Expression of Mammalian Homeobox Genes."

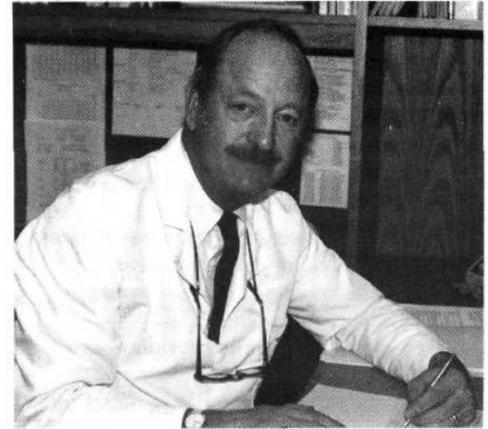
In addition to the symposium, Hunter College hosted a meeting of the program directors from 15 RCMI-supported institutions. □

## Greulich Retires from NIA

Dr. Richard C. Greulich, scientific director for two institutes during his 22 years at NIH, retired recently from the National Institute on Aging. He had served as the institute's scientific director since 1977 and, previously, was scientific director (1966-74) of the National Institute of Dental Research.

At the many events honoring him, the words "fairness" and "scientific leadership" were frequently heard. His staff at the NIA Gerontology Research Center (GRC) presented him with a plaque at a recent awards program, "To our Director, . . . for scientific leadership, integrity, and personal concern which has inspired employee dedication and scientific excellence."

Greulich said he had no immediate plans to jump into another career, but expects to pursue golf, travel and relax for a time. His wish



Dr. Richard C. Greulich

to play golf and travel were partially realized when the NIA staff gave him a gift certificate for a week's vacation at a resort in St. Michael's, Md.

Among the well-wishers attending his retirement reception were NIA director Dr. T. Franklin Williams; Dr. John Eberhart, senior advisor to the NIH deputy director for intramural research; Dr. Philip Chen, NIH associate director for intramural affairs; and Dr. Nathan W. Shock, Greulich's predecessor as NIA scientific director and director of the GRC.

During his tenure at NIH, Greulich also served as the staff director for the President's Biomedical Research Panel (1974), and as acting director of the newly established NIA (1975). He came to NIH from California where he was a professor of anatomy at the UCLA School of Medicine.—Dan Rogers □



## TRAINING TIPS

The NIH Training Center of the Division of Personnel Management offers the following:

<i>Courses and Programs</i>	<i>Dates</i>
<i>Management and Supervisory</i> 496-6371	
Effective Presentation Skills	7/7
Interpersonal Relationships in the Work Environment	7/13
Networking: Silent Politics	9/1
Working With Difficult Employees	9/7
Report Writing	9/13
Conducting Effective Meetings	9/22
Dealing With Daily Conflicts	9/14
Working With Personal Differences: Advanced MBTI	9/27

*Office Skills* 496-6211  
Proofreading & Editing 7/11

*Office Automation* 496-6211  
Intro. to Lotus 1-2-3 Macros 8/3

*Adult Education* 496-6211

*Training and Development Services* 496-6211

Personal Computer training is available through User Resource Center (URC) self study courses. There is no cost to NIH employees for these hands-on sessions. The URC hours are:  
Monday-Thursday 8:30 a.m.-9:00 p.m.  
Friday 8:30 a.m.-4:30 p.m.  
Saturday 9:00 a.m.-3:00 p.m.

NOW AVAILABLE ON SHARE TRAINING  
FY 88 Training Center courses

Access Wylbur and enter SHARE TRAINING.  
First time users only, enter:  
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### KERMIT Seminar

The DCRT Training Program is sponsoring a seminar on KERMIT on July 13 at 1 p.m. in Bldg. 12A, Rm. B51.

KERMIT is a software package used to transfer files between the PC and the mainframe computer. Topics to be covered include how to install KERMIT on the PC, how to use it for file transfer and for terminal emulation.

To register for the seminar, contact the DCRT Training Unit, 496-2339, TDD 496-8294. No formal application is required. □



Approximately 100 NIH'ers recently showed up to help stamp out couch potato-ism at the R&W-sponsored Couch Potato Classic. The event, consisting of a non-competitive 2.5-mile run and a 1-mile walk, awarded all participants a ribbon. Pictured are some ex-couch potatoes who won t-shirts, Twinkies and other goodies in a random prize drawing following their exercise.

### Online Directory Service Offered

A new online directory service is now available to registered users of the NIH Computer Center.

The frequently requested system ENTER NAMES provides the names and addresses of virtually all of its nearly 18,000 registered users, and can also be accessed through a command feature of the ENTER MAIL facility.

At registration, an individual's name, registered initials, location, and telephone number are entered into a data set stored on file disks.

Then, whenever the ENTER NAMES facility is accessed, pertinent information about the desired individual is immediately retrieved from the file.

Providing a means of rapidly obtaining information about other users on the system, ENTER NAMES allows a user to locate and communicate with colleagues quickly.

For more information about ENTER NAMES and its uses, contact Marc Arlen, NIH Computer Center, 496-5181. □

### It's a small world....

Global electronic collaboration for scientific researchers gets easier as ENTER MAIL and BITNET join forces to bring the world as close as the office or laboratory across the hall. All you need is a modem and a terminal or PC. Mail and files can travel around the world in minutes instead of days. Scientists can subscribe to any number of automatically forwarded electronic "newsletters" to help keep abreast of new developments in their fields.

The Computer Center is presently holding demonstrations of ENTER MAIL and BITNET to help people begin to take advantage of this fast and inexpensive way to communicate with research centers all over the globe. Call 496-2339 to reserve a place, and see for yourself just what a small world it really is.

Seminars available—  
ENTER MAIL: June 30  
BITNET: July 13 and 26  
Bldg. 12A, 9-11 a.m.



**Sports Stars Illuminate NLM Symposium**



*Former Redskin head coach George Allen makes a point during a panel discussion on the "breaks" of the game moderated by Washington's WMAL Radio sports director Ken Beatrice. Allen serves as chairman of the National Fitness Foundation and former chairman of the President's Council on Physical Fitness and Sports.*

Four veteran athletes teamed with health experts recently at the National Library of Medicine to promote physical fitness and sports medicine at a symposium sponsored by NIAMS, NLM and the National Fitness Foundation.

Former Redskin coach George Allen joined professional tennis player Tracy Austin, Washington Redskin Dave Butz and ABC sportscaster Donna de Varona for a 1-day program devoted exclusively to sports and fitness themes. Highlights of the symposium included panel discussions on athletic injuries and fitness for all ages.



*Washington Redskin Dave Butz, who has suffered numerous serious injuries during his long career with the Redskins, amazingly has missed only five games. The pressures to perform despite pain are strong, but the team doctor usually has the final say.*



*Donna de Varona, ABC sportscaster and former Olympic gold medalist in swimming, presented a film on women in sports and talked about the work of the Women's Sports Foundation that she chairs.*



*Tracy Austin's tennis career was cut short by an injury at the age of 18, but she has stayed active in the field of sports communication and speaks often to groups about the joys of fitness.*

Photos by Bill Branson



*George Allen, along with members of NIH's running club Healt's Angels, gets ready for an early morning 5k run.*