Still The Second Best Thing About Payday

A Portrait of Adolescent Health

By Susan M. Persons

The promise of a picture of United States adolescent health as rich in depth and color as an oil painting was unveiled at a recent NIH Seminar Series lecture organized by the behavioral and social sciences research coordinating committee. Dr. J. Richard Udry, principal investigator of the National Institute of Child Health and Human Development study, "Add Health," addressed a standing-room-only audience at NIH as he described the design and preliminary findings of the first national longitudinal study of adolescent health.

The main premise of the study is that social context-such as relationships with families, friends, and peers-influences the



UNC's Dr. J. Richard Udry gives portrait of teen health at OBSSR seminar.

health-related behaviors of young people, and that understanding that context is essential to guide efforts to modify health behaviors. What is unique about this study is the multitude of perspectives it provides from which to understand the healthrelated behavior of adolescents, and the effects of family, peers, school, neighborhood, religious institution, and community on those behaviors.

Udry, professor of maternal and child health and of sociology at the University of SEE TEEN HEALTH, PAGE 4 HIGHLIGHTS

New, Improved Internet Planned

President's FY 1999 NIH Budget Is Generous

NIH Observes **Nutrition Month**

Lancaster Gets



U.S. Department of Health and **Human Services** National Institutes of Health

February 24, 1998 Vol. L, No. 4

'HOV' Lanes for 'Superhighway'

NIH Joins Next Generation Internet, **Internet2 Development Efforts**

By Carla Garnett

Ur. Jumes Buttey

lmost 30 years old and already the Internet is, well, sluggish sometimes, especially while performing highspeed, high-capacity applications. Try juggling a few large-file sites in the heart of the day, then imagine how long it would take to crunch very large amounts of data for a research project or conduct a virtual reality experiment on the Internet. Add in the ever-increasing popularity of the so-called information superhighway and you easily could find yourself sitting in the mother of all traffic jams. Or worse, maybe you have an interesting new concept with 'Net application, but, anticipating the tieups, do not even attempt developing the potentially valuable task. That's what was happening a little more than 2 years ago when some of the country's top universities and science and technology companies teamed up with the government to begin developing two powerful alternatives to the Internet—the Next Generation

SEE NEW 'NET EFFORTS, PAGE 6

Battey Picked To Direct NIDCD

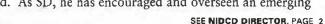
r. James F. Battey, the scientific director at the National Institute on Deafness and Other Communication Disorders for the past 3 years, has been picked by NIH director Dr. Harold Varmus to succeed Dr. James Snow as director of NIDCD. Battey

has served as acting director of the institute since Snow's retirement last year.

"Dr. Battey is a skillful and energetic leader who will bring the finest scientists to the challenges of human communication research," said Varmus. "As acting director, he has already been at work on a new strategic planning process designed to include both extramural and internal advice for identifying areas of opportunity in both basic and clinical research. I am pleased he is going to be able to continue this effort."

Battey will continue to direct the Division of Intramural Research at

NIDCD until a national search for a new scientific director is completed. As SD, he has encouraged and overseen an emerging





Injured on the

Do you have a

work-related

syndrome,

tendonitis, or

injury of the

fingers, wrist,

elbow or shoul-

der? USUHS is

conducting a

includes a \$40

be ages 20-60,

Volunteers must

physician within

the past month

and currently

working. Call

(301) 295-9659.

study that

payment.

seen by a

repetitive strain

upper extremity

problem or injury,

i.e., carpal tunnel

Job?

NIDCD DIRECTOR, CONTINUED FROM PAGE 1

program studying the molecular genetics of diseases and disorders of human communication affecting more than 46 million Americans. Under his leadership, there has been a restructuring of intramural clinical research and the development of significant laboratories and staff for the study of many diseases and disorders including otitis media, several forms of hereditary hearing impairment, stuttering, and autism, as well as the creation of a new laboratory of chemosensory research.

"Human communication research has at this moment more possibilities for productive exploration than at any other time in history," he said. "I am grateful for this appointment and look forward to working shoulder-to-shoulder with the scientific community, the public and with the creative and

dedicated NIDCD staff."

Battey earned a B.S. with honors in physics at California Institute of Technology. He earned his M.D. and Ph.D. degrees at Stanford University, where he pursued residency training in pediatrics. His postdoctoral fellowship at Harvard Medical School was under the direction of Dr. Philip Leder.

Battev has served NIH since 1983, first on the staff of the National Cancer Institute, followed by an appointment as chief of the molecular neuroscience section in the Laboratory of Neurochemistry, National Institute of Neurological Disorders and Stroke. He returned to NCI in 1992 to head the molecular structure section of the Laboratory of Biological Chemistry.

The Public Health Service has honored Battey with both its Commendation Medal in 1990 and the Outstanding Service Medal in 1994. He also serves as adjunct professor at George Washington University School of Medicine. He is author or coauthor of more than 120 research articles and is coauthor with Leonard Davis and Michael Kuehl of Basic Methods in Molecular Biology, now in its second edition.

Female Volunteers Needed

The Behavioral Endocrinology Branch, NIMH, is seeking female volunteers ages 18-45 to participate in a 5-month study of the effects of reproductive hormones on brain and behavior. Volunteers must have regular menstrual cycles with no changes in mood in relationship to menses, be free of medical illnesses and not taking any hormones or medication on a regular basis. They will complete daily rating forms and be asked to participate in one of several protocols. Payment will be in accordance with the duration of each visit and the type of protocol. For more information, call Linda Simpson-St. Clair, 496-9576. **R**



A recent NIH Record story (Dec. 16, 1997) announced that NICHD would receive a \$500,000 grant from the American Medical Association to conduct pediatric pharmacology research. Receiving the check on behalf of the institute are (from l) director Dr. Duane Alexander, deputy director Dr. Yvonne Maddox, and Budget Officer Arthur Fried. AMA president Dr. Percy Wootton (r) presented the check.

Capitals Days at MCI Center

Have you been to the new MCI Center downtown yet? Now is your chance to check out the venue and see the Washington Capitals hockey team at discount rates. They play Buffalo on Sunday, Mar. 1 at 1:30 p.m. Tickets are \$22 instead of \$40 for this game. Also, the same price applies on Saturday, Apr. 4 at 3 p.m., when the Caps take on the L.A. Kings. To order tickets, stop by the R&W activities desk in Bldg. 31, or any R&W gift shop, or call 496-4600.

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Web address

http://www.nih.gov/news/NIH-Record/archives.htm

Richard McManus rm26q@nih.gov

Assistant Editor Carla Garnett cg9s@nih.gov

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A Dramatic, Unprecedented Increase

President Unveils 1999 Budget for NIH

President Clinton on Feb. 2 unveiled a dramatic increase in the NIH budget for fiscal year 1999 more than \$1 billion over the record-setting FY 1998 budget estimate of \$13.648 billion, or an increase of 8.4 percent. So promising are the opportunities to build on the medical advances of the past that such an investment was deemed appropriate, said an

accompanying rationale.

"The baby boom generation is greying and without more effective strategies against chronic diseases such as osteoporosis, Parkinson's and Alzheimer's diseases, and heart disease, the potential medical needs of this generation will place enormous economic and social burdens on their children and our nation," read the budget's opening summary. "The size of minority groups in our society is growing," it continued. "By working to eliminate the disproportionate burden of ill health and disability among minorities and the socioeconomically disadvantaged, we can improve the quality of life for many and also benefit the nation economically. To meet all of these challenges with improvements in patient care depends on discoveries; the proposed expansion in the NIH budget will accelerate scientific discovery and, thereby, lead to a new age in the practice of medicine."

Chosen as areas of research emphasis in the budget are: genetic medicine, the biology of brain diseases, new approaches to pathogenesis, advanced instrumentation, new strategies for prevention and new avenues for development of therapeutics.

The President's budget request includes a major expansion of NIH's cancer research portfolio. Nearly 90 percent of the cancer initiative will be supported through the work of the National Cancer Institute, but the initiative will also involve new and enhanced activities in at least 12 other institutes and centers. In FY 1999, NIH estimates that it will spend \$2,776 million through NCI (nearly 90 percent) and \$429 million through the rest of the institutes and centers, for a total of \$3,205 million for cancer research. Diabetes research funding will increase substantially to \$388 million.

Other examples of FY 1999 initiatives include projects targeting: a variety of disorders of the nervous system such as Alzheimer's disease, Parkinson's disease, mental illness, drug addiction, multiple sclerosis, and traumatic injury to the brain and spinal cord; cardiovascular diseases; asthma; infectious diseases; an AIDS vaccine (NIH is developing an intramural Vaccine Research Center to stimulate multidisciplinary research, from basic and clinical immunology and virology to vaccine design and production for early stage trials). The budget request also bolsters research training, infrastructure,

shared instrumentation, new technologies (for largescale DNA sequencing, and medical imaging), advanced computing and communications, and a

reinvigoration of clinical research.

NIH's highest priority is the funding of basic biomedical research through research project grants (RPGs). In FY 1999, NIH will support 8,267 new and competing RPGs at a total of \$2,281 million. Support for RPGs, including Small Business Innovation Research and Small Business Technology Transfer awards will increase by nearly 8.3 percent over FY 1998.

The FY 1999 request for NIH once again asks that Congress appropriate all NIH AIDS research funds to the Office of AIDS Research. Support for AIDS research will increase by \$124 million, or 7.7

percent over the FY 1998 estimate.

To attract high quality new researchers and provide effective research support, in FY 1999 NIH will continue the transition begun in FY 1998 to replace the First Independent Research Support and Transition Award (R29) as the primary mechanism of support for new researchers with the traditional (R01) research grant. New traditional research grants average approximately \$200,000 annually and can compete for renewal, in contrast to FIRST awards, which limit funding to \$75,000 annual direct costs for 5 years. Support for individual noncompeting RPGs will increase by 3 percent on average over FY 1998 levels.

A complete exposition of the President's request for NIH can be found on the Web at http:// www.nih.gov/news/Budget99/BUDGET99.HTM.

ARHP Honors OTT's Alexander

The Association of Reproductive Health Professionals (ARHP) presented the 1997 Alan Guttmacher award to Dr. Nancy Alexander during its 34th annual clinical conference in Phoenix. The award is ARHP's highest honor, presented annually to a major contributor to the field of reproductive health. Alexander is internationally recognized for her work in fertility regulation methods, sexually transmitted diseases, and HIV/AIDS.

Each year, the Guttmacher honoree is asked to present a lecture on major scientific advancements in reproductive health. Alexander's lecture was entitled "Male Contraception: Present and Future," and focused on contraceptive methods developed specifically for men.

Alexander is currently with the Office of Technology Transfer, where she assesses patenting and processing of potential new products. She is also an adjunct professor at Georgetown University.

Healthy Normal **Volunteers** Needed

The cognitive neuroscience section, NINDS, seeks healthy volunteers ages 30-100 to participate in research on how memory changes across the lifespan. Participation requires 3-4 hours and participants will be paid \$40 to \$50, depending on time involved. For more information call 402-0060 and ask for the lifespan study.

Attention

Volunteers

participate in

Studies Need

NIMH is looking

for volunteers to

neuroimaging and cognitive studies

of visual attention.

Subjects must be

ages 20-40, and

have at least 12

of education.

als. Subjects should expect to

years (high school)

handed individu-

spend 1-3 hours

per experiment

and will be paid

accordingly. Call

402-0416 and ask

Elizabeth, or call

496-6831 and ask

to speak with Jill

to speak with

Jennifer or

or Liz.

TEEN HEALTH, CONTINUED FROM PAGE 1

North Carolina at Chapel Hill, and his colleagues chose a state-of-the-art survey as the medium to assess the health status of adolescents. The survey was conducted in two phases. In the first phase, approximately 90,000 students from grades 7 through 12 at 145 U.S. schools answered brief questionnaires to provide information about themselves and other aspects of their lives, including their health, friendships, self esteem, and expectations for the future. In the second phase, 90-minute laptop computer-administered interviews were conducted in the homes of 20,000 students and their parents drawn from the larger sample. One year later, these same students were interviewed a second time in their homes. Also interviewed were school administrators to provide comprehensive information on the school environment, and other independent sources to provide a strong data set of health-related aspects of the local neighborhood and community.

Because of the richness of the data in this study, it can best be described as a work-in-progress. "Although the first results from analysis of the data were published in JAMA on Sept. 10, 1997, we believe that the diversity and versatility of the data will allow a mosaic to emerge over time that will continue to inform parents, school and health professionals, as well as policy makers," Udry said. "We strongly encourage scientists to mine the resources of this study to augment or develop their

own analyses."

In the meantime, preliminary analyses from the Add Health study offer surprising and in some cases, counterintuitive findings. For example, most parents hope that their own health practices will

who choose not to smoke may believe that they are, by their good example, affecting their child's behavior not to smoke. However, data from the study show that, whether or not parents smoke, adolescents' decision to smoke is most influenced by their peers.

Adults who fondly remember "being true to their school" may find some Add Health data troubling. "The study has found that a student's level of allegiance to a school is greatest either when the student body is all Black or all white. It is least when the student body is half white and half Black," according to Udry. "School size also has an influence-small schools elicit greater allegiance than

moderate and large schools."

The study also offers some unsettling findings on obesity in the U.S. "There is a relationship among obesity, race and ethnicity, and the number of generations a family has been in the U.S.," said Udry. "Obesity levels vary by race and ethnicity, with Native Americans having the highest overall percentage. Obesity is drastically lower for the first generation Americans of all ethnicities and races. Unfortunately, by the second generation, members of all ethnic and racial groups begin to approach the U.S. general population obesity level," reported Udry. For more information about the study, visit: http://www.cpc.unc.edu/addhealth.

The next lecture sponsored by the Office of Behavioral and Social Sciences Research will feature Dr. Margaret Chesney from the University of California, San Francisco, addressing "Women's Health Care, Research and Policy" on Thursday, Feb. 26, in Wilson Hall, Bldg. 1, 10 to 11 a.m.

Sought are both left- and right-

have a positive influence on their children. Parents

Future of Bioengineering Examined

Charting a vision for the future of bioengineering research is the goal of a 2-day symposium sponsored by NIH on Feb. 27-28 at the Natcher Conference Center. The format includes plenary sessions, panel discussions, scientific posters and exhibits showcasing NIH-funded bioengineering projects to foster future collaborations among academic investigators, industry and small businesses. NIH director Dr. Harold Varmus will open the meeting and Sen. Bill Frist (R-Tenn.) will present the keynote address.

Panel topics include: genomics, imaging, biomaterials, instruments and more. Registration fee is \$50 and CME credit is available. Internet site for registration and additional information: http://www.nih.gov/grants/becon/symposium.htm or contact Kathleen Edmunds, (301) 468-6555; email kedmunds@prospectassoc.com.

Long, Short Sleepers Needed

The Clinical Psychobiology Branch, NIMH, is looking for volunteers ages 18-31 who either routinely sleep 9 or more hours, or 6 or fewer hours. Volunteers must have no sleep disturbances or insomnia, plus no history of mental illness. Volunteers must be in good general health and not taking any medications or birth control pills. The study requires living on the NIH research unit in Bethesda for 4 consecutive days. For more information call 496-6981. **B**

'Moppetts' Show To Benefit Inn

Katherine Mizell's Modelling Moppetts and Stage II Teen Models will present the 29th Annual Bunny Benefit, "Moppetts on the Airways," a musical variety show on Saturday and Sunday, Mar. 21 and 22 at 3 p.m. in Masur Auditorium, Bldg. 10. Tickets are \$5; proceeds benefit the Children's Inn at NIH. For details, call (301) 774-1194.



Nutrition Month Observed at NIH

NIH is hosting a number of activities in March to promote National Nutrition Month. The theme this year, selected by the American Dietetic Association, is "Make nutrition come alive. It's all about you." This message reminds us that we are empowered to select healthy foods for ourselves and our families. Variety and moderation are the key factors to a healthy diet, and combine with adequate physical activity to yield a healthy lifestyle.

The following activities on campus are planned for

March:

Il Clinical Center dietetic interns will present two nutrition classes for employees from 12:30 to 1 p.m. on two Fridays in March. "Size It Up! Increase Your Awareness of How Much You Are Eating," will be presented Mar. 6 in the Little Theatre, Bldg. 10 and Mar. 13 in Bldg. 31, Rm. 8A28. "Get Moving! Controlling Your Weight With an Active Lifestyle," will be presented on Mar. 6 in 31/8A28 and on Mar. 13 in the Little Theatre.

¶ The NIH Division of Nutrition Research Coordination is hosting a nutrition seminar on Thursday, Mar. 19. Dr. Thomas A. Wadden from the University of Pennsylvania School of Medicine will present a lecture on "Behaviors and Attitudes Associated with Weight Management," in balcony C

of the Natcher Bldg. from 3 to 4 p.m.

Il DNRC and NHLBI are hosting a discussion of issues related to "Dietary Fat Intake" on Friday, Mar. 27 in Natcher conference rooms F1&2 from 2:30 to 4 p.m. The presenter will be Dr. Scott Grundy, director, Center for Human Nutrition at Southwestern Medical Center in Dallas.

¶ Colorful nutrition month posters will appear on the director's bulletin boards and in NIH cafeterias

to announce the month's theme.

Note DeLITEful Entrees (lower in fat, sodium, cholesterol and calories than regular entrees) will continue to be provided in the NIH cafeterias operated by GSI. (These entrees were initiated during National Nutrition Month in 1996.)

¶ The Better Choices Vending Program (to identify snacks lower in fat, sodium and calories) will be back in many NIH vending machines.

A message about the nutrition month theme will appear on your Feb. 24 and Mar. 24 DHHS Earn-

ings and Leave Statements.

Il Important information on a variety of nutrition-related themes is available from NIDDK's Weight Control Information Network, phone (800) 946-8098; NHLBI (301) 251-1222 and 1-800 575-WELL; and the Cancer Information Service (800 4-CANCER). In addition, ADA offers a consumer nutrition hot line (800 366-1655) for food and nutrition messages taped in English and Spanish.

The Internet Diet: Appropriate Use

Trying to decide what email and Internet services to use is like trying to decide what food to eat at a buffet dinner. The Internet offers a wide array of goodies, and it may be tempting to use these capabilities for personal use because they are at our fingertips and the cost of using them is not always obvious to the average user. You probably know that the DHHS Standards of Conduct state that: "An employee has a duty to protect and conserve government property and shall not use such property, or allow its use, for other than authorized purposes." The question is "What are 'authorized purposes' for email and the Internet?" Doing anything that is illegal using these services is obviously not authorized, and conducting job-related business is obviously authorized. However, there are a lot of activities between those two extremes that are not as obviously appropriate or inappropriate, so how do you decide? Not to worry, this is the government and we have a policy that explains everything. The policy is located at the OIRM Web site, http://wwwoirm.nih.gov/policy/e-mail&i.html.

Some unauthorized activities are: using computer games (unless used as a training tool), sending or forwarding chain letters, visiting Web sites containing sexually explicit or pornographic material, and using email or the Web for commercial purposes. Using email and the Internet is quite similar to using the telephone, the facsimile machine or the copier (all government resources). The question is "Where do you draw the line?" If you have questions about appropriate use, ask your supervisor; inappropriate use of email and Internet services is a serious matter

and could lead to disciplinary action.

Email and the Web open up whole new worlds of information and possibilities for doing our work faster and more effectively. Use them wisely and they will nourish you in wonderful ways.—Robert Lagas

Free Wisdom Teeth Removal

NIDR is seeking volunteers in need of wisdom teeth removal (third molars) to participate in clinical studies evaluating new pain medicines. Patients will have their wisdom teeth removed by a board-certified oral surgeon using standard drugs for local anesthesia and sedation. After surgery they will receive a new drug and tell how well it works in comparison to a standard pain medicine. All studies have been approved by the NIH institutional review board as being safe and appropriate for young healthy adults (usually ages 18 and up) in need of the removal of impacted third molars. For more information call 496-4891.

Cafeteria Renovation Almost Done

Phase 1 renovation of the Bldg. 31 cafeteria is almost complete, after a year of work. It is set to reopen Tuesday, Mar. 3. ORS and GSI will have a ribboncutting ceremony on Monday, Mar. 2 at 11:30 a.m. followed by an open house. New features include accent lights; a semi-circle bulkhead with recessed lighting around four new food courts: a Soup and Salad Bar; a Chicago Rotisserie offering chicken roasters and a deli; the Ciao Amigo offering Italian/ Mexican style foods; and the Pasta HQ Pizza featuring pasta entrees and pizza. The dining area has more booths for larger groups and two-person tables for smaller groups. Phase 2 of the renovation starts mid-March and is scheduled for completion by mid-June.

NEW 'NET EFFORTS, CONTINUED FROM PAGE 1

Internet (NGI) and Internet2.

"Today's Internet suffers from its own success," said Dr. Michael Ackerman, assistant director for high performance computing and communications (HPCC) at the National Library of Medicine, which has been instrumental in getting NIH involved early on with the NGI and Internet2 initiatives. "Technology designed for a network of thousands is laboring to serve millions."

Future Shock Absorbers?

To ensure that the Internet will be able to handle the pressure of future usage, he continued, Vice President Gore announced in spring 1996 the administration's support of NGI, which marshals the resources of such government entities as the National Science Foundation (NSF), the Department of Defense, NASA and NLM.

One of NSF's biggest contributions so far is development with MCI of the very-high-speed Backbone Network Service (vBNS) in 1995, which provides a high bandwidth network for research applications. According to information at its Web site, the nationwide network operates at a speed of 622 megabits per second using MCI's network of advanced switching and fiber optic transmission

technologies. At that speed, the project boasts, "322 copies of a 300-page book can be sent every 7

Ackerman notes that as an NIH component, NLM—purveyor of the grand Visible Human Project several years ago-has long endorsed applying HPCC technology to health research. "The library has plans to sponsor a variety of NGI healthcare applications in such areas as advanced telemedicine and distance learning," he said. The development of NGI is necessary for such applications, he explained, because they often require the "nearly instantaneous transfer of massive amounts of data. Perhaps, more importantly, the transfer must be highly reliable and the integrity of the data must be rigorously maintained."

What NIH will contribute to both NGI and Internet2 are start-up investment funds, technological and engineering expertise, and development of medical research applications that can make the best of expanded 'Net capability.

No Time for Tie-Ups

"With NIH's biomedical research mission and increasingly more complex science applications, it's really more critical for NIH to be able to communicate at high speeds with universities than with most

First Steps on New High-Tech Frontier

he National Library of Medicine has pioneered several key underlying technologies that are candidates for the Next Generation Internet and Internet2, according to Mike Gill of NLM's



Electronics engineer Mike Gill (r) of NLM's Communications Engineering Branch jokes that the branch's browser-based medical information retrieval system, or WebMIRS, was "just a gleam in" Rodney Long's eye about 18 months ago. WebMIRS developer Long (l) says if all goes well, the Java applet—which allows the more than 20,000 x-rays and other key medical data from the National Health and Nutrition Examination Survey to be viewed via the Internetwill be online by late spring.

Communications **Engineering Branch** (CEB). One of the technologies being examined currently is asynchronous transfer mode, or ATM, which could improve transmission speed of live video, video databases, and large image files beyond the capabilities the Internet now has. CEB has been test-driving some of its NGI/Internet2bound teleconferencing prototypes for a little more than a year now.

In December 1996, CEB demonstrated its WebMIRS, a Java application prototype

that allowed digitized x-rays and associated text datafiles in a multimedia database at NLM to be sent to the annual meeting of the Radiological Society of North America in Chicago. Taped and live (digitized) video were also transmitted, and a live 2-way question and answer video session enabled a scientist on campus to participate simultaneously in the meeting hundreds of miles away.

The second ATM trial—a collaboration with DCRT—transmitted the proceedings of a 4-day gene therapy conference from the Natcher Bldg. to M.D. Anderson Cancer Center in Houston via

digitized video.

Last June, the ATM trial network carried the TeleHealth Care 1997 conference sponsored by the Texas Health Science Libraries Consortium at Baylor College of Medicine.

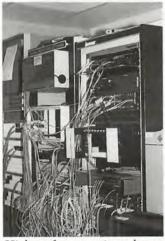
Most recently, NLM-again teaming up with DCRT-transmitted Jan. 21-22 the video proceedings of the "Developing U.S. Public Health Service Policy in Xenotransplantation" conference, sponsored by FDA, NIH, CDC and HRSA, to the M.D. Anderson Center in Houston. [For details on the conference see www.fda.gov/cber/meetings/ xeno012198.htm.]

"All these trials demonstrated the high capacity service available via a technology that will be part of the infrastructure supporting Next Generation Internet and Internet2 applications," said Gill.

other agencies of the federal government," said Roger Fajman, head of the systems development and support section of DCRT's Network Systems Branch and one of NIH's liaisons to Internet2, a smaller-scale project developed by a group of universities with aims similar to NGI. NIH was the first non-university organization to become a regular member of the more than 115-institution Internet2 consortium whose goal is to build a high-speed, members-

only network devoted solely to science, research and education pursuits.

Currently, the Internet is open basically to anyone with a computer connection and a service provider. While universal access is good in most respects, it obviously also significantly increases on-line traffic, which is not at all good for what are called "data-intensive" or "data-mining" applications. These applications require higher bandwidth



High performance interchange of the NGI/Internet2 (ATM switching equipment) located in NLM's Computer Science Branch, Lister Hill Center

(connection speed) and larger capacity than is possible with so many other travelers on the 'Net. Fajman says to think of it this way: The typical television image is updated electronically about 30 times per second; in contrast, most video images on computers are updated at varying speeds of about 5 times per second. "Video images on computers are usually much smaller than TV pictures," he explains. "The size of the images affects the data rate." If Internet2 can bring network computer imaging up to speed, imagine the boon to telemedicine and teleconferencing alone.

Coming to a GigaPoP Near You

By mid-1998, Internet2 will consist of several GigaPoPs, or high-speed, high-capacity connection points to the vBNS and other national networks, around the nation. These will link Internet2 members to each other for communication and, ultimately, scientific collaboration.

NIH's nearest vBNS connection point will probably be in Perryman, Md., near Aberdeen, according to Fajman. Internet2 GigaPoPs are as close to NIH as the University of Maryland, College Park. Since the cost of connecting at high speed to Perryman is quite high, connecting to a local GigaPoP can save money and provide other benefits as well. Other institu-

CONTINUED ON PAGE 8

Speed Thrills

"DCRT has been looking at asynchronous transfer mode (ATM) ever since it was proposed as the technology of the future, around '93 or '94," says Jeff Hancock of DCRT's Network Systems Branch. Specifically, NSB has

been looking at the technology as a way to increase the speed of the NIHnet backbone; offer higher performing and more flexible connectivity options to the institutes on and off campus; and transmit voice, video and data over the same network.

DCRT has installed ATM switches around campus to support the center's scientific research and to allow transmission of real-time, full-motion video between buildings. Conferences from Natcher or Masur, Hancock explains, can be turned into ATM cells and transmitted to



Jeff Hancock

the rest of the NIH ATM infrastructure (desktop or remote conference center), to the conventional NIHnet and Internet, or to any site that connects to DCRT via ATM.

"We have also been actively involved in connecting our ATM infrastructure to high-speed ATM testbeds in the area," Hancock continues. "DCRT and NLM share, in all respects—bandwidth, costs and technical administration—a link to the DARPA-funded and Bell Atlantic-run ATDnet. [ATDnet (http://www.atd.net) is a high performance networking testbed in the area. Established by the Defense Advanced Research Projects Agency (DARPA) to enable collaboration among Defense and other federal agencies, ATDnet serves primarily as an experimental platform for diverse network research and demonstration initiatives.]

"This link is six times faster than the current 100Mbit NIHnet backbone links," Hancock says. "ATDnet has been used to test the effects of delay upon video transmission and as a way to connect collaborative sites in the metropolitan (National Naval Medical Center and Walter Reed Army Medical Center, for example) and wide (Washington University in St. Louis, if things go as planned) areas."

DCRT is also testing Bell Atlantic's production cell relay service that uses ATM. This service will allow varying ATM connectivity options to any off-campus building in the Washington area and will allow DCRT for the first time to offer the same quality of data transmission (plus video and voice transmission) to off-campus users who have typically had to endure lower speed connectivity due to cost. "Initial tests in Rockledge have been so successful that the TLCs [technical LAN coordinators] there call us and complain when they notice we have switched them back to the old connection," Hancock remarks.

Typically, on the current NIHnet, DCRT connects users to each other via routers, which are high speed interconnection devices. These devices stop all traffic and examine it to determine the best path on which to forward the data. When messages are sent, they pass through two or more routers, which delay the transmission of the message.

"Savvy institutes have been requesting direct connections between buildings for years in order to bypass this delay but there is not enough fiber to go around," Hancock explains. "With current technology, all LANs are connected to a DCRT router in each building and communicate over the NIHnet backbone. With ATM technology and the use of virtual LANs, DCRT could maintain ATM links that would connect NIH buildings to the NIHnet, but also provide dedicated bandwidth for direct data connections (called supernetting) between buildings as well as voice and video traffic. ATM's traffic management features allow different traffic types to be identified and run over the same fiber links. So where several fiber links would have been necessary, only one is needed."

CONTINUED FROM PAGE 7

tions in the Washington and Baltimore areas are in the process of or are considering connecting to the

Baltimore-Washington GigaPoP.

Examples of some probable NGI/Internet2 applications include medical imaging for pathology, radiology and mammography, and maintenance and retrieval of multimedia data for patient records. A medical researcher on NIH's campus, for instance, would be able to consult with a physician at a university teaching hospital across country in realtime, while they both simultaneously view a patient's echocardiogram on their computer screens. (See sidebars for a description of several of NIH's early potential NGI/Internet2 forays. Also, researchers who want to discuss potential Internet2 applications can contact Fajman by phone, 402-4265, or email, rf4w@nih.gov.)

"Much of the healthcare community is just discovering the advantages and efficiencies afforded through use of advanced communications technologies such as the Internet," concluded Ackerman. "Getting medical practices connected—in rural areas, for example-is also still a formidable

problem. NLM advocates progress in these areas while encouraging, publicizing and showcasing advanced patient care and medical research applications that use evolving NGI capabilities."

Aside from developing useful applications to take advantage of the increased capacity of these "HOV lanes" on the 'Net, what also remains to be worked out is how the two projects will work together. NGI, a government endeavor, is currently better funded and more expansive, but Internet2, the university-led effort, is further along in its implementation—Internet2 GigaPoPs have already popped up in several areas nationwide and many Internet2 members, including NIH, are already in various stages of upgrading their servers and fiber optic equipment in preparation for connection. Eventually, according to DCRT and NLM experts, NGI and Internet2 probably will need to merge. Regardless of when and how the two link, though, NIH—as a charter member of both projects—is in prime position to reap the benefits for medical research.

High-Performance Telemedicine: The Radiology Consultation WorkStation

he Radiology Consultation WorkStation (RCWS) is a I multimedia, medical-imaging workstation that has been developed by staff of the image management and communication section of DCRT's Computational

Bioscience and Engineering Laboratory.

Envisioned as a node in a nationwide telemedicine network supporting an electronic radiology environment, the RCWS uses a high-speed asynchronous transfer mode (ATM) network as the communication infrastructure. Each RCWS system enables the high-resolution display of medical images and provides a mechanism for remote consultations between medical specialists in one location

and colleagues at multiple sites.

Video and sound are transported through a high-speed 155 Mbits/sec ATM link to connecting RCWS systems elsewhere on an ATM network. Video capability is provided with a higher quality "S-video" camera and color monitor. Other video input devices will soon be added to the RCWS, including an S-VHS video cassette recorder, a high-resolution patient exam camera, and an overhead projector. Microphones and speakers allow voice communication. Two high-resolution monochrome image display systems function as electronic view boxes to show 14x17-inch electronic films.

"Telecursor" contouring can be performed in a manual or semi-automated consultation mode, allowing each participating clinician to outline features or regions for discussion and comparison. These will be transmitted in real-time during the RCWS consultation session.

Radiotherapy treatment planning is targeted as the initial application for RCWS. DCRT engineers and programming staff are working closely with Drs. Laurie Herscher and Rosemary Altemus and other staff members of the NCI Radiation Oncology Branch. Dr. R.

Nick Bryan and staff members of the Clinical Center's diagnostic radiology department are also collaborators on the project. The RCWS is being tailored to help process CT image data before development of a radiotherapy treatment plan.

RCWS systems will soon be installed at Walter Reed Army Medical



The Radiology Consultation WorkStation includes four monitors: two high-resolution black-and-white electronic view boxes (shown at left) for displaying radiographic images, a standard color computer display, and a highresolution video monitor to show video signals from the collaborative site. A pan/tilt/zoom video camera, mounted atop the video monitor, sends images through the ATM network to other sites.

Center and the National Naval Medical Center enabling more effective collaboration between medical staff at radiation oncology clinics at these institutions and their NCI ROB

colleagues.

An application being planned involves studies related to swallowing disorders, laryngeal function, and head and neck cancer. Dr. Barbara Sonies of the CC rehabilitation medicine department plans to use the RCWS to evaluate patients from St. Louis Barnes-Jewish Hospital's speech pathology department.-Kenneth M. Kempner

Fogarty Center Offers Tax Help to Visitors

The Fogarty International Center will sponsor a series of tax year 1997 tax preparation workshops to help participants in the NIH Visiting Program complete federal and state tax forms. The workshops will be approximately 3 hours long. Participants should bring copies of their W-2, 1042S, and/or 1099 forms to the workshop.

The schedule is as follows:

Date/Time	Location	Who Should Attend
Feb. 27/10 a.m.	31/Rm. 6C10	Visiting Fellows
Feb. 27/1:30 p.m.	31/Rm. 6C10	Visiting Associates/ Scientists/
Mar. 6/10 a.m.	31/Rm. 6C6	Special Experts
		Visiting Fellows
Mar. 6/1:30 p.m.	31/Rm. 6C6	Visiting Associates/ Scientists/
		Special Experts
Mar. 13/10 a.m.	31/Rm. 6C10	Visiting Fellows
Mar. 13/1:30 p.m.	31/Rm. 6C10	Visiting Associates/ Scientists/
		Special Experts
Mar. 20/10 a.m.	31/Rm. 6C10	Visiting Fellows
Mar. 20/1:30 p.m.	31/Rm. 6C10	Visiting Associates/ Scientists/
	4	Special Experts
Mar. 27/10 a.m.	31/Rm. 6C6	Visiting Fellows
Mar. 27/1:30 p.m.	31/Rm. 6C6	Visiting Associates/ Scientists/
		Special Experts
Apr. 3/10 a.m.	31/Rm. 6C10	Visiting Fellows
Apr. 3/1:30 p.m.	31/Rm. 6C10	Visiting Associates/ Scientists/ Special Experts

'Hexagon '98' Features NIH'ers

Opening night for the 43rd annual production of Washington's only all-original, political, satirical, musical comedy revue is set for Wednesday, Mar. 4 at Duke Ellington School of the Performing Arts in Georgetown. This year's show is titled "Hexagon '98: Of Thee We Zing!"

Several community-spirited NIH'ers are members of Hexagon's all-volunteer theater troupe, including NCI's Dr. David Levin, Dr. Roz Breslow, Dr. Stefanie Nelson, Kimberlee Newball and Michael Smith, and NCRR's Martin Blumsack. Ticket prices for most performances are \$20; however, the Mar. 4 and 5 performances are discounted to \$15. As always, all proceeds from the show will benefit a local charity; this year's beneficiary is Community Family Life Services.

Over the past 42 years, Hexagon has raised more than \$2.4 million for Washington, D.C., area charities. For details, call (202) 333-SHOW or visit its Web site, http://www.hexagon.org.

NIDDK's Bob Creveling Retires

By Sharon Ricks

After nearly 40 years at NIH, Dr. Cyrus (Bob) Creveling, director of NIDDK's Office of Technology Development, retired Jan. 2. He was named an NIDDK scientist emeritus last December and will serve as 1998 president of the Washington Academy of Sciences.

"As a scholar, he's sort of a Renaissance man," says Dr. Kenneth Kirk, acting chief of NIDDK's Laboratory of Bioorganic Chemistry and a coworker for more than 30 years. "He is well read and his interests go beyond science into history, philosophy and religion."

Creveling joined NIH's Heart Institute in 1957 and enjoyed friendly competition with NINDS's Dr. Irvin Kopin. Both studied catecholamine metabolism and shared information and compounds. Kopin says, "Cy made important contributions to our understanding of the basis for some of the enzyme reactions that cause the inactivation of catecholamines."

In 1964, Creveling joined NIDDK's Laboratory of Chemistry, now the Laboratory of Bioorganic Chemistry. There, he and Kirk studied the biological properties of fluorine-substituted catecholamines and made a major discovery on the receptor selectivity of 2- and 6-fluoronorepinephrines.

"I made these compounds not having any idea what they would do," says Kirk. "And he was doing studies on adrenergic receptors. We paired up and found much to our delight that when we had fluorine in the 2-position, the analogue was selective for beta, and not active at the alpha adrenergic receptor, and if fluorine was in the 6-position the reverse was true. These analogues proved to be extremely valuable research tools.

"I am a chemist, and he's a pharmacologist," adds Kirk. "It was a kind of melting pot of science—the sort of science that can work very well at NIH."

In the late 1980's, Creveling was asked to head a forum 1 day a month on technology development. Eventually it consumed all of his time, and 3 years ago he left the lab. "I was caught," he says. "Once you can speak legal, you're caught. It really is a different language." In 1995, Creveling's new responsibility evolved into the NIDDK Office of Technology Development with responsibility for managing cooperative research and development agreements. NIDDK's first CRADA was for about \$50,000, says Creveling. Now there is one for \$17 million. "It's been exciting and interesting work," he admits, "but it was much more fun to be in the lab."

Born in Washington, D.C., Creveling graduated from McKinley Technical High School in 1946, received a B.S. in chemistry from George Washington University in 1954 and a Ph.D. in 1962. He has written 142 papers and dozens of book chapters.



NIDDK scientist emeritus Dr. Cyrus (Bob) Creveling recently retired following nearly 40 years at NIH. Gardening for

From the Ground

organization that

improve the life of

the community. Its

Etgen, will address

the March meeting

of the NIH Garden

Club on Thursday,

Bldg. 31, Conf. Rm.

From the Ground

Up operates an

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Up is a local

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DCRT Assistant Director Songco Leaves

By Charles Mokotoff

After 30 years nourishing the development of information technology at NIH, Dave Songco, DCRT assistant director for engineering and programs, has moved on to the private sector. His

career spanned a time when computing technology grew at an extraordinary pace; he distinguished himself by being at the forefront of new developments as an engineer, organizer and manager.

"He brings out the best in others by believing in them a little more than they believe in themselves," said Dale Spangenburg, chief of



Dave Songco

DCRT's Customer Services Branch. Excellence in customer service was Songco's passion, which he combined with technical knowledge, perspicacity in working with diverse personalities, and a flair for accomplishing projects from the ground up.

DCRT recently hosted a celebration of his career, and many recent acquaintances were amazed at the breadth of his achievements, laid out in a timeline from his beginnings as a student trainee at the Bureau of the Census to his final role as DCRT's assistant director. His whole family, including parents well into their eighties, were there to wish Songco luck in his new endeavor.

"My dad retired from government service after 30 years and went on to work 25 more years as a barber," Songco told the crowd. He paid allegiance to his family, from whom he drew much of his strength and skill.

The list of names and projects on his timeline read like a Who's Who in information technology at NIH. "Dave is an accomplished engineer, an outstanding customer service advocate and a committed NIH fan. We will all miss him tremendously," said Bill Risso, DCRT's recently retired acting director. It was clear that their friendship served them both well as they led DCRT through enormous changes in IT over the past 30 years.

When Songco joined the Bureau of the Census in 1960, he was working with the huge UNIVAC machines, tape drives and line printers that dominated computing technology in that decade. After graduating, he spent 3 years at the NASA Goddard Space Flight Center designing and building analog and digital systems to process data from U.S. satellites. In 1967, he moved to DCRT's newly founded Computer Systems Lab, designing computer systems for real-time data acquisition and control,

clinical automation, and analysis of biomedical signals. He also designed one of the first synthesized voice terminals for the blind. At CSL he met Bill Risso and Dr. Robert Martino along with several other long time colleagues, beginning a relationship of computer research and technical management that changed the face of DCRT and kept it on the cutting edge of computing technology.

Turning to IT management in 1982, Songco established the first PC support program at NIH and collaborated with the then NIH Training Center to establish the NIH User Resource Center. Later he cofounded the NIH Scientific Computing Resource Center.

In recent years, he was a staff member of the information technology central committee that sought to reengineer IT management at NIH. He also provided leadership for the NIH architectural management group, which serves as a technical advisory network for the chief information officer.

The NIH Office of the Director is grateful to Songco for providing leadership and direction in changing their local area network from a loosely organized compendium of machines into a model LAN. For these and many other achievements, he was given four Director's Awards, two Merit Awards and many Special Achievement Awards in the course

As DCRT begins another dramatic era of change, it can look back on Songco's contribution in advancing information technology at NIH and his extensive role in helping the division through unprecedented transformations.

Workshop on Signal Transduction

The third international workshop on signal transduction in the activation and development of mast cells and basophils will be held Mar. 7-11. The keynote lecture by Timothy A. Springer of the Center for Blood Research and Harvard Medical School will be on Saturday, Mar. 7 at 5 p.m. in the Natcher Bldg. and is entitled, "Integrins and G Proteins: Structurally Homologous Proteins That Regulate Interactions Outside and Inside the Cell Membrane." The Distinguished Lecture by Henry Metzger, NIAMS, "Regulation of Signal Transduction by the IgE Receptor," will be on Monday, Mar. 9 at 4 p.m. in Masur Auditorium, Bldg. 10. Both lectures are free and open to all.

The entire workshop is free to NIH employees but registration is necessary. This workshop is presented by the Foundation for Advanced Education in the Sciences. For more information and registration material, call 496-7975.

and vegetables. Half of its produce is distributed for sale at inner city farm stands. These stands are run by local residents involved in community organizations or job training programs. The other half is distributed to people who have purchased "shares." Once a week, they receive a share of the fresh produce from the farm.

NIH Garden Club meetings are open to anyone interested in gardening. For more information. email Karen Helfert at kh21k@nih.gov.



NIAMS Council Gains Five

Five new members were recently named to the National Arthritis and Musculoskeletal and Skin Diseases Advisory Council:

Dr. Gary E. Friedlaender is a professor and chief of orthopaedics and rehabilitation at Yale University School of Medicine. His scientific focus has been on limb reconstruction and the treatment of bone and joint diseases.

Dr. Pearl E. Grimes is medical director of the Vitiligo and Pigmentation Center of Southern California, Los Angeles. She is a noted expert in the



NIAMS director Dr. Stephen Katz (second from r) and deputy director Dr. Steven J. Hausman (second from l) greet new NIAMS council members (from l) Dr. Eduardo Rios, Dr. Gary Friedlaender, Dr. Pearl E. Grimes, Tamara K. Liller, and Dr. Gregory R. Mundy.

cause and treatment of vitiligo and pigmentation disorders affecting African-American and other minority populations, and is a practicing dermatologist.

Tamara K. Liller is president of the Fibromyalgia Association of Greater Washington, Inc., in Woodbridge, Va.

Dr. Gregory R. Mundy is the J.C. and Irene Heyser memorial professor of bone and mineral metabolism at the University of Texas Health Science Center, San Antonio. He has performed extensive investigations in bone research, and is an NIAMS MERIT Award recipient.

Dr. Eduardo Rios is a professor in the department of molecular biophysics and physiology at Rush-Presbyterian-St. Luke's Medical Center, Chicago. He has extensive publications in the science of muscle physiology, and is a recipient of the NIAMS MERIT Award.

Are You Overweight?

The Uniformed Services University Weight Management Program is looking for healthy nonsmoking women, ages 18-55, to participate in a weight management program as part of a study examining factors affecting weight maintenance. The program meets weekly for 3 months with follow-up extending to a year. If interested call Dr. Tracy Sbrocco, (301) 295-9664.

DWD Training Tips

The Division of Workforce Development, OHRM, offers the courses below. Personal computer training is also available through User Resource Center hands-on, self-study courses, at no cost to NIH employees. Additional courses are available by completing the "Training by Request" form in the back of the DWD catalog. For more information call DWD on 496-6211 or consult DWD's home page at http://www-urc.od.nih.gov/dwd/dwdhome.html.

Courses and Programs Starting Dates

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Skills Development Offered

The Administrative Skills Development Curriculum is being offered in 1998. The curriculum is open to all NIH administrative staff in one-grade-interval jobs who have ICD approval and funds authorization.

On Mar. 25-27, all participants will take part in a workshop, Planning for Career Advancement for Administrative Support Staff. They will use data from professionally administered assessments to formulate individual development plans. These plans, approved by participants' supervisors and personnel offices, will guide curriculum participants through the program. A minimum of six courses must be completed in 3 years to receive a certificate of completion. At least two courses must be taken each year.

Submit training nominations to the Division of Workforce Development. Participants will receive confirmation from DWD. For more information, call Pauline Irwin, 402-3385, or email irwinp@odepsm1.od.nih.gov.

Interested in Chamber Music?

The R&W **Chamber Music** Club now cooperates with Levine School of Music is assembling a chamber music directory, the Washington **Area Chamber** Players Directory. It lists members of the community who play instruments or sing, and who wish to be able to contact each other to form music groups. To be listed, submit contact information, and optional self-rating and comments to Nancy Breth at nbreth@aol.com, fax it to (703) 241-4072, or mail it to the Levine School, 2801 Upton St. NW, Washington, DC 20008. Use email if possible. When ready, the directory will cost \$5 and will be available from Levine School of Music. Questions? NIH campus contact is Sue Epstein, 827-0450 or email epsteins@A1.cber.fda.gov. Questions can also be emailed directly to Nancy Breth of the Levine School as above.

Wednesday Afternoon Lectures

The Wednesday Afternoon Lecture series-held on its namesake day at 3 p.m. in Masur Auditorium, Bldg. 10-features Dr. Eileen White on Mar. 4, speaking on "Regulation of Apoptosis by Oncogenes and **Tumor Suppressor** Genes." She is professor, department of molecular biology and biochemistry, Rutgers University, and faculty member at the Center for Advanced Biotechnology and Medicine, Piscataway, N.J.

On Mar. 11, Dr. Ronald D. Vale, professor of pharmacology and associate investigator, HHMI, University of California, San Francisco, will discuss "The Molecular Mechanism of Kinesin-Driven Motility."

For more information or for reasonable accommodation, call Hilda Madine, 594-5595.

NIDR Fellow Lancaster Gets Double-Lung Transplant

fter a long wait, NIDR oral medicine fellow Dr. Alterry Lancaster received a double-lung transplant as therapy for cystic fibrosis on Feb. 9 at Ochsner Foundation Hospital in New Orleans. As the Record went to press, he was doing well in the postoperative period and improving daily, according to his wife Joanne, an NICHD immunologist.

The 51/2-hour operation ended months of emotional highs and lows for the Lancasters, who temporarily relocated to New Orleans last fall to be near the transplant center at Ochsner. The daily anxieties of anticipation took their toll, reported Randy Schools, general manager of R&W, which helped raise funds for the Lancasters. Especially around Christmas, the couple expected donor organs to become available, he said.

An Irish dance festival held last October under



Dr. Joanne Lancaster, an NICHD immunologist, and husband Dr. Henry Lancaster of NIDR, last fall

R&W's sponsorship raised more than \$8,000 for Henry and Joanne, who had appealed to the NIH community for help (see Sept. 23, 1997 Record) when they discovered that their medical insurance would not fill all of their financial needs. The money has been crucial to their survival, says Joanne, who sent thanks to all NIH'ers via email to the Record.

"If we had not had R&W help for fundraising, as well as all the other fundraising we have had, we could not be here," she wrote Feb. 10. "We want to thank everyone very much."

If all goes smoothly, she reported, Henry will stay in New Orleans for 100 days so that physicians can determine the exact doses of immunosuppressive drugs to give him, and to pass the critical period when he is most at risk of acute rejection and infection.

"Henry's ICU nurse told me he is such a pleasant and patient patient, very laid back and tolerant of all the pain," said Joanne. "That sounds like Henry." She says she is constantly reassuring her husband that the time is near when "he will be able to walk without having to gulp for breath, and that he will not have to do all his pulmonary treatments anymore. These pleasant thoughts are helping keep his spirits up and keep him strong."

The donor of the lungs transplanted to Henry also contributed his heart to another patient, said

"I am confident God will protect (Henry), and so is he," she said.

Schools emphasized the benefits of the contributions of money and leave by many hundreds of NIH'ers to the Lancasters. Of the \$8,619 raised by R&W for their needs, almost \$3,000 had been spent by mid-February for expenses associated with their relocation, including bringing family members to New Orleans for brief stays. The Lancasters intend to return any unused funds to an account for patients awaiting life-saving organ transplant.—Rich McManus B

Circus To Benefit NIH Charities

Ladies and gentlemen, now hear this! Ringling Brothers and Barnum & Bailey Circus is bringing the 127th edition of The Greatest Show on Earth to the MCI Center for the first time ever. The circus and the center are joining on this historic occasion to provide a fundraising opportunity for the NIH charities on Tuesday, Mar. 24 at 7:30 p.m. Funds collected over expenses that evening will benefit the Children's Inn at NIH, Special Love/Camp Fantastic, and Friends of the Clinical Center.

In addition, sponsors will provide complimentary tickets for all children undergoing treatments for illnesses such as cancer and AIDS. The kids will come from the Clinical Center and

other local hospitals.

Because the MCI Center can seat more than 17,000 people, a major effort is under way to sell group tickets to schools, churches, synagogues and employers who can fill the seats. Reduced price tickets are available now at all R&W gift shops. The price range, depending on where the seats are located, is \$13.50, \$10.50 and \$7.50. A few \$40 seats will go for \$30.

"We are hoping to provide a grand time for patients, their families and children of all ages," said Randy Schools, R&W general manager.

Plan now to take your family and friends to the circus, and do a great favor to the NIH charities.