

January 31, 1997

Remember what
you have seen,
because everything
forgotten returns to
the circling winds.

—Navajo Wind Chant

Vol. XXIX, No. 19

Provost **Fred Dobney** presented a new TIAA-CREF retiree benefit proposal to the Board of Control January 24 that would give employees a choice of full retirement health coverage or a 2-plus-2 plan with access to University health coverage.

Under the proposal, TIAA-CREF participants hired before July 1, 1997, could

- ▶ have the University match their personal contributions to their retirement program, up to 2 percent of their salary and, with 80 points at retirement, have the option of buying health coverage from MTU; or
- ▶ with 80 points, retire and have the University reimburse them an amount equal to the cost of the premium for the MTU health benefits program.

Employees choosing the second option would have to pay the premiums themselves, but Michigan Tech would pay them back the full amount quarterly. They could choose MTU's health plan or use the money to buy another plan on the open market.

Currently, TIAA-CREF retirees receiving the health benefit pay 20 percent of the premium themselves, but because the reimbursement from MTU would be taxable, Dobney suggested waiving the 20 percent co-pay.

The choice would only apply to employees hired before July 1. Anyone hired on or after that date would simply receive the 2-plus-2 benefit.

The proposal is partly in response to the concerns of MTU employees, who, in a recent survey, indicated a preference for a 2-plus-2 program but also supported options such as prefunding of the TIAA-CREF retirement health benefit, Dobney said.

And, by locking in the 2-plus-2 option as of July 1, it helps assure that (1) the University can afford the improved benefit in the foreseeable future, and that (2) those employees choosing 2-plus-2 will have sufficient retirement income to buy health insurance.

Dobney said later that some Board of Control members were concerned about the cost of the proposal, asking how the University could afford a 2-

Dobney unveils
NEW



TIAA-CREF
proposal

plus-2 plan but not afford to prefund the benefit. Dobney said the 2-plus-2 plan is an enhancement of the compensation package that puts money directly in employees' pockets and does not set it aside, where it could conceivably be appropriated by future Boards in the event of a fiscal emergency.

The Board asked for additional information on the proposal and is expected to act on the TIAA-CREF retirement health care benefits issue at its March 14 meeting.

Dobney also reviewed Michigan Tech's performance indicators—statistics that show how well it is meeting its goals—and discussed how the University budget process is being used to support those goals.

"The Board seemed to appreciate the discussion, which was more philosophical than fiscal," Dobney said.

Among the performance indicators: The percentage of tenured/tenure track women faculty has risen from 15.5 percent in 1991 to 20.8 percent in 1996, while the percentage of minority faculty has risen from 14.1 to 16.0 percent. In an era of declining federal support, research expenditures per faculty member have risen from about \$60,000 in 1992 to nearly \$70,000 in 1995. Graduate enrollment, particularly in PhD programs, has risen steadily since the mid-1980s, with a slight drop off in 1996 when a large number of students graduated. New doctoral programs in geological engineering, and in computational science and engineering, as well as a master's program in industrial archaeology, have been instituted to support the University's goal of increased graduate enrollment.

Board approves Meese Center renovations

Submitted by the News Bureau

The Board of Control authorized funds January 24 for renovation of the Wesley House as a new location for the University Career Center and the Michigan Tech Alumni Association.

The Board authorized up to \$973,000 for the renovations. The building will be named the Harold Meese Center in honor of the former, long-serving dean of students. Moyle Construction began work on the project this week, and the center should be ready for occupancy in August.

Board Chair **Ken Rowe** and President **Curt Tompkins** recognized two Board members who have completed their terms on the governing board. Dr. **Denice Logan** served for eight years and **Ric Gonzalez** for twelve. "Both Denice and Ric have worked tirelessly to make Michigan Tech an even better University while always being sensitive to the issue of accessibility," Rowe said.

Governor **John Engler** is evaluating potential board members to fill the two eight-year terms. The governor's office expects to announce the new board members prior to the next regularly scheduled meeting, March 14, in Houghton.

Tompkins also told the Board that the University will be in a better position to begin discussing budget options at its next meeting following the governor's unveiling of the state budget, on February 6.

Name change: ARO now ARS

Auxiliary Retail Operations has changed its name to Auxiliary Retail Services.

"Service, and selling our products and services, is what we are all about," ARS Director **Howard Greenley** said. "Our new name better reflects our role in the Tech community."

The areas that report to ARS are the SDC, MacInnes Student Ice Arena, Gates Tennis Center, Central Ticket Office, Portage Lake Golf Course, Mont Ripley Ski Hill, Memorial Union, MTU Bookstore, Auxiliary Technologies, Tech Express, Community Programs, and Summer Athletics.

Faculty development grants awarded

Twenty-five MTU faculty members have received a total of \$68,000 in Faculty Development Grants. The grants, awarded based on the recommendations of the Faculty Development Grant Committee, typically support educational or research projects that would not generally receive outside funding. Recipients, the grant amount, and their projects are:

- **Dieter Adolfs** (humanities), \$4,500, data collection for a writing project, *Thomas Mann's Rhetoric of Exile*
- **Thomas Co** (chemical engineering), \$3,500, writing project for the textbook *Advanced Mathematics For Chemical Engineers*
- **Sylvie Dangeville** (humanities), \$2,700, writing project for a book, *A Critical Reading of the Dramatic Works by the Marquis de Sade*
- **Carl Dassbach** (social sciences), \$2,000, research for a manuscript, *The Faces of Fordism*
- **Jianping Dong** (mathematical sciences), \$2,100, attend a workshop at the International Symposium on Contemporary Multivariate Analysis and Its Applications
- **Diana George** (humanities), \$2,650, data collection and research for a book, *A Free Adaptation: Schooling Popular Culture and the Evolution of Ideas*
- **Glenda Gill** (humanities), \$3,500, research on *Advanced Dementia: Morgan Freeman and Nontraditional Roles*
- **Kathleen Halvorsen** (social sciences), \$2,700, experimental project with sustainable communities and citizen involvement in forest management in the Upper Peninsula of Michigan
- **Jacqueline Huntoon** (geological engineering and sciences), \$2,300, research project on the geology of Utah's national parks: a field-oriented teacher education program
- **John Jaszczak** and **George Robinson** (Seaman Mineral Museum), \$1,300, equipment use charge for investigation of naturally occurring spherical graphite
- **David Landon** (social sciences), \$700, publication of research results
- **Barbara Lide** (humanities), \$3,500, data collection and research for a book, *Strindberg from the Feminine Perspective: A Collection of Essays*
- **Carol MacLennan** (social sciences), \$5,000, research on Hawaiian sugar and sovereignty
- **David Mendenhall** (chemistry), \$2,500, data collection and research for a book on polymer degradation
- **Faith Morrison** (chemical engineering), \$3,500, research for a book on understanding polymer rheology
- **Pushpalatha Murthy** (chemistry), \$3,000, attend an American Chemical Society workshop on molecular modeling
- **David Odde** (chemical engineering), \$2,500, research travel for collaborative laser trapping experiments
- **Barry Pegg** (humanities), \$3,750, editing and translation of *Tragedies of the North* by Dimitri Shparo and Alexander Shumilov
- **Wayne Pennington** (geological engineering and sciences), \$2,000, attend training courses in the use of commercial software programs
- **Ching-Kuang Shene** (computer sciences), \$2,800, attend a workshop at the Third Annual ACM Symposium on Computational Geometry
- **William Sproule** (civil and environmental engineering), \$3,500, research on snowmobile trail planning and design
- **Ghatu Subhash** (ME-EM), \$2,100, participate in the Second International Winter School on Continuous Media Mechanics
- **Vladimir Tonchev** (mathematical sciences), \$900, travel related to a writing project
- **Song-Lin Yang** (ME-EM), \$2,500, attend the Sixth ERCOFTAC/IAHR/COST Workshop and the Second Symposium on Turbulence, Heat, and Mass Transfer
- **Debra Bruch** (fine arts), \$2,500, research related to a writing project, *A Cultural History of Australian Theatre*

TECH TOPICS

is published weekly by

University Relations

Bill Curnow, director, University Relations
Dennis Walkainen, mgr., Editorial Services
Marcia Goodrich, Tech Topics editor
Gail Sweeting, composer

Information to be included in *Tech Topics* should be submitted to the *Tech Topics* editor in one of the following ways:

By e-mail to ttopics@mtu.edu
By campus mail, send typed copies to *Tech Topics*, University Relations.

Each week, the deadline for submitting information is **Friday at 5:00 p.m.** or publication the following Friday.

Our URL is <http://www.sas.it.mtu.edu/jcs/ttopics/index.html>

How to use FirstSearch

FirstSearch, an information system that gives you access to about sixty databases, is now available via the J. R. Van Pelt Library as part of a three-month statewide trial, February 3–April 30.

The library is inviting everyone who's interested to try out FirstSearch—some of the databases are already available.

To get to FirstSearch, (1) access the MTU Home Page, (2) select the Van Pelt Library button (3) select the Voyager Online Catalog & Databases button, and (4) click on FirstSearch.

Note the word "Area" in blue. By default, the system provides you with an alphabetical listing of all available databases. For a database breakdown by topic area, click on "Area." Then, (1) click on a topic area, (2) select a database title, and (3) click on Select Database.

Database welcome screens provide information on scope and period of coverage. Depending on the database, you can get subject access to books, journal articles, proceedings, newspapers, government publications, and financial information on companies. A few databases provide full-text; all provide help screens and the capacity either to print locally or to e-mail to yourself up to twenty citations at a time.

For instructions on searching, advanced searching, Boolean operators, databases, tagging records, and thirty other topics, click the Help and General Help Topics buttons. Anyone, including classes, who needs instructions in formulating searches may contact Dave Bezotte, reference and instructional services librarian, to schedule an appointment. He can be reached at 487-3041 or dbezotte@mtu.edu

New Staff

Matthew Buss has joined the humanities staff as a system specialist. He lives in Hancock.

Amy Louise Miller has joined the Educational Opportunity staff as a secretary. She is married to Donovan Miller and lives in Houghton. Miller has a BS in Business Administration from Central Michigan University.

Beth Balcom joins the Youth Programs staff as a secretary. She was previously employed at the Western U.P. District Health Department as an environmental health secretary. She has two children, Jon Balcom and Shirlee Balcom, and lives in Hancock.

Hartman to speak on ethics

Arthur Hartman, director of human resources at Stryker Instruments, will be speaking on ethical dilemmas and leadership in industry at the next Ethics in Engineering lecture, on Tuesday, February 4, at 7:00–9:00 p.m. in M&M U115.

All interested persons are invited. For further information, contact Jon Henkel at 487-3057.

Computer classes

Michigan Tech is offering the following classes in cooperation with dL Computer Consultants at the reduced price of \$115. All classes will be held 9:00 a.m.–4:00 p.m. at the consultants' office, 706 Shelden Avenue. For more information or to register, call 487-2416.

- Access—Advanced: Monday, February 3
- Access—Basics: Monday, February 10
- Excel—Basics: Thursday, February 20
- QuattroPro—Basics: Tuesday, February 18
- Windows 95: Tuesday, February 4
- Windows (version dependent on client needs): Thursday, February 27
- Word—Basics: Tuesday, February 25

NSF grant info on line

Information about the National Science Foundation, including program deadlines, is available on the Web.

The NSF Web site also includes award abstracts, and visitors can download copies of NSF publications.

To get the latest NSF information, go to <http://www.nsf.gov>

VIIU teams compete in programming contest

Submitted by *Dave Poplawski*

Assistant Professor **Phil Sweany** and several three-person teams from the computer science department ventured to Sault Ste. Marie November 7 to participate in the annual Association for Computing Machinery programming contest.

The contest drew approximately 1,000 teams from colleges and universities in 20 regions (12 in North America, 5 in Europe, 2 in Asia, and 1 in the South Pacific), all hoping to be the best in their region and have a chance at the finals, which will be held in San Jose, California, this March.

The contest involved writing programs to solve even problems. The programs were scored based on correctness and how long it took to produce correctly working programs. MTU's two official teams, which were selected via a locally held run-off contest, placed fourth and eleventh in the North Central region (Minnesota, Wisconsin, Western Ontario, Manitoba, Iowa, North Dakota, South Dakota, Nebraska, Kansas, and the U.P.), beating out teams from places like the University of Nebraska, Iowa State, and the University of Minnesota. Unfortunately, only the teams placing first, second, and third qualified for the finals. The fourth-place team was "almost" third, missing qualifying for the finals by taking just one minute more than the third-place team.

MTU's fourth place team included undergraduates **Dan Laursen**, **Ryan Mahoney**, and **Tom Schumm**, while the eleventh-place team members were undergrads **George Willard** and **Todd Vanderwoude** and graduate student **Jeff Winters**.

Bulletin board contest for Women's History Month

The Professional Women's Caucus is sponsoring a bulletin board contest in recognition of Women's History Month (March).

A \$200 prize will be awarded for the best display. Boards will be judged based on their educational value, originality and creativity, theme, and presentation. All organizations, departments, and individuals are encouraged to participate.

Displays should be completed by Monday, March 10, and judging will take place March 13-14.

You can pick up a registration form at Educational Opportunity from Sandy Henkel, G018 Academic Office Building, or contact her at shenkel@mtu.edu or 487-3539.

Chinese Spring Festival dinner party February 8

The Chinese Students and Scholars Association is holding its Chinese Spring Festival Dinner Party on Saturday, February 8, at 6:30 p.m. at Houghton High School.

The dinner features a Chinese buffet with more than twenty different dishes, plus a wide variety of entertainment.

Tickets are \$10, \$5 for children ages 5-12, and are sold at the Promotion Counter at the Memorial Union, 12:30-1:30 p.m., January 27-31, and at the door. Only 100 tickets are available, so hurry! For information on ticket availability, contact Qingyu Liu at qinliu@mtu.edu or 487-3895.

Demand driving expansion of IT network, services

More power is not the issue here. What we need at Michigan Tech is more bandwidth!

When it comes to telecommunications technology, there's apparently no such thing as too much bandwidth, defined as "the data transfer rate of an electronic communications system." So, it's not enough to rewire the University just once—rewiring is becoming a way of life for Information Technology.

Jim Cross, director of information technology, talked with Staff Council January 27 about IT's bandwidth-gobbling offerings, including Resnet, a high-speed Ethernet service for the residence halls. A pilot of about 100 connections began in October.

Hooking onto Resnet costs students \$16.95 per month and gives them the same high-speed Internet access enjoyed by other MTU computer users, Cross said. "Our objective is not to say no to the students in the residence halls," Cross said. "They had no high-speed connectivity, even though 70 percent of the freshman class came to campus with computers."

Resnet, in addition to an overall hike in demand for telecommunications services, prompted IT to double the capacity of MTU's Internet gateway. "We wanted the network to be able to accommodate that traffic," Cross said. Previously, the gateway occasionally filled to capacity at peak periods.

In addition, IT is going to incrementally expand the campus backbone—the center of the high-speed network that distributes electronic data such as e-mail, BANNER, and Web stuff throughout MTU—by 600 percent over the next few years. Starting next fall, its capacity will go from 100 to 155 megabits.

MTU's growing graduate and research programs are two factors powering the need for a bigger backbone. "Grad students eat up bandwidth like crazy," Cross noted. Other bandwidth eaters are the distance education program, which is expected to double within the next few years; high-powered graphical computing used in the engineering labs; and multimedia. On the horizon is universal messaging, which would allow users to access fax machines from their computers, and even more multimedia ("It's a resource hog, but everybody wants it," Cross said.)

"And desktop videoconferencing is coming," he predicts. As with Dick Tracy's two-way wrist TV, you'll be able to see and talk with folks from all over, so long as they have the same tools you do. "There's about fifty people on this campus just dying for it and willing to pay extra for it, but it will bog down the current backbone," Cross said.

Not bogging down the backbone are other services available right now, including a twenty-six-port audioconferencing bridge (which functions like a huge conference call) and videoconferencing, which can extend a Lansing public hearing into the University. "The state has been one of the biggest users of videoconferencing, and the local medical community has used it to interface with the medical center at Ann Arbor," Cross said.

Some future IT projects include a BANNER/Web interface, a BANNER research accounting subsystem, high-speed remote access to campus, and increasing desktop network access to 100 megabits speeds.

"We know this all is coming and we have to get there," Cross said. In anticipation, IT will be forming focus groups from across campus to determine what the University community's needs and expectations are in telecommunications.

"We have to make sure that what we do today is going to fit into that puzzle," Cross said

Staff Council to appoint new members

Staff Council agreed January 27 to appoint an additional four members to serve one-year terms.

The council is expected to make the appointments at its next meeting, on February 10. Council Member **Rich Pelto** (building maintenance), who is chairing a committee considering constituency issues, said the professional/administrative group is underrepresented on Staff Council. Council Member **Ted Soldan** (IT) agreed to serve on the committee, which is seeking volunteers.

Family Fun Day has been tentatively set for Saturday, March 8, Council Member **Glenn Ekdahl** (Wadsworth Hall) reported. In addition, six volunteers have agreed to serve on the Fun Day organizing committee.

The council agreed to distribute its minutes with its agenda so the University community could be better informed about its activities.



We have to make sure that what we do today is going to fit into that puzzle.



Tech Tea Time: Thomas completes Twin Cities-Chicago AIDS bike ride

Submitted by University Cultural Enrichment

Kelly Thomas is neither an athlete nor a regular cyclist. However, last July he rode 470 miles in six days across three states in the company of 1,446 other riders.

By the sixth and final day, although he was suffering from sunburn and an injured knee, he had experienced a deep sense of purpose and a great feeling of being a part of a committed and caring community. Thomas had participated in the Twin Cities-Chicago AIDS ride, an ambitious undertaking that raised more than \$5 million toward the fight against AIDS. For Thomas, the guest at Tech Tea Time on Wednesday, February 5, the journey was one of the most significant challenges of his life, and arriving at the finish line has become one of his most significant achievements. At Tea Time he'll share this experience, showing slides of the ride and a video of the earlier Boston-New York ride. Tech Tea Time is scheduled for 4:00 p.m. in the Memorial Union Alumni Lounge.

At first, Thomas felt that the project was too daunting. Both the physical challenge and the prospect of having to raise the obligatory \$2,300 in order to participate were overwhelming. Although he was concerned that he wouldn't have time to train (his job as box office coordinator involves working evenings and weekends), he was encouraged to learn that most of the riders were not athletes, and that forty of them were over 60. The fundraising goal seemed to present more of a problem. Finally, having learned as much as he could about the project, he decided that he had to participate.

Proceeds from the ride help to fund seven nonprofit AIDS service providers in Minneapolis-St. Paul and six in Chicago. Thomas doesn't know anyone who is HIV positive or who has AIDS. However, a theater major in college, he is well aware of the toll the disease has taken in the arts community.

Thomas began training in January and fundraising in February for the July ride. To his utter amazement, letters to friends, relations, and small gatherings yielded more than the \$2,300 minimum. He wasn't quite as successful on the training front. Due to his work with the Pine Mountain Music Festival, Thomas wasn't able to train at all during the month of June.

On the first day, Thomas rode 99 miles and ended exhausted and aching, but held together to finish the ride. The riders approached the finish line in one huge mass. "We all raised our bikes over our heads as thousands of people cheered. The sense of elation and excitement at having reached the end was phenomenal," Thomas reminisces.

Would he repeat the experience? "Not as a rider for this summer," he responds. However he does intend to sign up as a crew member and is enthusiastic about passing on his knowledge to other potential participants.

Tech Tea Time is coordinated by the University Cultural Enrichment Department and is free and open to all. Call 487-2844 for further information.

In print

Assistant Professor **Richard Honrath** published a paper, "Transport of Ozone Precursors From the Arctic Troposphere to the North Atlantic," coauthored by PhD student **Amy Hamlin** (civil and environmental engineering) and John Merrill (University of Rhode Island), in the December 20 issue of the *Journal of Geophysical Research*, Vol. 101.

Assistant Professor **Mohan Krishnamurthy** (MME) published a paper, "Heterogeneous Nucleation of Coherently Strained Islands during Epitaxial Growth of Ge on Si(110)," coauthored by graduate students **Bi-Ke Yang** and **J. D. Weil** (MME) and C. G. Slough (Ford Research) in the January 6 issue of *Applied Physics Letters*.

Seminar February 10 on thin film gas sensors

V. J. Rao, principal scientist at Indian Institute of Chemical Technology, in Hyderabad, India, will present a seminar on SnO₂-based gas sensors on Monday, February 10, at 4:00 p.m. in M&M 610.

For more information, contact Anand Kulkarni at 487-2773.

Transportation engg group starts at MTU

A student chapter of the Institute of Transportation Engineers (ITE) was chartered in December at MTU. ITE is an educational and scientific association of transportation and traffic engineers, transportation planners, and other professionals involved in planning, designing, and operating surface transportation systems. Its 15,000 members, including about 25 MTU students, come from more than 70 countries. Most of the chapter's members are studying civil engineering, and most (about two-thirds) are undergraduates. Graduate student **Kristina Fields** is the chapter president.

"It's kind of a specialty group," said Associate Professor **William Sproule** (civil and environmental engineering), the group's advisor, so having the chapter here helps draw attention to an area that might otherwise be overlooked. "Having a chapter gives us international recognition as a transportation school." Thanks to the MTU chapter, student members will have access to scholarships, support for educational trips, reduced prices on ITE products ranging from textbooks to conferences, and access to transportation engineers worldwide.

Chapter membership is already bearing fruit. "Twelve of our students have already gone to the Transportation Research Board conference in Washington, DC," Sproule said.

Dancer Rob O'Neill to perform at MTU

Submitted by the Department of Fine Arts

Actor, dancer, choreographer, and teacher Rob O'Neill brings twenty years of outstanding theater experience back to his hometown next week when he appears as the fine arts department's artist in residence.

During a week-long residency, O'Neill will present workshops on creative movement to students and teachers in local schools and offer a four-hour public workshop on creative movement techniques. This workshop, which begins at noon in Walker Theatre on Saturday, February 8, is open to interested persons of any age, with a \$15 fee payable at the door. The final event of O'Neill's residency will be a performance with The Troupe, MTU's improvisational acting ensemble, in Walker Theatre at 8:00 p.m. on Saturday, February 8. Tickets for the evening performance are available at MTU box offices (487-3200 or 487-2073) and at the door for \$4.

A graduate of Hancock High School and Michigan State University, where he earned a degree with high honors in psychology, O'Neill has been an active performer and teacher in New York City for fifteen years. He has performed with the Phyllis Lamhut Dance Company since 1985, this year premiering a solo dance/theater work, "Adjustments," in collaboration with Lamhut. He has performed, choreographed, and directed numerous dance and theater works, including work with Victoria Marks, David Dorfman, Bob Berky, The Bond Street Theatre, and the Chelsea Repertory Theatre Company.

O'Neill has received extensive acting training in New York with Carol Fox Prescott. After teaching for twenty years, he has combined his dance and theater experience to create a unique approach to movement and physical communication. He presents annual workshops at the Naropa Institute, in Colorado, in the actor training program of The Acting Studio, Inc., in New York City, and in a movement program for professional actors presented by The American Stage Network. In addition, O'Neill enjoys presenting workshops for public school teachers and others who are not professional dancers or actors, which emphasize using movement to enhance creativity and enjoyment in everyday life.

For more information, contact the fine arts office, 487-2067.

new manufacturing technique boosts performance, lowers costs of parts production

Submitted by the News Bureau

Scott (Xiaodi) Huang, a research engineer/scientist II in the Institute of Materials Processing, has developed a new manufacturing approach that combines casting, forging, powder metallurgy, bonding, and coating in one process to produce high-performance components at lower cost for a variety of industries.

Called CastCon, the process begins with a sand mold formed with a pattern and made from a selected sand and binder mixture. A powdered material is fed into the cavity of the sand mold either dry or wet. The powdered material, metal or ceramic powder, is then heated and isostatically pressed with a high-pressure source. The sand mold acts as a pressure transmitting medium, uniformly consolidating the powdered material within the mold.

According to Huang, major advantages of the CastCon process over current methods include (1) excellent shape forming capability inherited from the vast use of sand molding techniques in the metal casting industry; (2) good mechanical properties equivalent to forged parts resulting from zero porosity and fine microstructure; (3) great flexibility of producing a wide variety of metallic, intermetallic, ceramic, and composite components facilitated by using various powdered materials and their mixtures; (4) the capability of producing macrocomposites by bonding different powders, or a powder to a solid, or a solid to a solid; (5) a unique powder coating method for improving abrasive and corrosion resistance; and (6) a production process suitable for both single piece and high-volume productions.

Huang says his process allows manufacturers to produce a small quantity of parts using low-cost sand molds. By comparison, if the part were produced by forging, the costs for tooling designed to produce a small quantity would be prohibitive. With the new process, parts can be made at near net shape, which translates into significant savings on machining costs.

"We can achieve still greater savings by using a softer, less expensive core material for a part and covering it with a very hard outer metal or ceramic sheath, which will withstand wear for a much longer period than traditional materials," says Huang. "For example, the parts for armored tank treads wear out very quickly and are very costly to replace. CastCon allows us to use a less expensive material for the core of the tread and a harder, more durable outer material to achieve longer wear."

Huang says the CastCon process can be used to produce a variety of parts, ranging from surgical implants to gear parts, vehicle brakes, machine parts, drill bits, train wheels and rails, advanced cutting tools, permanent molds, die inserts, forging dies, turbines, and aircraft components. He says opportunities currently exist to implement this advanced manufacturing process in rapid prototyping using molds produced in stereo lithography or in a production application.

POSITIONS AVAILABLE AT MTU

The following positions will be posted Friday, January 31, 1997, at 1:00 p.m. through noon, Friday, February 7, 1997, in the Human Resources Office.

- Food Service Helper—Memorial Union (REGULAR, PART-TIME, AFSCME INTERNAL AND EXTERNAL POSTING)
- Secretary (N3)—Student Affairs (REGULAR, FULL-TIME, UAW INTERNAL AND EXTERNAL POSTING)
- Secretary II (N4)—Recreation and Health Programs (REGULAR, FULL-TIME, UAW INTERNAL AND EXTERNAL POSTING)
- Department Chair—Department of Mechanical Engineering—Engineering Mechanics

University employees are reminded to apply in writing prior to noon, Friday, February 7, 1997, to be considered as internal candidates. Applicants from the recall pool will be given first consideration for non-bargaining-unit positions. Vacancy announcements are normally posted every Friday at 1:00 p.m. in the Human Resources Office. Complete job descriptions are available in the Human Resources Office or by calling 487-2280. More information regarding employment opportunities is available by calling the Job Line at 487-2895. Michigan Technological University is an equal opportunity educational institution/equal opportunity employer.

Correction

Last week, *Tech Topics* published the wrong time or a reception for the photo exhibit Underexposed: Photography from Michigan Tech. The event will be held at 5:00-7:00 p.m. Friday, January 31, at Omphale Gallery in Calumet.

Companies coming

Representatives from the following companies will be recruiting on campus next week. If you'd like to meet with any of them, call the Career Center at 487-2313.

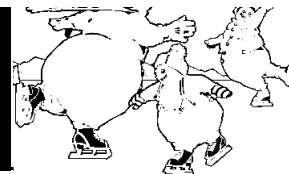
- Monday, February 3: Ascent Technologies, Inc., Electrical Design & Control Co., Electronic Data Systems, ITT Automotive, Mears/CPG, Inc., Raytheon Engineers (Litwin), U.S. Steel
- Tuesday, February 4: Broad, Vogt, & Conant, Inc., Cleveland-Cliffs, Inc., ComEd, Rosemount, Inc., Seagate Technology, U.S. Steel
- Wednesday, February 5: Dart Container Corporation, Greenheck, Lockheed-Martin (video interviewing), MIT Lincoln Laboratory, Unisys
- Thursday, February 6: Applied Manufacturing Technology, Dart Container, Harris Corporation, Hughes Electronics Corporation, Kulicke & Soffa, MTS
- Friday, February 7: Applied Manufacturing Technology, Citibank, Motorola, Wade-Trim

Proposals in progress

Researchers, their proposals, and their potential sponsors are

- John Crittenden** and **David Hand** (civil and environmental engineering), "The Development of a Kinetic Model for the H₂O₂/UV AOP System," EPA
- Crittenden, Hand, Stephen Hackney** (MME), and **Barry Kunz** (electrical engineering), "Development of High-Performance Photocatalytic Systems for Water Treatment Using Surface Characterization Method, *Ab Initio* Calculations, and Thermodynamic Calculation," EPA

Calendar



January

31 Friday

- 5:00-7:00 p.m.**—Reception for student photo exhibit—Omphale Gallery
- 6:00/7:00 p.m.**—Club Indigo: Japanese buffet, *Woman of the Dunes*—Calumet Theatre
- 7:05 p.m.**—Hockey, Minnesota—Duluth at MTU—MacInnes Student Ice Arena
- 9:30-ish p.m.**—post-hockey game Winter Carnival Party—Varsity Gym
- 8:00 p.m.**—*Macbeth*—Walker Theatre

February

1 Saturday

- 5:05 p.m.**—Hockey, Minnesota—Duluth at MTU—MacInnes Student Ice Arena
- 8:00 p.m.**—*Macbeth*—Walker Theatre

2 Sunday

- 3:00 p.m.**—*Macbeth*—Walker Theatre

4 Tuesday

- 7:00 p.m.**—Arthur Hartman on ethics and leadership—M&M U115

5 Wednesday

- 4:00 p.m.**—Tech Tea Time: Kelly Thomas' AIDS ride—Memorial Union Alumni Lounge

7 Friday

- all day**—TimeQuest™: Increasing Productivity through Value-Based Time Management—Super 8 Motel

8 Saturday

- noon**—Guest artist Rob O'Neill creative movement workshop—Walker Theatre
- 6:30 p.m.**—Chinese Spring Festival Dinner Party—Houghton High School
- 8:00 p.m.**—Preservation Hall Jazz Band—Calumet Theatre
- 8:00 p.m.**—Rob O'Neill and the Troupe—Walker Theatre

10 Monday

- 4:00 p.m.**—V. J. Rao, seminar on SnO₂-based gas sensors—M&M 610

13 Thursday

- 6:00 p.m.**—Women's basketball, Saginaw Valley State at MTU—SDC
- 8:00 p.m.**—Men's basketball, Saginaw Valley State at MTU—SDC

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