

## National Advisory Board comments on Manufacturing Initiative

The National Advisory Board urged Michigan Tech to bear in mind the needs of industry as the University implements its Initiative for Manufacturing.

Dean of Engineering **Robert Warrington** reviewed the multidisciplinary Engineering Enterprise program, which will bring together teams of students in their sophomore, junior, and senior years to work on year-long projects driven by the needs of industry partners. Students will design, produce, and market a product; the PrISM program, under the direction of Senior Research Engineer/Scientist **Marvin McKimpson** (IMP) will be among the options. Related partnerships with industry are now under way in senior design projects offered by most engineering departments at MTU.

"The faculty member [leading the team] will have to be the old hand and guide the process so you don't have a great debate and no output," said Board Member **Fred Mitchell**, vice president and general manager of the customer services division at the Boeing Company. "You'll need the perspective of faculty who have been in business."

Board Member **Joe Warren**, retired group vice president for imaging systems at 3M, agreed. "You don't want anything to go to heck in a handbasket," he said. "You may need leadership training."

Some MTU faculty have work experience in industry, Warrington said. And internships with Boeing have helped participating faculty improve their courses to better meet the needs of manufacturers.

Warren said MTU should be sure to look beyond "the 3Ms, GMs, and Fords."

"You should keep in mind that this program could work with small, entrepreneurial companies," he said. "I could see this program position Michigan Tech as the institution of choice for small and mid-sized entrepreneurial companies that might not have the experts within their organization [to undertake certain projects]."

Mitchell questioned how the relationship between industry and the University would work. "What would the engagement be like?" he asked. "We'd need your input on that," Warrington said.

Warrington said that the Engineering Enterprise teams would be geared to produce "a deliverable at the end of each year"—a specified product in specified time. But the program will not only provide a service for industry. It will also improve education.

"We're trying to get away from the lecture format," he said. "We learn better when we are doing things. It will require more faculty teaching fewer students, but it's the right way to go." And when students graduate and enter an industrial setting, they should have the confidence to handle projects from their first day on the job.

Associate Dean of Engineering **Neil Hutzler** discussed the new Master of Engineering program. Though demand for engineers with education beyond the bachelor's degree is high, few students want to stay in school an extra two or three years for an MS degree, he said, particularly since it takes some students five or six years to earn a BS. However, the ME degree can be completed in one year, allowing students to take extra coursework or advanced design projects. "So, if a student is well-prepared when they come here, they could get an ME in five years," Hutzler said.

"It's an outstanding program," Warren said. "It has a lot of flexibility." He suggested that MTU also offer a master's degree in manufacturing. "There are a lot of corporations who would like to hire people skilled in sup-

ply chain management," he said. "That would be a highly marketable commodity."

In the research arena, **Jay Meldrum**, director of the Keweenaw Research Center, introduced the Center for Advanced Manufacturing and Materials Processing (CAMMP), an umbrella organization to incubate new research centers and institutes across campus. CAMMP now oversees the Institute for Materials Processing and the Carbon Technology Center; it provides secretarial services,

technical support, and help with proposal preparation and marketing. Under the auspices of CAMMP, MTU researchers have submitted a preproposal to the National Science Foundation for a Center for Environmentally Responsible Manufacturing.

"This is an area we ought to be a leader in," Provost **Fred Dobney** said.

And environmentally sound manufacturing is apparently a high priority for industry. Manufacturers are looking for environment-friendly technology to help them comply with government regulations, Warren said. "That's one area we're all interested in," Mitchell agreed. And, while industry is spending "a ton of money" to clean up hazardous waste generated by manufacturing, it spends very little on environmental research.

Board members said they do not rely on

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## Forestry groundbreaking April 23

The School of Forestry and Wood Products is inviting all members of the University community to the groundbreaking of the Gene A. Hesterberg Hall and Sam Horner Hall, to be held on Friday, April 23, at 11:00 a.m. near the U. J. Noblet Building.

The groundbreaking will be preceded by building tours at 9:00 and 10:00 a.m., which will begin at the main entrance of the Noblet Building.

The expansion will more than double the space available to the School, from 48,000 to 98,000 square feet. It will include Gene A. Hesterberg Hall, named for the former head of the forestry department, to be built in the center of the Noblet Building. This hall includes a 135-seat auditorium, a large conference room, and a student organizations office, as well as a large atrium featuring four wood columns representing trees.

The second part of the expansion is a new wing to be named Sam Horner Hall. This hall is made possible by the generous support of **Robert** and **Virginia Horner**. Sam's father, William Horner, pioneered the manufacture of hardwood flooring in 1891 at his Reed City plant. Later, with his son Sam, he built the nation's largest hardwood flooring mill in Newberry. The Horner Flooring Company mill was built in Dollar Bay in 1938. The floors in the hallways and offices of Sam Horner Hall will be Horner flooring. Featured speakers at the ceremony will be State Representative **Paul Tesanovich**; President **Curt Tompkins**; **Mike Henrickson** '64, of Satellite Services, in AuTrain; **David Holli** '61, Holli Forest Products, Ishpeming; and **Gene Hesterberg**.

*How can you govern a country  
which has 246 varieties of cheese?*

—CHARLES DEGAULLE

## Why I march

### Faculty: Time to order robes for convocation

Faculty will be receiving an invitation from Provost **Fred Dobney** to participate in the President's Convocation, set for Wednesday, September 22, at 3:00 p.m. in Fisher 135. Convocation, which includes the State of the University Address, will be preceded by a faculty march in academic garb from Walker to Fisher Hall.

If you plan to participate but don't have academic garb, contact Mike DeCaesari at the Campus Store (mjdecaes@mtu.edu or 487-2410) by Friday, April 23, to arrange for your gown rental. This deadline is real; gown orders will not be accepted in the fall. The University will pay for the gown rental.

Contact the Special Events Office (487-2284) if you have any questions.

### Staff: Want to trade two half-day holidays for a personal day?

Staff Council is asking MTU staff to comment on whether they'd be interested in having a personal day off from work in exchange for eliminating the Good Friday and K-Day half-day holidays.

Michigan Tech has adopted an academic calendar that does not include a Good Friday afternoon class dismissal. K-Day remains on the calendar as a half-day class dismissal the Friday following Labor Day. The Good Friday change does not apply to staff, who still have the afternoon of Good Friday off.

To comment, go to the Staff Council Web page at [http://www.admin.mtu.edu/staff\\_council/](http://www.admin.mtu.edu/staff_council/) and click on "Comments." You can identify yourself or remain anonymous. Staff Council will compile the results and refer them to Human Resources.

## MichiganTech

Bill Curnow, executive director, University Relations  
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- By e-mail to [ttopics@mtu.edu](mailto: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. for publication the following Friday.

(Editor's note: The following is reprinted again in Tech Topics with permission of the author, Professor Martin Auer, who, in defiance of a tenacious stereotype, is both an engineer and an eloquent writer.)

I regularly feel an emptiness at the end of the academic year as our students graduate or leave campus for the summer. It seems there should be some celebration of our accomplishment, an internal acknowledgement of a job well done. I have attended commencement several times in recent years and find that the ceremony and celebration found there helps to fill the emptiness.

I also miss the sense of the academic on our campus, an atmosphere which was much more prevalent at the University of Michigan and at schools that I attended in the east. Sometimes, I feel that we are more a branch office of General Motors than an academic institution.

That's why I march in academic garb at the President's Convocation. It reminds me of the investment that I have made in seeking advanced degrees, of the investment I have made in my many years on our faculty, and of the pride which I have in my chosen profession. The faculty march affirms my role here and provides me with an opportunity to share affirmation of that role with the campus at large.

I enjoy this celebration of our profession. That's why I march. Without the convocation and other similar opportunities, this would be just another "model year."

### Learning as developing talent, part 2

Center for Teaching, Learning,  
and Faculty Development

By William Kennedy, director



Last week, we reviewed four of the ten learning principles gleaned from a study of sixty-three campuses by the Joint Task Force on Student Learning formed through the American Association of Higher Education. Last week, we reviewed the following findings of the task force: learning is fundamentally about making and maintaining connections; learning is enhanced when the context is compelling, challenging, and stimulating; learning is the active search for meaning by the learner; and learning takes place over time and must involve the whole person, relating old ideas with new, and assuming ownership of the learning process.\*

The fifth principle derived from this study of colleges is that "learning is done by individuals who are intrinsically tied to others as social beings, interacting as competitors or collaborators."\* Not surprisingly, students learn and remember more when learning takes place in a complex, rich environment engaging their hearts as well as their heads. Thus, activities like SAE and Baja activities have inestimable benefit in terms of motivation and integration.

Sixth, the researchers observed that "learning is strongly affected by the educational climate in which it takes place." Institutions publicly valuing exceptional learning and encouraging intellectual interaction outside of class enjoyed higher retention and graduation rates, as well as increased levels of student achievement. Extending student learning beyond the constraints of the classroom means that the culture of learning must pervade students, staff, and faculty.

The seventh principle is that "learning requires frequent feedback if it is to be sustained, practice if it is to be nourished, and opportunities to use what has been learned." Campuses emphasizing case studies, collaborative learning exercises, simulations, and internship programs foster student learning. Learning centers, study groups, and team-projects provide opportunities for newly acquired information to be made permanent.

Eighth, the task force found that "much learning takes place informally and incidentally, beyond explicit teaching or the classroom." Community service and service learning activities, especially those performed jointly by faculty and students, improve the durability and impact of teaching and increase the retention of the learned material. "Show me, don't tell me" works in higher education.

The ninth principle is that "learning is grounded in particular contexts and individual experiences." Campuses that encouraged dialogs between people with different perspectives and backgrounds, especially dialogs between faculty and students, encourage deeper learning and increase intrinsic motivation. Campus enrichment activities should be focused on student development but should engage the entire learning community.

Finally, the task force found that "learning involves the ability of individuals to monitor their own learning, to understand how knowledge is acquired, to develop strategies for learning based on discerning their capacities and limitations, and to be aware of their own ways of knowing in approaching new bodies of knowledge and disciplinary frameworks." Campuses that acknowledge learning differences and provide a wide variety of learning opportunities and settings increase student self-awareness and individual growth.

\*Learning Principles and Collaborative Action, AAHE report (all quoted material)

# Why Johnny can't add, or the crisis in college math



**Hezekiah Ford** leaves practice with the Echoes from Heaven Gospel Choir a half-hour early to get over to Fisher Hall by 8:00 p.m. That's when he holds office hours. And that's when undergraduates who have questions about calculus and precalculus are welcomed, nay, exhorted, to drop by for help.

Only they don't, not very often. "When a student shows up, I'm ecstatic," says Ford, a master's student in math who has taught calculus, college algebra, and algebra and trigonometry labs.

The evening office hours were supposed to make it easier for students to get help in math. And the handful who do come are more likely to succeed. Ford, who is African

American, invited Black Student Association members to drop by for some free tutoring, and a couple are making the effort. But it's frustrating for Ford and other math instructors, who believe that many undergraduates, particularly freshmen, simply aren't doing what it takes to grasp the high-level math that's a linchpin of science and engineering studies.

The numbers bear him out. About 40 percent of the freshman class is on academic probation, and, at 5 credits a crack, a D or an F in a 100-level math course can pull down a GPA dramatically.

One primary problem, Ford believes, may be a disinclination to work hard, also known as laziness.

"Or do they even know how to study?" he asks rhetorically. "Math is different from most other subjects. You have to work on it daily—everything builds on everything else. In math, if you have a shaky foundation, everything else is going to crumble."

The Department of Mathematical Sciences provides plenty of help outside the classroom, including the Math Learning Center as well as instructors' office hours. "If a student really wants to do well, the resources are here," Ford said. "They're just not using them."

Sometimes students blame their failures on poor teaching. While a few instructors may be truly bad, "most teachers are encouraging," he said. "If your learning style doesn't mesh with your teacher, visit them during office hours and ask for clarification."

And if you really want to steer clear of bad teachers in any discipline, do some research, he advises. Ask upperclassmen or (discreetly) the department secretary for tips on whose sections to take and whose to avoid.

No amount of help, however, will raise the grade of a student who consistently sleeps through an 8 o'clock class, doesn't take notes on the rare days they attend, and never reads the text. It might help if students were more accountable to the people who make it all possible.

"Parents don't even have the right to see their kids' grades," Ford said. "But if I'm a parent spending my money to send you to school, you best show me the grades or the money stops."

"Students aren't any less intelligent today than the students who came ten years ago," said **Alphonse Baartmans**, chair of the Department of Mathematical Sciences. "I think part of the problem is the way they are being taught in high school. Students can get points for attendance and extra-credit work, so they can get good grades in math without necessarily mastering the material. In college, we make no bones about it; you have to do well on the tests to get a good grade."

And teaching math to the short-attention-span, MTV generation can be an uphill battle.

"Students want to be entertained, but studying math is not a show," Baartmans said. "It's a serious endeavor, and there's no instant reward. At some point, you have to spend a significant amount of your own time with that material to comprehend it. . . . Many of them seem to lack the sort of tenacity that's needed to do many things at the college level."

"I don't know if it's so much a problem with students and math," **Kalpna Godbole** sighed. "It might be students and lazy."

This from the very popular director of first-year math programs, one of Michigan Tech's best instructors, and winner of the statewide Distinguished Teaching of University Mathematics Award.

Like Baartmans, she believes that students aren't less smart than they were a decade ago. But they seem to have greater difficulty coping with college's traditional challenge—balancing new freedoms and increased individual responsibility.

Students who don't do well in math often weigh in heavily on the freedom side of the equation. "It's that newly discovered independence," Godbole said. "I don't know if we do enough to give them a sense of belonging to counteract that. We try hard."

For example, she arranged the evening office hours last quarter for instructors teach-

ing the precalculus sequence, which had 200 students. Her frustrations were the same as Ford's. "No more than six showed up on a given night, and it was mostly the same four," she said. "This was a free service that almost nobody used. There seems to be an unwillingness among students to take charge of their academic progress."

She agrees with Baartmans that high-school math practices may be sowing the

STUDENTS WANT TO BE ENTERTAINED, BUT STUDYING MATH IS NOT A SHOW.

seeds of failure at the college level. "In high school, there's a sense that you will

always be bailed out," Godbole said.

"Students who are failing will come up to me and say, 'Can I do some extra work to fix this?' I tell them no, and remind them that they didn't take the help I offered earlier in the course." And an overdependence on calculators seems not only to have dampened basic arithmetic skills, but also undermined students' overall understanding of how math works.

One problem is math's use-it-or-lose-it quality. Most new high school graduates spend their summer using as little math as possible, so when they arrive on campus their skills are rusty at best. Godbole notes that students who hone their skills in MTU's summer MaCH-1 program score significantly higher on placement tests.

"I believe our placement criteria are sound, but only 15 percent of entering freshmen pass the basic skills test [which indicates preparedness for calculus]," Godbole said. "Does that say that 85 percent should be below Calc I? I'm not sure that entry in lower courses will fix the problem. I think students can do it if they put their minds to it."

And teachers also need to multiply their efforts. "I ask myself, what does it take to get freshmen working? We need to instill good study habits—today's students need that. And they need constant feedback. Too many instructors don't collect homework; they say students are adults, they are responsible for doing their work. But we are responsible for helping them achieve their potential. Otherwise, we are looking at a shrinking university. We must assign good and caring teachers to our lower-level courses."

Godbole has a theory: Good students can limp along with bad teachers, and bad students can get by with good teachers, but bad students and bad teachers are a lose-lose combination. And bad teachers can be as intransigent as bad students when it comes to changing their habits.

"Students need to take charge of their education, and instructors need to take more interest in their teaching. Boredom is just as contagious as enthusiasm. Johnny's interest in his classes will increase if he feels that his

*Continued on page 4*

## Holmes Brothers main event at Tech Arts Festival

Submitted by University Cultural Enrichment

When you ask Wendell Holmes what kind of music the Holmes Brothers play, Wendell thinks for a while and answers in a gravelly tone, "I call it Southern Roots music." That's probably the best description for what this up-tempo, gospel-flavored, R&B, New York-based band delivers. They are hard-working, dedicated musicians with a thorough knowledge of Piedmont and Chicago blues, black Baptist church music, Southern soul, country & western, and good, old-style rock and roll. Basically, if they like it, they play it, with a driving melodic style that is their trademark. The main event at Tech Arts Festival, the Holmes Brothers, one of the most sought after roots music acts today, will be at Michigan Tech for one performance only on Saturday, April 24, at 8:00 p.m. in Fisher 135. Tickets are on sale at all campus box offices (487-3200 or 487-2073).

The Holmes Brothers are a rarity, a soul harmony group in which the three singers are also simultaneously their own backup band. Sherman Holmes on bass and piano and Popsy Dixon on drums lay down a rhythmic foundation, punctuated by Wendell's guitar solos that dart and fly through the mix. Even more compelling than the band's instrumental work are the vocals which play Wendell's gruff and gravelly shouts off Popsy's falsetto and Sherman's baritone. They perform their own solid originals and clever arrangements of classics. For example, they pour pure soul into the Beatles' "And I Love Her" and emphasize the agony and the glory in Tom Waits' "Train Song."

In 1989, the Holmes Brothers debut album, *In the Spirit*, drew rave reviews from the critics, international awards, and TV appearances at home and in Europe. They were heralded as the greatest blues "find" in recent memory.

In fact, they had been playing the blues clubs around New York City for eleven years. They were the first American artists to record an album (*Jubilation*) for Peter Gabriel's Real World label, and they toured Africa as musical ambassadors of the US government's Arts America program. They added acting and film scoring to their accomplishments with the independent feature film *Lotto Land*, and they were invited by the National Council for Traditional Arts to headline Juke Joints and Jubilee, with which they toured nationwide with other masters of blues, soul, and gospel.

Growing up in Christchurch, Virginia, the Holmes brothers didn't have a record player, but they were influenced by the many kinds of music they heard on the radio: the blues of B.B. King, Junior Parker, and Jimmy Reed; gospel quartets like the Sensational Nightingales and the Pilgrim Travelers; and country western singers like Hank Williams and Gene Autry. Popsy Dixon is also a native Virginian, but he grew up in Brooklyn where his musical background was similar to the brothers, but with a stronger gospel influence. Popsy "learned to play in the Pentecostal Church," jokes Sherman, "where they take little boys and make 'em sit up and play the drums." It was this combination of Popsy's gospel background with the Holmes' blues interests, the wide open harmonies and soul techniques that wring maximum emotion from the music, that have made this band so special. The *L.A. Weekly* says they have managed "to distill American music to its purest form. There is no fluff, no frills, and nothing that isn't essential."

The visit of the Holmes Brothers to Michigan Tech is funded by the Memorial Union Board and coordinated by the Tech Arts Festival Committee in conjunction with the University Cultural Enrichment Department (487-2844).

## Math crisis Continued from page 3

teacher wants him to succeed. And faculty need to work cooperatively, sharing strategies with each other on how to inspire students to do their best rather than working as independent contractors."

But excellence in teaching isn't the sole solution, she stressed. "A while ago, I was teaching MA150 [part of the calculus sequence], and half my class flunked the common exam we give in all sections," Godbole recalled. "I thought, 'Heck, what's wrong?' I'm a good teacher and I take this personally." So she did a little digging and found that 21 of the 47 students in her class were repeating the course; other sections had 3 to 6 students retaking the course. And apparently many weren't working any harder than they had the previous year.

"So, just having a good teacher doesn't change everything," she said. "Students must study harder."

So, how does one go about recasting the student psyche?

"We are trying to get a hold on it," Baartmans said. "I believe there almost has to be a very structured environment for these students: they'll have to attend class, have to do their homework every night, and have to attend help sessions if they perform poorly. Hopefully, if we do this for one year, students will adopt the proper work habits, and those habits will carry over for their entire college career."

Next fall, the department will begin just such a program in all sections of precalculus. "It is my hope that this will begin to improve the performance of students in their math courses," Baartmans said.

## Keweenaw String Quartet performs April 18

Submitted by the Department of Fine Arts

The Keweenaw String Quartet presents its spring concert on Sunday, April 18, at 3:00 p.m. at St. Ignatius Loyola Church in Houghton. The program features three masterpieces for string quartet: Haydn's Quartet No. 18 ("Fifths"), Mozart's Divertimento No. 3, and Beethoven's Quartet in F Major. Tickets are available from Michigan Tech box offices (487-3200, 487-2073) and at the door for \$7 general, \$5 seniors, and \$3 students.

Members of the quartet are **Karen Kubin** and **Eric Lawson**, violins; **Anne Kearney-Looman**, viola; and **Brian Kubin**, cello. All are active soloists and recitalists, as well as string teachers and section leaders of the Keweenaw Symphony Orchestra.

The Kubins both earned master's degrees in music performance from Northwestern University and were active in Chicago-area orchestras and chamber groups before moving to the Keweenaw early last year. Brian is artist-in residence with the Houghton-Portage Township Schools. Kearney-Looman did graduate and undergraduate work at Michigan State and is executive director of the Copper Country Suzuki Association. Lawson is concertmaster of the KSO and conductor of the Copper Country Suzuki Association's string orchestras. He earned degrees in violin performance from Michigan State, Louisiana State, and the University of Minnesota.

"The quartet wants to make quality string music accessible to everyone in our community," Karen Kubin says. "We hope to make classical music more familiar to a wide range of people, and raise awareness and appreciation for music and the arts." The quartet is sponsored by the Department of Fine Arts and the Copper Country Suzuki Association. With funding from the Michigan Council for Arts and Cultural Affairs, the quartet presents community concerts and programs for K-12 students that demonstrate the fun of playing string instruments and how to enjoy classical music.

## Physics sponsoring two colloquia

Guest speakers will present two colloquia this month, courtesy of the Department of Physics.

Ronald M. Levy, of the Rutgers University Department of Chemistry, will present "Solvation and Electrostatic Effects in Biophysical Chemistry: Explicit vs. Implicit Solvent Models" on Thursday, April 22, 4:00 p.m., in Fisher 139.

Jeffrey Skolnick, of the Department of Molecular Biology at the Scripps Research Institute, in La Jolla, California, will speak on "New Methods for the Prediction of Protein Structure and Function from Sequence" on Friday, April 30, at 4:00 p.m., in Fisher 139.

All interested persons are invited.

## Talk April 20 on Lake Superior Center

As part of Earth Week, the GEM Center and the Keweenaw Children's Museum will co-sponsor a one-hour presentation by the staff of the Great Lakes Aquarium, "The Lake Superior Center—A Success Story in the Making," on Tuesday, April 20, 4:00–5:00 p.m., in the Memorial Union Alumni Lounge. The event is free and open to the public.

Speakers will describe the mission, programs, and history behind the Lake Superior Center, home of the new Great Lakes Aquarium museum and teaching facility now under construction in Duluth. The presentation will describe the programs and exhibits planned for the aquarium, as well as a glimpse of one of their classroom presentations, a visit from Jacques the voyageur.

**Joan Chadde**, education program coordinator for the GEM Center, has arranged for the Lake Superior Center staff to conduct school assemblies and classroom presentations at eight elementary schools in the Copper Country on the cultural, geologic, and ecological history of Lake Superior. In addition, the Lake Superior Center will conduct a K-8 teacher workshop, cosponsored by the GEM Center and Copper Country ISD Math and Science Center, on Monday, April 19, at Michigan Tech.

For more information, contact the GEM Center, 487-3341.

## Two symposia on Deleuze, Guattari

The humanities department, the Center for Teaching, Learning, and Faculty Development, and the Graduate Student Council are sponsoring two symposiums on "Technology and the Two-Fold Thought of Deleuze and Guattari."

Charles Stivale, professor and chair, Romance Language and Literatures at Wayne State University, will speak on "Animating Deleuze and Guattari," on Friday, April 16, at noon in Walker 134.

Greg Wise, assistant professor, Speech Communication Studies, Clemson University, will speak on "Deleuze and Guattari and Technology" on Friday, April 23, at noon in Walker 134.

Both guest speakers will meet with graduate students at 1:00 p.m. after their presentations; receptions follow at 2:00 p.m.

For more information, contact Danielle DeVoss (dndevoss@mtu.edu).

## New staff

**Javier Fernandez** has joined the staff of the Department of Chemical Engineering as a systems administrator. He graduates from MTU this year with a BS in Computer Science. He and his wife, Michelle Jarvie, live in Hancock.

## Tech Tea: Japan at the millennium—Will the sun rise again?

*Submitted by University Cultural Enrichment*

Dr. William Tsutsui, of the department of history at the University of Kansas in Lawrence, is the guest at Tech Tea Time on Wednesday, April 21, at 4:00 p.m. in the Memorial Union Alumni Lounge. Tsutsui's speciality is East Asian studies with an emphasis on modern Japanese history. At his Tea Time presentation, "Japan at the Millennium . . . Will the Sun Rise Again?" he will discuss the deterioration of the Japanese economy and whether, given the nation's current instability, Japan will ever return to its glory days.

"Just a decade ago," says Tsutsui, "Japan appeared headed for world dominance, and America seemed in deep decline. But today, needless to say, things are far different." In the days when the Japanese economy flew high, Americans were fascinated, even obsessed, with the ways of our Pacific neighbor. Japan of the late 1980s was "potent industrially, respected internationally, rock-solid socially and politically." Japan seemed to have everything that America had somehow lost: safe streets, stable families, great schools, plenty of jobs, and ever-increasing material wealth. "Ten years ago," Tsutsui asserts, "Japan was a model, a vision, a threat, even a rebuke, that a United States down on itself could not ignore."

Tsutsui examines the events of the last decade, pointing out how in the U.S. national self-confidence is way up, while Japan seems to have stumbled (indeed, stumbled badly). What has happened to Japan? "As we approach the millennium," he says, "Japan's once mighty economy is faltering, its banks are near collapse, the predictable politics of the past are a distant memory, and its society is beset with crime, delinquency, and other symptoms of decay." As to what the future will hold for Japan, Tsutsui raises more questions. "Will the values and institutions that underlay Japan's meteoric rise from the ashes of World War II reassert themselves, giving rise to a new renaissance of Japanese busi-

ness, culture, and government? Or is the victory of the 'American way' so complete (and the Japanese system so intellectually and morally bankrupt) that Japan will now unavoidably have to become more like the United States?"

Tsutsui holds an AB, summa cum laude, in East Asian Studies from Harvard University, an MLit in Modern Japanese History from Oxford University, and a PhD in History from Princeton University. He is a Fulbright Fellow and the recipient of a Marshall and John Harvard Scholarship. He is a member of the East Asian Studies Advisory Committee, has served as a consultant to the Bank of Japan, and sits on several editorial boards. He is the author of two books, *Banking Policy in Japan: American Efforts at Reform During the Occupation* and *Manufacturing Ideology: Scientific Management in Twentieth-Century Japan*.

Tsutsui's visit to Michigan Tech will include the following presentations: "Paternalism in Japanese Economic History," hosted by the Department of Social Sciences, on Monday, April 19, at 2:30 p.m. in the ROTC Blue Room; "The History of Quality Control in Japan," hosted by the College of Engineering, on Tuesday, April 20, at 2:00 p.m. in ME-EM 111; and "The Development of Lean Production in Japan," hosted by the School of Business and Economics, on Thursday, April 22, at 1:00 p.m. in Academic Office 101.

Tsutsui's visit to MTU was made possible by a grant from the Visiting Minority Scholar Series and additional funds from the College of Engineering, College of Sciences and Arts, Department of Social Sciences, and School of Business and Economics. Professor Carl H. A. Dassbach (Social Sciences) is coordinating Tsutsui's visit. Anyone interested in arranging a classroom visit or an informal discussion with Tsutsui may contact Dassbach at 487-2115 or dassbach@mtu.edu. Tech Tea Time is coordinated by the University Cultural Enrichment Department (487-2844).

## Flemal scholarship established

*Submitted by the News Bureau*

The Jean and Tom Flemal Endowed Minnesota Scholarship has been established for a student from Hoyt Lakes, Aurora, or Biwabik area high schools to attend Michigan Tech. The Flemal Scholarship candidate must major in engineering, sciences, or technology, be recommended by his/her high school principal, and preferably have financial need. The scholarship is renewable yearly if a 2.5 grade point average is maintained.

**Tom Flemal**, a resident of Gilbert, grew up in Cornell Township of the Upper Peninsula. At age 13, he began helping to support his family by working when not in school. His first job was in the logging industry, helping to keep the horse-drawn sleighs running. In 1946, after serving in the Pacific during World War II, he enrolled at Michigan Tech and paid his way with help of the GI Bill and a part-time job (shared with his late wife, Jean) picking potatoes at a local farm. He graduated in 1950 with a degree in engineering and became a very successful civil engineer and part of the management team of Erie Mining Company.

Flemal has also established an endowed scholarship for students from the Escanaba and Gladstone districts in Delta County.

## April

FAIR HOUSING MONTH

- 16 Friday**  
**noon**—Charles Stivale, "Animating Deleuze and Guattari"—Walker 134  
**1:00 p.m.**—Laurel Hansen, "A Tale of Two Carpenter Ants: City Ant & Country Ant"—Noblet 153  
**8:00 p.m.**—*Man of La Mancha*—Walker Theatre
- 17 Saturday**  
**1:00 p.m.**—Men's tennis, Lake Superior State at MTU—Gates Tennis Center  
**8:00 p.m.**—Bimbetta—Fisher 135  
**8:00 p.m.**—*Man of La Mancha*—Walker Theatre
- 18 Sunday**  
**3:00 p.m.**—Keweenaw String Quartet concert—St. Ignatius Loyola Church, Houghton
- 19 Monday**  
**2:30 p.m.**—William Tsutsui, "Paternalism in Japanese Economic History"—ROTC Blue Room  
**7:00 p.m.**—Rebecca Garris Perry, "Experiences of a Female Chief Financial Officer"—Dow 642
- 20 Tuesday**  
**2:00 p.m.**—William Tsutsui, "The History of Quality Control in Japan"—ME-EM 111  
**4:00 p.m.**—"The Lake Superior Center—A Success Story in the Making"—Memorial Union Alumni Lounge
- 21 Wednesday**  
**4:00 p.m.**—Tech Tea: William Tsutsui, "Japan at the Millenium: Will the Sun Rise Again?"—Memorial Union Alumni Lounge
- 22 Thursday**  
**1:00 p.m.**—Teleconference, "Pitfalls and Progress: Cost-Effective and Appropriate Use of Technology in Higher Education"—EERC B11  
**1:00 p.m.**—William Tsutsui, "The Development of Lean Production in Japan"—Academic Office 101  
**4:00 p.m.**—Ronald Levy, "Solvation and Electrostatic Effects in Biophysical Chemistry: Explicit vs. Implicit Solvent Models"—Fisher 139  
**8:00 p.m.**—*Man of La Mancha*—Walker Theatre

## In print

Associate Professor **Josiah Heyman** (social sciences) edited a book, *States and Illegal Practices*, authored the chapter "State Escalation of Force: A Vietnam/US-Mexico Border Analogy," and coauthored (with Alan Smart, University of Calgary) the chapter "States and Illegal Practices: An Overview."

Associate Professor **Mary Durfee** (social sciences) published a book review of David Wallace's *Sustainable Industrialization in Environment and Security*, 1998. She also published an article, "The Small, Remote, or Odd College: Making the Most Out of Your New Teaching Position," in *PS*, March 1999.

Associate Dean of Sciences and Arts **Anant Godbole** published a paper, "Random Sidon Sequences," in Volume 75 of the *Journal of Number Theory*, 1999. The paper was coauthored by Svante Janson (Uppsala, Sweden), Nick Locantore (University of North Carolina), and Rebecca Rapoport (Harvard University).

## National Advisory Board Continued from page 1

universities for most research services. "We do most of our research in-house," said **Larry Washington**, vice president of human resources for chemicals and plastics at the Dow Chemical Company. A prime concern was intellectual property. Mitchell said the need for complete control prompts him to keep such research within the company. "Intellectual property is one of the few things we can leverage against the competition," he said.

Board Member **Gary Anderson**, president of Dow Corning, said companies are more likely to use universities for "blue sky" research rather than for a limited project with a specific goal. There is another obstacle to having universities do company research, Mitchell said: a lack of "absolute focus." **John Oleson**, director of manufacturing technology at Dow Corning Corporation, agreed. "It takes too long," he said. And Board Member **Dale Kesler**, a managing partner with Arthur Andersen & Company in Dallas, suggested that an outside auditor be invited to assess MTU's research program with the goal of meeting corporate customers' needs.

Warrington introduced a proposed initiative in Earth Resources Engineering, which would include researchers from several disciplines, including mining, mineral processing, and civil, environmental, and geological engineering. "We need to break down departmental boundaries," he said.

"If there's anything that the University and the US can export, it's the technology of environmental clean-up and mitigation," said

Board Member **Ken Brunk**, vice president and corporate general manager for Bateman Project Holdings, noting that clean-up processes are closely linked to chemical engineering and mineral processing.

And Oleson presented a "blue sky" research problem, stating that even the most-efficient gas furnaces are extremely wasteful. "We burn 20 times the quantity of fuel that we need to and generate 20 times the amount of carbon dioxide, and we wonder why we have a problem," he said.

By marshalling University resources via CAMMP, "we'll have the opportunity for that kind of thought," Dobney said.

President **Curt Tompkins** and Warrington discussed graduate education. Currently, the ratio of graduate to undergraduate students is 10:90 at MTU, Warrington said. To gain national prominence the ratio should move toward 20:80. Michigan Tech places 74th among *US News & World Report's* ranking of 221 graduate engineering programs, Tompkins said. Considering that the graduate program has only been emphasized for about eight years, to be in the top third is not bad. However, he said, the University suffers from a lack of representation in prestigious positions. "RPI has twelve members on the National Academy of Engineering, and they want fifteen," he said. "We have none. Other schools set goals, and we have never done that," even though some MTU faculty could qualify for such honors. The University needs to address these and other related issues to attain greater national recognition, he said.

## Broadbelt to speak on catalytic kinetics

Dr. Linda J. Broadbelt from Northwestern University will speak on "Unraveling Catalytic Kinetics via Detailed Mechanistic Modeling and Computational Chemistry" on Monday, April 19, at 10:00 a.m. in Memorial Union Alumni Lounge A. All interested persons are invited.

Broadbelt's visit is part of the Arthur and Dorthy Sigel Lecture Series coordinated by the Department of Chemical Engineering.

## POSITIONS AVAILABLE AT MTU

Job descriptions are available from Human Resources starting at 1:00 p.m. on Friday. You can e-mail us at JOBS@MTU.EDU and we will e-mail you the job description you request.

The following positions will be posted Friday, April 16, 1999, at 1:00 p.m. through noon, Friday, April 23, 1999, in the Human Resources Office.

- Senior Specialized Clerk (N4)—Student Records and Registration (UAW internal and external posting)
- Office Assistant—Transportation Center (UAW internal posting)
- Assistant Manager—Recreation

University employees are reminded to apply in writing prior to noon, Friday, April 23, 1999, to be considered as internal candidates for bargaining unit positions only. Applicants from the recall pool will be given first consideration for non-bargaining-unit positions only. 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.