

Alcator C-Mod experiment operates with restored funds

Warren visits as fusion experiment resumes operations

By Tushar Kamath
NEWS EDITOR

In a large, press-filled event at MIT's Plasma Science and Fusion Center (PSFC) Monday, scientists and legislators celebrated the restoration of funding to Alcator C-Mod. The ceremony began with the press of a giant red button, signifying the restart of nuclear fusion experiments at the facility.

Alcator C-Mod, MIT's magnetically confined nuclear fusion device (a tokamak), was a winner in the most recent U.S. budget deal, receiving \$22.2 million to continue nuclear fusion tests. The experiment remained in inactive maintenance mode during 2013 due to funding cuts from the Department of Energy as part of the sequestration. The restoration of funding is not without uncertainty, however, as the funding will only last until the end of September.

Present at the ceremony were legislators, including Senator Elizabeth A. Warren and U.S. Representative for Massachusetts' fifth district Katherine M. Clark, as well as MIT administrators, including President L. Rafael Reif, Vice President for Research Maria T. Zuber, and Professor Miklos Porkolab, the Director of the

PSFC. All were provided a tour of the facility and were allowed to converse with the faculty and graduate students who oversee the lab.

"It is great to be represented in Congress by people who understand the value and importance of basic science and the connection between basic science and innovation," said President Reif, who applauded the efforts by Senator Warren and Rep. Clark to secure funding for the project as part of the nation's most recent budget deal.

During interviews with the press contingent, both Warren and Clark expressed the necessity for continued basic research in the nuclear fusion field. "It's not only the energy research we are doing here today but the investments in the students that are here and the science and the work they're going on to do whether it's in fusion or beyond," commented Rep. Clark. Clark, a Massachusetts Democrat, won the special election in December 2013 to represent the 5th district of Massachusetts. Her victory came directly before the passing of the new budget deal.

Warren, also a Massachusetts Democrat and former Harvard Law Professor, started her term in the U.S.

Senate in November, 2012. "What goes on here is something we all need to support. This is our future in science, but also our future in power," stated Warren, affirming her continued support of C-Mod.

While both the legislators and the MIT administration conveyed similar attitudes toward the funding, the future remains uncertain for C-Mod. As it stands, the \$22.2 million will only last through the end of September, and no budget has been set for the Department of Energy, the primary source of funds for C-Mod, by Congress for fiscal year 2015. The legislators, administrators, and scientists at the event agreed this will be a continuous problem.

"In the long term, we have to have assured long-range funding. It is not enough to fight year to year. Grad students need to be able to come here and work and know that they can start projects and that the lab will still be open a year from now, three years, and five years from now" claimed Warren. Professor Zuber agreed with Warren and mentioned a "plan to recommend C-Mod to continue for years to come," seeing the recent

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PAUL RIVENBERG

Massachusetts Senator Elizabeth Warren, along with MIT Nuclear Science and Engineering professor Anne White and Massachusetts Congressman Jay Livingstone (not pictured), prepare to officially restart Alcator C-Mod, a fusion research project at MIT's Plasma Science and Fusion Center. The program was set to shut down at the beginning of the year, but funding was recently reintroduced by Congress.

Ex-MIT professor Moniz is the man in the middle

Energy chief balances environment, industry

By Matt Viser
THE BOSTON GLOBE

Secretary of Energy Ernest Moniz is known around his department for a quick wit, a leader of a vast bureaucracy who draws quotes from Monty Python skits and chuckles self-deprecatingly at the attention paid to his unusual Colonial-style hairdo.

As he toured a government lab in Virginia the other day, he also displayed a deep knowledge of technical science, making small talk with fellow scientists that sounded like code to an outsider.

"What's the typical Q?" he asked about one machine ("8 times 10 to the 9th," came the answer). As they passed by a cleanroom used for experiments, he asked nonchalantly whether it was a "Class 10" (it was). Introduced to a high school senior interested in science, he enthusiastically recommended a book: "The Existential Pleasures of Engineering."

But hidden behind the wonky demeanor one would expect from Moniz, a former MIT professor who got hooked on physics at Durfee High School in Fall River, is a measure of political savvy earned as a veteran of the Clinton administration. It is a well of experience that his supporters say will help him lead key initiatives in President Obama's second term — including an expansion of America's nuclear power industry.

At a time when the White House plans to exercise greater executive authority to

circumvent a recalcitrant Congress, Moniz, 69, is in charge of one of the most controversial portfolios in the Cabinet, requiring him to balance worries about global warming with the demands of a powerful energy industry.

Constituencies clamoring for his favor include gas and oil companies that want permission to drill and export more; clean energy start-ups eager for more government loans; environmentalists, some of them critical of Moniz's ties to industry, who want a stronger emphasis on wind and solar energies; and scientists seeking more research money.

In a wide-ranging interview as he traveled around the Virginia coast — touring a federal laboratory and giving a speech at Hampton University — Moniz, who was confirmed 97 to 0 by the Senate in May, discussed the administration's "all-of-the-above" energy philosophy.

He previewed plans to increase energy efficiency standards. And he said he planned to move forward aggressively on more government loans to private energy companies, despite the embarrassing bankruptcy filings of Solyndra and A123 Systems of Waltham.

"We've got a big-time problem to address climate," he said, riding in the back of a sport utility vehicle. "And if it's business as usual, we're not going to get there in time."

The opera-loving fly-fisherman also di-

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CHRISTOPHER A. MAYNOR—THE TECH

Rambax MIT, MIT's Senegalese drum ensemble, performs behind co-director and artist-in-residence Lamine Touré as he conducts the audience at "Pulse 2014: Feel The Beat." The show was hosted by the MIT Black Students' Union this Saturday evening and featured a wide variety of acts, from gospel choir to a reading of an excerpt from Martin Luther King's "I Have a Dream" speech.

IN SHORT

The MIT Egyptian Student Association is hosting billionaire Naguib Sawiris. Be sure to check out Sawiris' talk and Q&A session at Wong Auditorium this Tuesday, February 25 from 6-7:30 p.m.

Join the MIT Generator to improve MIT's campus sustainability. The MIT Generator is run-

ning an event this Wednesday, February 26 at 6 p.m. in the R&D Commons where students can address campus issues of energy, water, environment and sustainability.

Add date is next Friday, March 7. Obtain approval from your advisor if you submit a form.

Send news information and tips to news@tech.mit.edu.

SOCHI HIGHLIGHTS

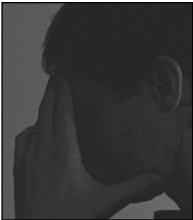
Ice hockey, speed skating result in thrilling finishes, despite disappointing finishes for the U.S.
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CONTEMPORARY BALLET

Boston Ballet Company's trio of one-act performances. ARTS, p. 7

A THEATRICAL CIRCUS

Australia's Circus Oz brings an on-stage circus to Boston. ARTS, p. 7



RHYE AT ROYALE

Live rendition of album brings out subtleties, new perspectives.
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REIF LETTER ON TIDBIT, RESPONSE

MIT's president explains the Institute's plans, stance on issue.
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On Ukraine, a wary stance from Obama

By Peter Baker
THE NEW YORK TIMES

WASHINGTON — Televisions around the White House were aglow with pictures of Ukrainians in the streets, demanding to be heard and toppling a government aligned with Russia. It was an invigorating moment, and it spurred the president and his staff to rethink their approach to the world.

That was a different decade and a different president. While George W. Bush was inspired by the Orange Revolution of 2004 and weeks later vowed in his second inaugural address to promote democracy, Barack Obama has approached the revolution of 2014 with a more clinical detachment aimed at avoiding instability.

Rather than an opportunity to spread freedom in a part of the world long plagued by corruption and oppression, Obama sees Ukraine’s crisis as a problem to be managed, ideally with a minimum of violence or geopolitical upheaval. While certainly sympathetic to the pro-Western protesters who pushed out President Viktor F. Yanukovych and hopeful

that they can establish a representatively elected government, Obama has not made global aspirations of democracy the animating force of his presidency.

“I just think this president is not going to lean forward on his skis with regard to democracy promotion,” said John Lewis Gaddis, a Yale University historian who advised the Bush White House as speechwriters worked on the former president’s January 2005 inaugural address promising to combat tyranny abroad. “If anything, he’s going to lean back and let natural forces take us there, if they do.”

Obama’s handling of Ukraine reflects a broader “policy of restraint,” as Gaddis termed it, keeping the United States out of crises like Syria, minimizing its involvement in places like Libya and getting out of the wars in Iraq and Afghanistan. It reflects, he said, not only fundamental differences between the presidents but an underlying weariness on the part of the U.S. public after more than a dozen years of war.

Turned off by what he saw as Bush’s crusading streak and seared by

the dashed hopes of the Arab Spring, aides said Obama was wary of being proactive in trying to change other societies, convinced that being too public would make the United States the issue and risk provoking a backlash. The difference, aides said, was not the goal but the methods of achieving it.

“These democratic movements will be more sustainable if they are seen as not an extension of America or any other country, but coming from within these societies,” said Benjamin J. Rhodes, a deputy national security adviser. “For the longer term, it is better to let the people within the country be the strongest voice while also ensuring that at the appropriate times you are weighing in publicly and privately.”

To some critics, though, that justifies a policy of passivity that undercuts core U.S. values.

“The administration’s Ukraine policy is emblematic of a broader problem with today’s foreign policy — absence of a strategic vision, disinterest in democracy promotion and an unwillingness to lead,” said Paula J. Dobriansky, an under secretary of state for Bush.

US and Britain joining forces in bank misbehavior cases

By Matthew Goldstein and Ben Protess
THE NEW YORK TIMES

It seemed to be a thumb in the eye of the U.S. Justice Department. Britain last week criminally charged a former Barclays employee suspected of trying to manipulate global interest rates, even though the authorities in London were aware that the employee had been assisting U.S. prosecutors in a related investigation for more than a year.

Some prosecutors in the United States were annoyed by the move, but it did not ignite another trans-Atlantic dispute over how to crack down on bad behavior by global banks with large operations in New York and London. Instead, the charges against the Barclays employee, Jonathan Mathew, reflected a tentative truce that has emerged between British and U.S. authorities, according to people briefed on the matter.

The Justice Department in Wash-

ington and the Serious Fraud Office in London, these people said, have agreed to divide up cases against employees at the center of an investigation into the manipulation of the global interest rate benchmark used for mortgages, credit cards and corporate loans known as the London interbank offered rate, or Libor. The agencies are splitting the caseload, which involves traders in both New York and London, depending on which jurisdiction will have an easier burden of proof or possesses stronger evidence against a particular bank employee.

The cooperation should enable prosecutors on both sides of the Atlantic — whose political mandates and personalities have at times clashed, stalling the investigation — to file several new criminal cases stemming from the more than 5-year-old inquiry.

The Justice Department, the people briefed on the matter said, is expected to charge a handful of other Wall Street employees during

the next year as it continues to investigate banks, including Citigroup and Deutsche Bank.

The agreement over Libor could also provide a template for the Justice Department and Serious Fraud Office as they pursue other investigations into global banking giants.

The developments illustrate the fragile and ever-evolving relationship between Washington and London enforcement officials. Given the interconnected nature of the global financial markets, legal observers say, the agencies must maintain a level of cooperation.

Tensions peaked in late 2012, when Justice Department prosecutors notified the Serious Fraud Office that they were filing charges under seal against Tom Hayes, a former UBS and Citigroup employee seen as an architect of Libor manipulation. In turn, British authorities promptly arrested Hayes, setting off a series of fuming phone calls and angry letters on both sides of the Atlantic.

For the Supreme Court, a case poses a puzzle on the EPA’s authority

By Adam Liptak
THE NEW YORK TIMES

WASHINGTON — In trying to decide whether the Environmental Protection Agency has the authority under two programs to regulate greenhouse gas emissions from stationary sources like power plants, the Supreme Court on Monday faced what Justice Elena Kagan called “the conundrum here.”

One part of the Clean Air Act, she said, seemed to require that such emissions be regulated. But another part set the emission thresholds so low that even schools and small businesses would be covered.

The agency’s solution was to raise those thresholds, and the resulting standards covered far fewer sources. That move was at the center of Monday’s arguments, and the justices seemed divided along ideological lines over whether it was a sensible accommodation or an

impermissible exercise of executive authority.

Justice Anthony M. Kennedy, who may hold the decisive vote, made a point that did not bode well for the agency.

“I couldn’t find a single precedent that strongly supports your position,” he told the agency’s lawyer, Donald B. Verrilli Jr., the U.S. solicitor general.

Verrilli said the solution to the conundrum was to allow the agency to exercise some discretion.

“The choice,” he said, “is between throwing up your hands with respect to what EPA considers to be the most serious air pollution problem we have or trying to deal with the implementation problem.”

But Justice Samuel A. Alito Jr. suggested that the agency’s revision of numerical standards in a statute was without precedent in “the entire history of federal regulation.”

Even as the justices differed on the scope of the agency’s author-

ity, though, they seemed to agree that the case before them was not particularly significant, for two reasons.

First, the narrow issue the Supreme Court agreed to address left in place the agency’s determinations that greenhouse gases present an urgent threat and that emissions from motor vehicles may be regulated.

Those determinations were based on the Supreme Court’s 5-to-4 decision in 2007 in Massachusetts v. Environmental Protection Agency, which required the agency to regulate emissions of greenhouse gases from new motor vehicles if it found that they endangered public health or welfare.

At Monday’s argument, the justices did not seem inclined to re-examine that decision. Indeed, Kennedy, who was in the majority, said, “We’re bound by both the result and the reasoning of Massachusetts v. EPA.”

Ford to drop Microsoft from car systems

Ford has found a new software partner to power its in-car entertainment and communications systems, making plans to drop technology from Microsoft in favor of software from BlackBerry.

For its Sync in-car system, which connects to mobile phones for access to music and other digital services, Ford intends to use software called QNX made by BlackBerry rather than the embedded version of Windows, Microsoft’s operating system, according to two people briefed on the automaker’s plans who spoke on the condition of anonymity because the plans are still private.

News of the switch was first reported in the February issue of the Hansen Report, an auto industry newsletter.

Problems with Ford’s in-car systems, especially as the company introduced versions that came with dashboard touch screens, hurt the company’s customer satisfaction ratings in recent years. Ford was Microsoft’s most prominent partner in the automotive business for its software. For years, Microsoft has tried to make variations of its Windows operating system an ingredient in technologies used in a variety of industries, including health care and manufacturing, but none of the efforts has achieved anything like the company’s success in PCs.

—Nick Wingfield and Jaclyn Trop, The New York Times

Ugandan president signs anti-gay law

LONDON — Brushing aside Western threats and outrage, President Yoweri Museveni of Uganda significantly strengthened Africa’s anti-gay movement on Monday, signing into law a bill imposing harsh sentences for homosexual acts, including life imprisonment in some cases, according to government officials.

The move came weeks after Museveni’s Nigerian counterpart, Goodluck Jonathan, took similar steps in his own country, threatening offenders with 14-year prison terms. The Ugandan law seemed even tougher, threatening life terms on charges including “aggravated homosexuality,” meaning homosexual acts with a minor, a disabled person or someone infected with HIV.

“We Africans never seek to impose our view on others. If only they could let us alone,” Museveni said, according to The Associated Press, alluding to Western pressure to reject the bill.

He signed the legislation at his official residence at Entebbe, near the capital, Kampala, in front of government officials, journalists and a team of Ugandan scientists who had said they found no genetic basis for homosexuality — a conclusion that Museveni cited in support of the new law, the AP said.

While Western gay-rights campaigners have accused U.S. evangelical Christian groups of promoting anti-gay sentiment in Uganda, Museveni accused “arrogant and careless Western groups” of seeking to draw Ugandan children into homosexuality.

—Alan Cowell, The New York Times

Camels linked to spread of deadly virus in people

A new study suggests that camels are the major source of the Middle East Respiratory Syndrome, or MERS, a viral disease that has sickened 182 people and killed 79 of them since it was first detected in Saudi Arabia in 2012.

The animals are most likely to infect people through respiratory secretions — from coughing, sneezing, snorting or spitting — that travel through the air or cling to surfaces.

People with chronic illnesses like diabetes, lung disease or kidney failure, or other conditions that weaken their immunity, seem to be most susceptible, and should avoid close contact with camels, researchers say.

Saudi Arabia has had the most cases, other Middle Eastern countries have had a few and a handful of travelers from that region have taken the disease to Europe. There have been no cases in the United States. Although people have infected one another, the disease is not highly transmissible among humans, so researchers say that unless the virus changes to become more contagious in people, the risk of global spread does not seem high.

The new study provides the first evidence that the virus is widespread in dromedary camels (the kind with one hump) in Saudi Arabia, and has been for at least 20 years.

Younger animals are more likely than older ones to be infected and contagious. The virus invades the camels’ nose and respiratory tract, but does not kill them. It is not known whether it even makes them sick.

—Denise Grady, The New York Times

Arizona governor is pressed to veto faith-based bill

PHOENIX — As the Arizona Legislature sent a bill to her desk Monday that would grant business owners the right to invoke religion to refuse service to gays and others, Gov. Jan Brewer, a Republican, faced pressure from many corners to veto the measure, which has cast unwanted national attention on Arizona.

Elected officials, civic leaders and business groups spoke out against the measure, which passed both houses of the Legislature on Thursday.

On Twitter, Arizona’s U.S. senators, John McCain and Jeff Flake, also Republicans, had nearly identical posts, with both of them saying they hoped Brewer would veto the bill. An executive from Apple Inc., which plans to build a big manufacturing plant in Mesa, called Brewer to urge her to reject it, and W. Douglas Parker, chairman and chief executive of American Airlines, sent her a letter citing the state’s “economic comeback” and saying, “There is genuine concern throughout the business community that this bill, if signed into law, would jeopardize all that has been accomplished so far.”

Their calls were echoed by three Republican state senators — Adam Driggs, Steve Pierce and Bob Worsley, all members of the party’s conservative camp — who had helped pass the legislation in the first place.

—Fernanda Santos, The New York Times

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Response to open letter regarding Tidbit

Thank you for your expression of concern for the Tidbit students and for the larger issues their circumstances point to.

As you know, we are coordinating with the students and their pro bono lawyers at the Electronic Frontier Foundation. I agree with your view that the Tidbit subpoena highlights a larger threat to the freedom to “imagine, create and disseminate projects that expand the possibilities of technology.” For the moment, we are focused on the welfare of these students. Their lawyers have suggested that MIT make a statement, and we are working with them to define what statement will have the greatest impact on their behalf.

The experience of the Tidbit students also points to the need to provide a new

kind of legal resource to serve our student innovators. As I explained in my February 15 letter to the MIT community and as Professor Abelson has noted in recent public comments, when our student inventors and entrepreneurs engage in research and experimentation that push technological and societal limits, they need legal counsel that is genuinely independent and focused on their interests alone.

I believe it is important to appreciate that, by definition, MIT's Office of the General Counsel (OGC) cannot provide this independent legal advice. OGC provides MIT with tremendously valuable service, in an important and well-defined sphere. There are certainly times when we decide that a legal case in which MIT is not technically involved is in fact "our business." Correctly, OGC relies on MIT's academic leadership to make that call. We have made that judgment in this case, and we are proceeding on that basis, with enthusiastic help from OGC.

As you know, I have asked Provost

Marty Schmidt, Chancellor Cindy Barnhart and General Counsel Greg Morgan to develop a proposal for the new legal resource. In preparing this proposal, they are seeking insight and suggestions from those with direct knowledge of the challenges that innovators face in the field. I know many of you are inventors and entrepreneurs, and I encourage you to share your experiences with Marty, Cindy and Greg as they design this new resource.

Going forward, I hope you will be open to working cooperatively together with me and the MIT leadership team as we try to support the Tidbit students in this immediate circumstance, work to design a lasting new resource for our innovation ecosystem and identify ways we can actively protect the freedom to innovate so essential to MIT's mission.

In leading the MIT community, I strive to listen respectfully, collaborate openly and take decisive action. In that spirit, I look forward to working with you.

L. Rafael Reif,
President, MIT



In the Friday, Feb. 21 review of Garden at the Cellar, the listing of the restaurant's times was incomplete. They are also open for lunch Monday through Friday 11:30 a.m. - 2:30 p.m.

and for brunch on Saturdays and Sundays during the same hours.

In an opinion column in the Tuesday, Feb. 11 issue, Cory Hernandez was incorrectly listed as the former UA treasurer. Hernandez is the current UA treasurer.

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BALLET REVIEW

Complex, challenging, and on pointe

Boston Ballet performs three contemporary pieces

★★★★☆

Close to Chuck

**Boston Ballet
Company**

The Boston Opera House

Through Mar. 2

By Angelique Nehmzow
STAFF WRITER

“Wow” — the clearly audible voice of an awed child elicited muffled chuckles from the audience members around us. She hit the nail on the head — we all felt the same.

Boston Ballet's latest offering is a trio of one-act pieces by eminent contemporary choreographers that takes the viewer on a gripping emotional journey. The first piece, *C. to C. (Close to Chuck) reborn*, by Boston Ballet's resident choreographer Jorma Elo, premiered in 2007 at the American Ballet Theatre in New York. It celebrates the American artist Chuck Close, who is best known for his large-scale portraits, some of which are hyper-realistic or pixelated into colorful, globular cells.

Close is affected by prosopagnosia (face blindness), which greatly impairs his ability to recognize faces, but helps sustains his artistic drive for portraiture. In 1988 Close suffered from a spinal artery collapse and is now paralyzed from the waist down. But he has been able to continue creating his art with the aid of a brush-holding device attached to

his wrist and forearm.

An important basis for *C. to C. reborn* is the relationship between Close and the composer Philip Glass, who have been friends and collaborators since the 1960s. Over the years Close featured Glass in a number of important artworks, and in 2005, at the request of the musician Bruce Levinston, Glass “returned the favor” by composing *A Musical Portrait of Chuck Close*. *C. to C. reborn* is set to this piece. Fittingly, Levinston is the solo pianist playing for the Boston Ballet’s performances.

In *C. to C. reborn*, three couples take the stage, as well as a fourth, the pianist and piano on the left hand side, visually displaying the link between dance and music. The lighting is stark and dramatic, illuminating every perfectly controlled muscle, as well as the sheer white of the sheet music. The dancers' movements vary seamlessly between smooth and stiff, sometimes robotic, sometimes jellyfish-like, but constantly engaging and charged. Their costumes, by designer Ralph Rucci, are fashionable floor-length black leather-like skirts (with flaps that open disconcertingly to reveal a portrait of Close) and mesh tops with black crosses. At one point, the curtains are raised to reveal Close's colorful and characteristic self-portrait, and his eyes bore into the audience, watching them watch the dancers. There is an atmosphere of sci-fi with a solemn and intimate ending, as a line of dancers reach to touch the pianist on the shoulder, flaps raised to show a line of Closes.

The second performance is the world premiere of *Resonance*, the first ballet commissioned of José

Martinez by a North American company. Martinez is a renowned Spanish dancer and choreographer, who danced for many years for the Paris Opera Ballet and has been artistic director of the Spanish National Dance Company since 2010.

The music for *Resonance* is from Franz Liszt's *Études Transcendental*, and is performed by two solo pianists. Again, the pianists and their pianos are on the stage, but this time they are only intermittently revealed. The set is a moving maze of white walls, with larger-than-life shadows dancing and intersecting on them, gently teasing the viewer about where something or someone is and how fast they are moving, what is real and permanent, and what is a fleeting illusion. At times I felt this was an unnecessary distraction. For example, when two walls forming a corner slowly swing around to reveal the dancers moving inside, it is difficult to focus on the single female dancer who is twirling in the spotlight at the front of the stage. At other times, however, I thought the effect was used powerfully. For instance, the gap through which a couple dances off stage quickly disappears as the walls move together, as if erasing the evidence that the couple was there at all.

The third and final piece is the popular *Bella Figura* by Jirí Kylián, a Czech choreographer. First presented in 1995 by the Nederlands Dans Theater, *Bella Figura* had its North American debut at the Boston Ballet in 2011, and the company has performed it several times since then.

The beginning of the piece catches the audience unawares, as the lights remain on and the



GENE SCHIAVONE

Rie Ichikawa struggles in the embrace of black curtain during the performance of Jirí Kylián's *Bella Figura*.

curtains remain open. On stage, below two suspended naked dolls, nine dancers move in heavy silence, seemingly preoccupied. As the lights dim, the curtains descend, and a series of scenes begins.

In the first, a man lies supine, his head towards the audience, wrapping himself hypnotically, and a topless woman struggles in the folds of an ensnaring black curtain, her face contorted and her gestures entreating. In another, two topless women wearing bustled red skirts play-fight in slow motion, neither ever touching the other. In the final scene, flickering fires form the dramatic backdrop to a slow duet. The dancing is highly eloquent, sometimes suggesting brookness and pain, occasionally invoking humor, and

expressing protection, support
and comfort at other times.

The dancers often jerk like broken dolls, jutting out one hip aggressively, suddenly dropping a forearm to hang forlornly, or shaking their hands spastically. Other times, a dancer holds a hand to another's forehead, or calmly pushes down an overwrought shoulder. Silence is used to good effect, and the music, a compilation that includes pieces by Lukas Foss and Vivaldi, complements the urgency and emotion of the dancers' movements.

Close to Chuck delivers an evening of dance that highlights the versatility, skill and dynamism of Boston Ballet's dancers, and demonstrates the creativity and range of contemporary styles — a challenge and a pleasure to watch.

PERFORMANCE REVIEW

Circus Oz

The gravity-defying spectacle from Australia lands in Boston



ROBERT TORRES

Hazel Bock of *Circus Oz* juggles a table with her feet at Boston's Citi Shubert Theatre.

By Denis Bozic
ARTS EDITOR

When was the last time you saw a live performing circus? Chances are you've simply forgotten about circus as a type of performing arts. Indeed, with so many blockbuster movies filled with otherworldly acrobatics, there seems to be a loss of interest in seeing an actual human being putting their life at risk for your entertainment. Nevertheless, the entertaining teams of performers — from Cirque du Soleil to The Big Apple Circus — still deliver some of the most gut-wrenching and captivating shows to people across the world. Last week, Boston hosted the world's renowned Australian ensemble of acrobats, musicians, and dancers known as *Circus Oz*.

Established in Melbourne in 1978, *Circus Oz* is an animal-free circus that unites traditional circus arts with theater, musical, high-risk acrobatics and stand-up comedy. Their tour “From The Ground Up” is a perfect choice of circus that’s appropriate for all ages — jaw-dropping feats for the kids and hilarious jokes for the adults who appreciate a subtle sense of humor. With a cast of good-looking and charming Australians, *Circus Oz* is the perfect blend of fun and spectacle.

Their show premiered in Boston last Wednesday at Citi Shubert Theatre, and it was a two-hour long performance filled with laughter, applause, and gasps. It might be counterintuitive to imagine a circus on theater stage, but *Circus Oz* is far from a regular circus ensem-

ble. Their performers mingle with the audience before the show and show off their tricks while the rest of the circus crew is setting up the stage, which seems a vibrant and joyous construction site. The show starts with the performers telling jokes and trying to perform card tricks. It all somehow seems a bit dull when there is no one flying in the air during the first fifteen minutes of performance.

But that is just an elaborate prank. The ensemble tricks you into thinking that the show is going to be mellow, but just after the first twenty minutes, the thrills begin. One of the male performers climbs a ten-meter tall pole that keeps swinging from left to right, while one of the female performers plays a jazzy melody on the piano as if it's commonplace to risk multiple fracture every day. And that's when you realize that the show is anything but traditional.

Not all of the stunts were quite as frightening as the one with the swinging pole, but they were always stunning enough to have the audience applauding every two minutes. Some of the most fascinating feats included juggling a small table with feet, doing reverse spirals on a hanging hula-hoop, "tightroping" on a rotating rope, and see-saw somersaults. Despite the extraordinary focus and practice required to perform these acrobatics, the performers delivered every stunt with such grace and enjoyment that it was easy to believe that the effect of gravity was the last thing on their mind.

Circus Oz

From the Ground Up Tour

**Presented by
Celebrity Series
of Boston**

Feb. 19 — Feb. 23

Citi Shubert Theatre



Moniz has plans to lower carbon levels

Environmentalists accuse Moniz of having close ties with industry

Moniz, from Page 1

vulged details about his hair, which has generated intense interest on Twitter, triggered photo galleries online, and drawn comparisons to, among others, George Washington.

“No one except my wife has cut my hair in decades. And she’s not a professional,” he said. “It’s a big joke, and that’s OK.”

“If it gets people interested in the Department of Energy,” he added with a laugh, “it’s good.”

Moniz was born in Fall River, where his father worked at Firestone, the rubber manufacturing plant, and his mother watched after him, the only child. All four of his grandparents were emigrants from the Azores Islands.

“I came from a blue-collar town, a public school,” he told students at Hampton University. “It’s a great country to be able to do this.”

He played baseball and tennis at Durfee. He also benefited from an MIT initiative to develop a stronger physics curriculum in high schools, after the Soviet Union launched Sputnik and fears spread that the United States was falling behind.

“Fortunately the physics teacher at the high school decided that the high school would be one of the pioneers, one of the guinea pigs,” Moniz said. “That’s when I got hooked on physics.”

He went to Boston College on a scholarship from his father’s labor union and became editor of Cosmos, the school’s science journal. After getting his doctorate in theoretical physics at Stanford, he joined the MIT faculty in 1973. He was the founding director of the MIT Energy Initiative and the MIT Laboratory for Energy and the Environment.

“He has this marvelous sense of humor,” said Susan Hockfield, the former MIT president. “You don’t feel as though you’re getting browbeaten by him. You feel like he’s teaching you. And he’s a master teacher.”

He served as a science adviser and as the undersecretary at the Department of Energy in the Clinton administration. Some say he is more politically savvy than his predecessor, Steven Chu, a Nobel-winning physicist from California who at times frustrated the White House by going off script.

“He’s the best-prepared secretary of energy — ever,” T.J. Glauthier, a former top-ranking energy department official who now advises energy companies, said of Moniz.

As he was preparing to take the job, Moniz consulted with George Shultz, who held four Cabinet positions under Presidents Nixon and Reagan and who worked with Moniz on the MIT Energy Initiative.

“I told him, ‘Stay close to members of Congress. In the end, they own the money,’” Shultz said in an interview. “You go and talk to them, just informing and whatnot — not just when you’ve got a crisis.”

Moniz said he has taken that advice. Several Republicans have praised his approach, and he recently had dinner with Representative Mike Simpson, an influential Republican on energy issues from Idaho.

But some environmentalists accuse Moniz of being too close with the oil and gas industry, citing ties established at the MIT Energy Initiative, which was funded primarily by those industries.

“So far he’s known for his deep love of fracked natural gas,” said Bill McKibben, a prominent environmental activist.

Moniz said damage to the en-

vironment should be mitigated, but his primary goal is lowering carbon levels in the atmosphere — even if that means promoting nuclear power or natural gas exploration through fracking, a controversial technique that uses pressurized water to fracture underground rock and release trapped gas.

“I frankly don’t care what the mix of technology is, as long as it gets us to low carbon,” he said. “And I think we need every arrow in the quiver.”

He bristles at criticism that the administration isn’t doing enough.

“Here we have the president who has done the most to commit to climate — I have been out there as a climate warrior,” he said. “But it’s not good enough because we refuse to exclude part of the portfolio.”

Moniz strongly defends the use of government loans and grants for clean-energy companies, saying it is a vital way to develop technologies. While high-profile failures have caused Republicans to contend the government should not be investing in startups, Moniz said some risk is inevitable when you “push the envelope.”

Moniz strongly defends the use of government loans and grants for clean-energy companies

“We are not defensive about it,” he said, citing a remaining \$50 billion in lending authority. “Quite the contrary. We have a lot more authority left. We’re going to use it.”

In the interview, Moniz would not discuss in any detail one of the more controversial proposals he must decide: whether to expand US exports of natural gas. He also would not weigh in on the Keystone Pipeline, which would carry oil from tar-sands fields in Canada to US refineries and ports. The highly controversial project is being reviewed by Secretary of State John Kerry, but the Department of Energy has an advisory role. Obama has said he will not approve the project if it would “significantly exacerbate” greenhouse gas emissions.

When asked if he believes it would increase carbon emissions, Moniz said, “I’m not commenting on Keystone.” He also declined to say if he has discussed the project with Kerry.

Moniz lives with his wife in Brookline, but his schedule keeps him away from home for weeks at a time. He often travels overseas to meet with foreign leaders about climate issues (although his home is about a mile and a half from Fenway Park, he watched Game Six of the World Series from the US Embassy in Japan).

The travel has kept him away from most games in the “Over-the-Hill Soccer League,” which he has played in for about 25 years (when he shows up, he is the only one who now has a security detail).

He also recently had a sobering responsibility, acting as the potential last line of defense in the event of a catastrophe. He was the “designated successor,” sitting out the State of the Union in case the president and other top officials died at once in the House chamber.

He was placed in an undisclosed location, with ample security and communications capability. The accommodations were not exactly meager.

“We had a steak dinner,” he said.



SARAH LIU—THE TECH

Emily M. Salvador ‘16 and Molly J. Tracy ‘16 read a picture book to the audience amid a pile of toilet paper at the Chorallaries’ nth Annual Concert in Bad Taste on Saturday night.

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C-Mod’s future is still unclear

Funding cuts were part of larger U.S. energy policy

Alactor, from Page 1

budget deal as a vote of confidence from Washington to further plasma research in Cambridge.

The lack of continuous support most directly affected graduate students and their effort to finish up research at MIT. “It was a big worry because many of us were planning at that point to do our experiments,” said Theodore Golfinopoulos G, a graduate student in the Electrical Engineering and Computer Science department conducting research with C-Mod. He continued, “It really makes you think hard about your career decisions if the rug can get pulled out from under you like that. For now, nobody can predict what is going to happen in the future.”

Alcator C-Mod’s funding cuts are part of the larger context of the U.S.’s future energy policy. The cuts at the beginning of fiscal year 2013, allowed Congress to redirect funding to an international effort, the International Thermonuclear Experimental Reactor (ITER), a large tokamak project under construction in France. But, according to an article in *The New Yorker*, “members of Congress were invited to view the inert machine [ITER], and they returned to the Hill expressing

outrage.” Only after the Department of Energy submitted a revised proposal did Feinstein agree to continue funding support.

Professors and graduate students linked C-Mod’s cash-strapped situation to the future of science in the U.S. “The U.S. should not play a backseat as other nations, particularly China, Japan, South Korea in the East and the European Union in the West, move forward [with plasma research]” commented Golfinopoulos, “The U.S. has to decide whether it wants to be a leader in this and other areas of science.”

Professors and students linked C-Mod’s situation to the future of science in the U.S.

“The cuts made me turn away so many qualified students... now we need a long-term solution to best identify the policy for U.S. fusion going forward. The U.S. needs to figure out what role we play in the international community for fusion research,” commented Anne E. White, Assistant Professor in the Nuclear Science and Engineering

(NSE) program.

When asked how they would convince D.C. lawmakers to continue C-Mod funding, both Professor White and Professor Dennis G. Whyte, also in the NSE department, emphasized the uniqueness of the Alcator C-Mod facility. Whyte argued that C-Mod “gains its strength being in a niche as a smaller academic lab. We are nimble and have a good solid group of students, which provide for innovative new research. This keeps us fresh.”

The Alcator C-Mod tokamak is one of three in the United States, the others located at the Princeton Plasma Physics Laboratory affiliated with Princeton University, and General Atomics, a private industry endeavor. C-Mod is the only facility with such an involved academic program, as the lab is able to support up to 25 full-time graduate students.

Despite this unique position, only time will tell if the U.S. will back continued small-scale academic research in favor of larger projects. As a last plug for C-Mod to lawmakers and the public, Golfinopoulos stated, “Plasma is the ideal source of baseload energy. We can’t afford not to pursue this avenue. There aren’t that many other options, and we can’t stay with coal forever.”



SUJOY KUMAR CHOWDHURY

Students use Lego bricks to create replicas of the Shaheed Minar, a national monument of Bangladesh, at an event hosted by the MIT Bangladeshi Students’ Association (MIT-BSA) in the Mezzanine Lounge of the Stratton Student Center last Saturday in observance of International Mother Language Day. First announced by UNESCO in 1999, this observance is held annually on February 21 worldwide to promote awareness of linguistic and cultural diversity.

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Solution to Sudoku

from page 5

6	3	8	4	1	7	5	9	2
2	5	9	3	6	8	4	1	7
1	4	7	9	5	2	3	8	6
9	2	1	8	7	4	6	3	5
4	7	3	6	9	5	8	2	1
8	6	5	1	2	3	9	7	4
5	1	4	2	8	9	7	6	3
3	9	6	7	4	1	2	5	8
7	8	2	5	3	6	1	4	9

Solution to Techdoku

from page 5

4	2	1	6	3	5
6	4	3	2	5	1
1	5	4	3	6	2
2	6	5	4	1	3
3	1	6	5	2	4
5	3	2	1	4	6

Solution to Crossword

from page 6

MANHOLE	BERTRAM
AREARUG	ALAMODE
DISHRAG	GENOMES
EAT	ENOS
CUBANS	
URN	HATPIN
RICKI	MINI
LAWS	
ASSEENONTV	ECHO
NSF	SINGLES
LAN	
DUOS	GRUESOMELY
BERN	HOAR
FIFES	
EASTER	ETC
GOSPEL	DART
DNA	
OUTSWIM	URANIUM
ACETONE	NOCANDO
THRONES	TROTTER



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Women’s basketball team gets win against WPI

MIT earns spot in NEWMAC Championship tournament for the first time since 2008

By Mindy Brauer
DAPER STAFF

Despite a late surge that saw WPI come within four points with 54 seconds left to play, MIT hit four free throws down the stretch to claim a 56-48 victory on Saturday, February 22. With the win, MIT claimed the seventh and final spot in the upcoming NEWMAC Championship tournament, marking its first playoff appearance since 2008. MIT will travel to its last post-season foe, No. 2 Wheaton College, on Wednesday, February 26 for a



7:00 p.m. start. Sabrina M. Drammis ’16 led all scorers with 18 points as MIT improved to 12-13 on the year and 9-11 in conference play. WPI (10-15, 8-12 NEWMAC) was led by senior Siena Mamayek, who recorded 15 points and five boards in her squad’s season finale. MIT raced out to a 17-6 lead after 9:25 expired as Drammis and Mari R. Kordell ’15 combined for 11 points. WPI slowly chipped away at the deficit, narrowing its gap to five on three occasions, the last on a layup by junior Rachel Pineda that made the score 27-22 with 3:35 to go. MIT countered with baskets by Drammis and Maya K. Ramachan-

dran ’16 to enter the break with a 31-22 advantage. The hosts maintained their comfortable margin throughout most of the second half as their lead grew to 15 (47-32) with 5:29 remaining. On WPI’s ensuing possession, junior Dani Davis drained a three-pointer, sparking an 11-0 run during the next three minutes that she capped with a jumper. Drammis ended MIT’s scoring drought while Durva N. Bhandare’s ’16 free throw increased the cushion to 50-43 with 1:37 on clock. Pineda kept WPI close with two free throws 10 seconds later, but Bhandare drained a pair of shots at the charity stripe. On WPI’s next trip down the

court, sophomore Jessica Larsen buried a layup and after snagging a steal, Pineda hit the front-end of a one-and-one to come within four (52-48) with 54 seconds left to play. Following an exchange of possessions, a foul sent Bhandare to the free throw line where she hit her second shot after 11 seconds came off the clock. Pineda put up a three-pointer but her bid was off the mark and was grabbed by MIT’s Rachel A. Hunt ’14. While bringing the ball up the court, Drammis was fouled with 19 seconds remaining as her free throw increased the lead to 54-48. On WPI’s next charge, Davis’ shot from behind the arc failed to connect. Drammis grabbed the

loose ball and once again was sent to the charity stripe with 3.7 ticks left, where she drained both shots to secure the victory. Kordell finished with 15 points, a game-high six assists, and added four rebounds for MIT. Ramachandran recorded 10 points and 10 rebounds as Hunt posted five rebounds and two blocks. Bhandare added seven points and three steals for the home team. Pineda totaled seven points, four steals, and two assists while Davis had seven points and two assists for WPI. Larsen generated six points, five assists, and two steals as sophomore Haili Welton tacked on six points.

Men’s speed skating events highlights of Olympics

Victor Ahn claims the gold for Russia in tight men’s 5000m speed skating relay final

Olympics, from Page 12

States was expected to pick up many medals in speed skating. But after a disappointing week in the long track events, resulting in no medals, they finally won a medal in a speed track event. The Netherlands was the big winner in speed skating, taking home eight gold medals in a dominating display of speed skating. For me, the most exciting speed skating event of this year’s Olympic games has to be the men’s 5000m

relay speed skating final. With as many as 20 skaters on the ice at

The Netherlands was the big winner in speed skating, taking home eight gold medals.

once, the event has the potential for utter chaos. This year’s final was contested

by five countries: USA, Russia, the Netherlands, China and Kazakhstan. With the Netherlands and China crashing midway through the first lap and Kazakhstan unable to keep pace with the leaders, the race for the gold medal very quickly became a question of which of Russia and USA would have the pace down the stretch. For much of the race, the United States team members were content to sit in the slipstream of the Russian team, but finally made a move to take the lead with around 18 laps

to go. The USA was never able to completely drop the Russian team

For much of the race, the United States was content to sit in Russia’s slipstream.

though, and Russia’s eight-time short track Olympic medalist, Viktor Ahn, finally reeled in American

JR Celski with six laps to go to take a lead that the Russians did not relinquish for the remainder of the race. Celski valiantly tried to chase Ahn down in the final lap, but the South Korean-born Russian had too much gas in the tank to be overtaken. China picked up the Bronze medal after finishing a distant third behind the leaders. With his victory in the relay, Victor Ahn picked up his fourth medal of the Olympics, and reaffirmed his status as one of the greatest short track speed skaters of all time.

Track and field team claims victory in 1000m track race

MIT collects 121 points in total over the two days

Track, from Page 12

’17 was 13th with 1:25.67. In the 800m, Samuel G. Parker ’15 and Harrison A. Hunter ’14 both earned points towards MIT’s final score, with Parker coming in fourth with a time of 1:56.37 and Hunter taking eighth with his 1:57.48. Tech’s lone victory of the day came in the 1000m, with Chadd T. Kiggins ’15 crossing the line two seconds ahead of the competition with his time of 2:30.11. Ricardo Paez ’15 came in third place in 2:32.85. MIT’s highest finisher in the 5000m was Benjamin X. Xie ’15, who came in fifth place with a time of 15:04.46. Roy A. Wedge ’14 was sixth with a time of 15:05.31 and Allen K. Leung ’15 came in seventh with 15:09.80. All three Engineers earned points for MIT. Kaba fared well in the 60m Hurdles, completing the event with a time of 8.36 to finish in fourth place. Tech came in eighth place in the 4x800 relay with its time of 8:04.27, crossing the line over a sec-

ond ahead of Connecticut College’s A relay. The Distance Medley Relay earned eight points when it came in second place with 10:30.83. In the Pole Vault, junior Benjamin J. Schreck ’15 was second when he cleared the bar in 14-11, the same height as Ben Wollhaupter of Coast Guard who took first. Ian Perry ’17 finished in fifth place with a 13-11.25 and Marshall P. Wentworth ’16 was seventh, also with a vault of 13-11.25. In the Long Jump, David C. Motley ’15 and Adrian C. Samsel ’16 were fifth and sixth, both with jumps of 21-07.25. Motley went on to come in third place in the Triple Jump with a 45-01.75. Just shy of his season best performance, Kenneth B. Cooper ’15 was second in the Shot Put with a throw of 54-07.50. In the next event, the Weight Throw, he also finished in second place with a throw of 60-11.50. MIT returns to the track next Friday, Feb. 28 for the NEICAAA Championships, which will take place at Boston University through Saturday, March 1.

Engineers Grab Win in Five Sets



Andrew A. Busse ’15 leaps over his opponents as he spikes the ball over the net. The Engineers overcame a deficit to clinch a 3-2 victory over UC Santa Cruz on Thursday night.

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*This year's Olympics will be remembered
for the surprises, oddities, and spectacles*

Sochi 2014 came to an end on Sunday, February 23. With security threats in Sochi and a tense Russian political climate, uncertainty surrounded this Olympics. Nevertheless, the Sochi Games delivered all the expected spectacles, from the “oddities” of the Winter Games, like Jamaica’s bobsled team, to a healthy dose of Olympic spirit and sportsmanship, like Swiss Dario Cologna’s 30 minute wait at the 15km cross-country finish line to greet the injured last-place finisher.

The United States suffered more disappointment this year in ice hockey, as both the men's and women's teams lost to Canada in the knockout rounds of the competition. Canada reaffirmed its status as the team to beat with dominating performances throughout the tournament, while Russia's campaign for Olympic glory on home soil ended disappointingly.

Russia and USA played with remarkable pace and intensity in a preliminary round

After going down to a Pavel Datsyuk goal early in the second period, the United States were forced on the back foot early, but goals from Cam Fowler and Joe Pavelski ensured they were in the lead with 10 minutes to go in the third period. Russia quickly struck back with an equalizer three minutes later. Russia then scored what would have been a decisive third goal with only 5 minutes remaining, but the goal was controversially ruled to be off its moorings.

Team USA's shootout specialist, TJ Oshie, took all of USA's last five shots, and made three (including two to keep the match alive) to lead the USA to victory in the first ever USA-Russia ice hockey match on Russian ice.

Heading into the Sochi games, the United

Olympics, Page 11

Tuesday, February 25

Men's Volleyball vs. SUNY New Paltz

7 p.m., Rockwell Cage

Wednesday, February 26

Men's Basketball vs. Emerson College NEWMAC Quarterfinal

7 p.m., Rockwell Cage

Thursday, February 27

Men's Volleyball vs. Elms College

7 p.m., Rockwell Cage

Men's track and field team claims first place in the New England Division III Championships for the second year

On Saturday, February 22, the second and final day of the New England Division III Championships, the No. 4 MIT men's

track and field team won the title for the second year in a row, wrapping up the weekend in first out of 26 teams with 121 points. No. 7 Tufts University finished in second with 74 points and Williams College was third with 58.

In the preliminaries of the 60m, Taylor D. Njaka '17 finished in 12th place with a time of 7.16, while three Engineers finished in the top four of the 200m. Tyler S.

Singer-Clark '14 was second with 22.53, crossing the line a tenth of a second behind Graham Beutler of Tufts. Michael S. Kaba '16 and States Lee '16 were third and fourth with times of 22.94 and 22.98 respectively.

Singer-Clark took second in the next event, the 400m, completing the event with a time of 49.81. Lee followed just two one-hundredths of a second later in third place with a 49.83 and Derek C. Barnes '16 was eighth with 51.06. It was after this event that MIT took over as the first place team.

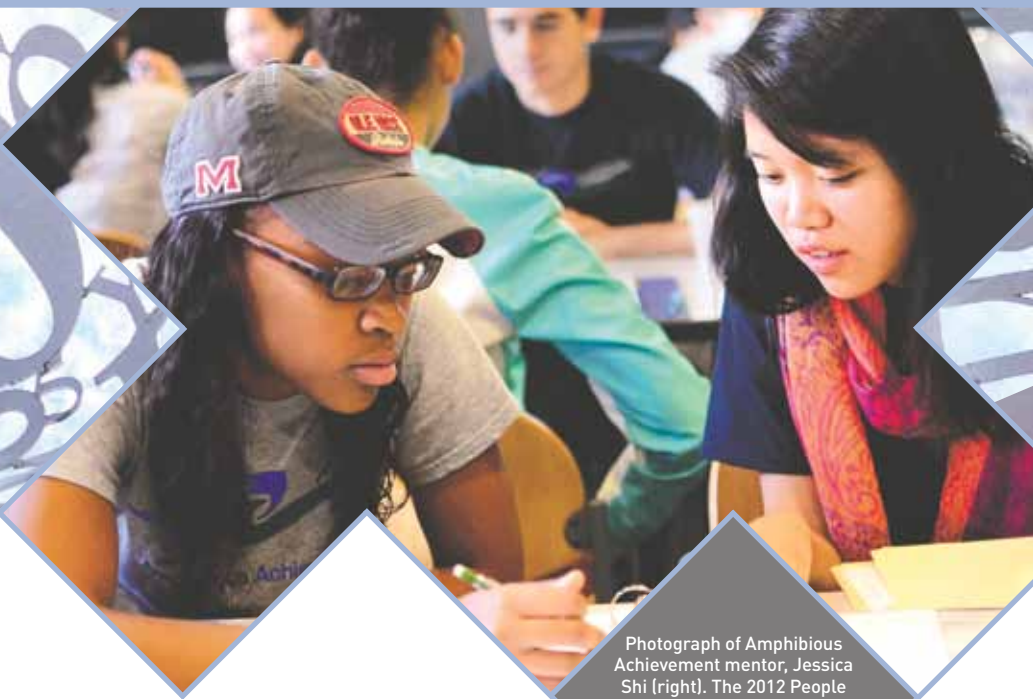
Brian M. Gager '14 was fifth in the 600m with 1:23.47, while Henry Tareque

Track, Page 11



ERIC HAO—THE TECH

Marshall P. Wentworth '16 competes in the pole vault, finishing 7th with a height of 4.25 meters. His score contributed to MIT's overall 1st place finish out of 26 teams at the New England Division III Indoor Track and Field Championships this past weekend.



Photograph of Amphibious Achievement mentor, Jessica Shi (right). The 2012 People Helping People award went to Corinne Carland, past Amphibious Achievement executive member.

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- MIT Federal Credit Union Memorial Scholarship
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For more details and information regarding applications, deadlines and official program rules, visit **mitfcu.org**.

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