MIT's Oldest and Largest Newspaper

tech.mit.edu

The Tech

Established 1881

Volume 133, Number 62

Wednesday, January 15, 2014

WEATHER, p. 3

WED: 50°F | 34°F
Sunny

THU: 42°F | 31°F
Chance rain

FRI: 45°F | 34°F
Partly cloudy

CHRISTOPHER A. MAYNOR—THE TECH

MIT Medical fully converted to Follow My Health, a new healthcare portal, at the beginning of this year. The voluntary program will among other things allow patients to check and update their own medical records, as well as provide a better means of remote communication between patient and doctor.

MIT Medical adds new portal system

New healthcare portal Follow My Health program 'totally voluntary'

By William Navarre
STAFF REPORTER

On Jan. 1, 2014, MIT Medical fully converted to a new healthcare portal called Follow My Health, replacing an older portal called Patient Online. Follow My Health will support features absent from Patient Online, such as the ability for patients to view lab results. Like Patient Online, Follow My Health has the right to sell aggregate data, but will not compromise any patient privacy in the process.

The program is "totally voluntary," said MIT Medical's manager of marketing David Tytell. "You should have [an account] because it's easy. But if you don't have one, it's fine," he said.

Shelagh Joyce, director of information services at MIT Medical, said that the biggest improvement in Follow My Health over Patient Online is that patients may now access "laboratory and radiology results." Also, the platform is portable and available on Android and iOS devices, according to Joyce.

Tytell said MIT Medical chose to change to Follow My Health because it's "used by over three-hundred hospitals... it's a tried and true product." Tytell said the portal is useful to patients as it allows them to easily update their health history and view the data collected by practitio-

Medical, Page 13

MIT scientists benefit from US budget deal

Bipartisan bill will extend funding for MIT's nuclear facility, Alcator C-mod

By Kimberly Railey
THE BOSTON GLOBE

Massachusetts fishermen and MIT scientists are among the winners in a $1.012 trillion spending deal released Monday night by Congress.

Under the bill poised to clear Congress this week, $75 million in fisheries disaster relief will go toward to the Commerce Department, which will then distribute it to states.

The assistance is part of a bipartisan bill that is set to begin moving through Congress to fund the US government through Sept. 30. The compromise signals a break from years of forced budget cuts and congressional funding fights.

"We're very pleased," Representative John Tierney, who represents North Shore communities including the fishing community of Gloucester, told the Globe on Tuesday. "We've been desperate for our folks to get the help that they need."

The $75 million in fisheries money marks the first relief since the Northeast groundfishing industry was declared an economic disaster in September 2012. The Senate previously voted for $150 million in disaster assistance, but the House appropriated no funding.

The omnibus spending measure also would give $22.2 million to the Alcator C-Mod facility at the Massachusetts Institute of Technology, which examines nuclear fusion as a potential energy source. The long-running research experiment was planning to cease its operation, after its already reduced federal funding was cut further last year.

Budget, Page 14

NEWS BRIEFS

New IS&T VP John Charles

On Jan. 1, John Charles became the new vice president for information systems and technology (IS&T). He succeeds Marilyn T. Smith, who stepped down February last year. "It's an extraordinary honor and opportunity for me to serve MIT and its talented IS&T organization in this leadership capacity," he told the MIT News Office.

As the new vice president of IS&T, Charles is responsible for the development of information technology policy, and overseeing long-range systems planning and projects.

Before coming to MIT, he was chief operating officer for the Corporation for Education Initiatives in California (CENIC). Prior to his work at CENIC, Charles served as an information officer at the California State University, East Bay, for fifteen years.

"John sketched a principled and pragmatic IT approach to supporting MIT's core mission of teaching and research," said Frans Kaashoek, a co-chair of the search committee charged with finding the new vice president. "We are looking forward to working with him."

Lambda Chi Alpha flooded

Last Saturday, a water leak in the basement of MIT fraternity Lambda Chi Alpha, located on 99 Bay State Road, caused eight to ten feet of flooding, requiring the intervention of Boston firefighters.

According to *Fox News*, at least ten students evacuated the building. Fire officials did not give a reason for the leak.

The Boston Herald reported that the Boston Fire Department responded to 75 water leaks between Jan. 2 and 4, with frigid temperature blamed for the bursting pipes.

Reif warns about innovation deficit

On Dec. 29, 2013, in an article in the *Boston Globe*, President L.

News Briefs, Page 13

IN SHORT

Tim the Beaver's 100th birthday celebration is Friday, Jan. 17 from 11:30 a.m. to 1:30 p.m. in the Student Center lobby. You can have your photo with Tim, snack on a cupcake, enjoy live music, giveaways, and more.

The Art of Astrophysics competition for the MIT community is seeking artistic applications! Entries must be received by Jan. 29, 2014 at 5 p.m. Digital works may be submitted to artofastrophysics@gmail.com and tangible artwork brought to 37-673. For more information, go to *http://space.mit.edu/symposium/iap/2014/astro_art/*.

Friday, Jan. 17 is the last day to go off of the February degree list.

Monday, Jan. 20 is a holiday for Martin Luther King, Jr. Day.

The final deadline to pre-register for the Spring semester is Tuesday, Jan. 21 by 5 p.m. Pre-registering after that time will incur a late fee of $85.

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

CHRISTOPHER A. MAYNOR—THE TECH

Only a short stump in the midst of a puddle remained after a large tree at the southeast entrance to W20 was cut down Tuesday morning. Grounds Services was not available for comment Tuesday evening.

THE NATURALIST'S NOTEBOOK
Temperature changes and their impact on nature.
CAMPUS LIFE, p. 11

TAMING THE FIREHOSE
Proper preparation can make your semester less difficult. **OPINION, p. 4**

DIGITAL CHESS: NEW HEIGHTS
New chess engines transform the ancient game. **CAMPUS LIFE, p. 10**

SMBC THEATER'S STARPOCALYPSE
SMBC Theater finally presents the long-anticipated web series.
ARTS, p. 7

A TALE OF TWO BETAS
Compared to *Hearthstone*, *Scrolls* is a deeper game with more variety. **ARTS, p. 8**

SECTIONS
World & Nation . . . 2
Opinion 4
Fun Pages 5
Arts 7
Campus Life 10
Sports 16

House and Senate negotiators agree on spending bill

WASHINGTON — House and Senate negotiators reached accord on a trillion-dollar spending plan that will finance the government through September, reversing some cuts to military veterans' pensions that were included in a broader budget agreement last month and defeating efforts to rein in President Barack Obama's health care law.

The hefty bill, filed in the House on Monday night, neutralized almost all of the 134 policy provisions that House Republicans had hoped to include, with negotiators opting for cooperation over confrontation after the 16-day government shutdown in October.

Measures to eliminate the Environmental Protection Agency's ability to regulate greenhouse gases and reverse clean water regulations did not survive the final negotiations.

Republicans also relented on their efforts to strip financing to carry out the Affordable Care Act.

"Obamacare lives another day," said Sen. Barbara A. Mikulski, D-Md., the chairwoman of the Senate Appropriations Committee.

The compromises may be difficult to accept for conservative Republicans, many of whom campaigned in 2010 vowing never to vote on a phone-book-size bill they have not had time to read.

And because many of them will balk, the bill will have to have bipartisan support to pass.

Republican and Democratic leaders said they believed they would easily get majorities in the House and Senate, but not without loud protests from both the right and the left.

Republicans do get to point to some conservative victories. The bill would cut $1 billion from the Affordable Care Act's Prevention and Public Health Fund, which Republicans have long targeted, fearing the administration would use it to bolster the law's online insurance exchanges.

The legislation also would impose new requirements for the Internal Revenue Service in reporting its activities to the public and Congress after the agency's scrutiny of Tea Party groups' applications for nonprofit status. The $11.3 billion appropriated for the IRS is down $503 million from the level enacted in 2013.

The military budget would total $572.66 billion, $20 billion less than House Republicans wanted. The bill also explicitly prohibits the Postal Service from cutting Saturday mail delivery or closing rural post offices.

But the final bill restores part of that accord's most controversial spending cut — a 1-percentage-point reduction in cost-of-living adjustments to the pensions of working-age military veterans. Under the bill, that cut will not apply to disabled veterans. Lawmakers in both parties have pledged to eliminate the reduction.

—Jonathan Weisman, The New York Times

Court rejects FCC rules on equal Internet access

By Edward Wyatt
THE NEW YORK TIMES

WASHINGTON — A federal appeals court on Tuesday threw out Federal Communications Commission rules that require Internet service providers to give all traffic equal access through their networks.

Although it acknowledged that the FCC has some authority to regulate Internet service, the court said Tuesday that the commission overstepped its authority when it imposed anti-discrimination rules on Internet service providers, because the commission had previously exempted those companies from that type of regulation. The decision, by the U.S. Court of Appeals for the District of Columbia Circuit, was the second case the FCC had lost before the appeals court over its authority to regulate Internet service providers.

The ruling means that, under current law, broadband providers can offer companies that provide Internet content — ESPN or Facebook, for example — faster service to provide their content to consumers, at a price. It is unclear how the FCC will respond. The commission could overcome the ruling if it decided to reclassify Internet service as a utility, much like telephone or electric service. Consumer groups have advocated for that solution, but the commission has faced fierce opposition from Congress and heavy lobbying by broadband providers against doing so.

In addition, Tom Wheeler, the new FCC chairman, has shown some signs that he wants to allow freedom for Internet companies to design new products and see how they work, rather than impose regulations that prohibit potentially innovative services before they are tested.

In a statement, Wheeler said the court ruled that the FCC does have authority to enact measures "encouraging the deployment of broadband infrastructure" and said the commission might appeal the ruling.

Federal judge rejects Oklahoma's gay marriage ban

By Erik Eckholm
THE NEW YORK TIMES

A federal judge in Oklahoma ruled Tuesday that the state's constitutional amendment barring same-sex marriage violated the federal Constitution, the latest in a string of legal victories for gay rights and one that occurred in the heart of the Bible Belt.

The state's ban on marriage by gay and lesbian couples is "an arbitrary, irrational exclusion of just one class of Oklahoma citizens from a governmental benefit," wrote Judge Terence C. Kern of U.S. District Court for the Northern District of Oklahoma, in Tulsa, deciding a case that had languished nine years. The amendment, he said, is based on "moral disapproval" and does not advance the state's asserted interests in promoting heterosexual marriage or the welfare of children.

The decision will not take effect immediately, and Oklahoma is almost certain to appeal, leaving prospects uncertain for gay couples in the state.

The ruling comes less than a month after a federal judge in Utah reached the same conclusion, declaring that state's restrictive marriage amendment to be unconstitutional. Some 1,300 couples rushed to marry before Utah obtained a temporary stay from the U.S. Supreme Court, blocking further marriages while the issue is considered by a federal appeals court.

In view of the Utah ruling, Kern stayed his decision in anticipation of an appeal by Oklahoma to the same appeals court where the Utah case is being heard, the 10th U.S. Circuit Court of Appeals in Denver.

Over the past year, the number of states authorizing same-sex marriage, whether through legislative action or court order, has grown to 17, or 18 if Utah is included.

Tunisian constitution, praised for balance, nears passage

By Carlotta Gall
THE NEW YORK TIMES

TUNIS, Tunisia — Tunisia's National Constituent Assembly is close to passing a new Constitution that legislators across the political spectrum, human rights organizations and constitutional experts are hailing as a triumph of consensus politics.

Two years in the making and now in its third draft, the charter is a carefully worded blend of ideas that has won the support of both Ennahda, the Islamist party that leads the interim government, and the secular opposition. It is being hailed as one of the most liberal constitutions in an Arab nation.

"They finally found some equilibrium," said Ghazi Gherairi, secretary general of the International Academy of Constitutional Law in Tunis, the capital. "It is a result of consensus, and this is new in the Arab world."

The process of drafting and approving a new constitution took a year longer than planned. It was buffeted by two assassinations and rising terrorism last year, and by political divisions that nearly derailed the government.

Ennahda ultimately gave up many of its original goals for the constitution: It says nothing, for instance, about the establishment of an Islamic state or the supremacy of Sharia law. But the party succeeded in injecting an Islamic flavor, with wording stating that Islam is the religion of Tunisia and a preamble that recognizes Tunisians' Arab-Muslim identity.

With Western support and strong lobbying by civil society groups, the country's more liberal parties secured constitutional guarantees that Tunisia will remain a civil state with separation of powers. The constitution enshrines universal freedoms and rights, and calls for parity for women in elected bodies.

The first two articles lay out the balance between Islamist and secular views in careful language that is not subject to amendment by future governments. "Tunisia is a free, independent and sovereign state, Islam is her religion, Arabic her language and republic her regime," they say. "Tunisia is a state of civil character, based on citizenship, the will of the people and the primacy of law."

Although the country remains divided over the role of religion in public life, those divisions were set aside in order to guarantee freedoms and prevent a return to the kind of dictatorial rule Tunisians overthrew in 2011, at the start of the Arab Spring.

The atmosphere in the 217-member assembly drafting the charter changed remarkably in the last 12 days, as members put aside the hostilities that had suspended the proceedings for five months and worked 14-hour days to debate and vote on the draft, article by article.

"It's a positively crazy, fantastic environment," said Noomane Fehri, a member of a small secular party, Afek Tounes. "There is a will to complete it within the time frame, and suddenly things started to work." The assembly is likely to ratify the full charter with the necessary two-thirds majority when the final vote is taken, he said. The vote may come in the next few days.

NSA devises radio pathway into computers isolated from web

By David E. Sanger and Thom Shanker
THE NEW YORK TIMES

WASHINGTON — The National Security Agency has implanted software in nearly 100,000 computers around the world that allows the U.S. to conduct surveillance on those machines and can also create a digital highway for launching cyberattacks.

While most of the software is inserted by gaining access to computer networks, the NSA has increasingly made use of a secret technology that enables it to enter and alter data in computers even if they are not connected to the Internet, according to NSA documents, computer experts and U.S. officials. The technology, which the agency has used since at least 2008, relies on a covert channel of radio waves that can be transmitted from tiny circuit boards and USB cards inserted surreptitiously into the computers.

The radio frequency technology has helped solve one of the biggest problems facing U.S. intelligence agencies for years: getting into computers that adversaries, and some U.S. partners, have tried to make impervious to spying or cyberattack.

The NSA calls its efforts more an act of "active defense" against foreign cyberattacks than a tool to go on the offensive.

Among the most frequent targets of the NSA and its Pentagon partner, U.S. Cyber Command, have been units of the Chinese army, which the U.S. has accused of launching regular digital probes and attacks on U.S. industrial and military targets, usually to steal secrets or intellectual property. But the program, code-named Quantum, has also been successful in inserting software into Russian military networks and systems used by the Mexican police and drug cartels, trade institutions inside the European Union, and sometime partners against terrorism like Saudi Arabia, India and Pakistan, according to officials.

"What's new here is the scale and the sophistication of the intelligence agency's ability to get into computers and networks to which no one has ever had access before," said James Andrew Lewis, the cybersecurity expert at the Center for Strategic and International Studies in Washington. There is no evidence that the NSA has implanted its software or used its radio frequency technology inside the U.S.

President Barack Obama is scheduled to announce on Friday what recommendations he is accepting from an advisory panel on changing NSA practices.

FBI investigators believe targeting of groups by IRS not a crime

WASHINGTON — FBI investigators do not believe Internal Revenue Service officials committed crimes in the unusually heavy scrutiny of conservative groups that applied for tax-exempt status, a law enforcement official said Monday.

Prosecutors for the Justice Department who have been overseeing the case have not made a decision about whether to file charges against the officials — although that would seem unlikely given the FBI investigators' conclusion, according to the official, speaking anonymously because he could not talk on the record about a continuing investigation.

Despite an admission by the IRS that it inappropriately targeted conservative groups, by searching for groups with the words "Tea Party" or "Patriots" in their names, many legal experts and law enforcement officials say they do not believe that the scrutiny broke the law.

Some members of Congress had called for the Justice Department to investigate the tax-collecting agency. The Wall Street Journal was the first to report Monday that criminal charges were unlikely.

IRS documents show the agency gave the same scrutiny to some liberal groups, using the key words "Progressive" and "Occupy."

—Michael S. Schmidt, The New York Times

Obama to place some restraints on surveillance

WASHINGTON — President Barack Obama will issue new guidelines on Friday to curtail government surveillance, but will not embrace the most far-reaching proposals of his own advisers and will ask Congress to decide some of the toughest issues, according to people briefed on his thinking.

Obama plans to increase limits on access to bulk telephone data, call for privacy safeguards for foreigners and propose creation of a public advocate to represent privacy concerns at a secret intelligence court.

But he will not endorse leaving bulk data in the custody of telecommunications firms nor will he require court permission for all so-called national security letters seeking business records.

The emerging approach, described by current and former government officials who insisted on anonymity in advance of Obama's widely anticipated speech, suggested a president trying to straddle a difficult line that will placate civil liberties advocates without a backlash from national security agencies.

The result seems to be a speech that leaves in place many current programs, but embraces the spirit of reform and keeps the door open to further changes later.

The decision to provide additional privacy protections for non-Americans or residents, for instance, largely codify existing practices but will be followed by a 180-day study by the director of national intelligence about whether to go further. Likewise, instead of taking the storage of bulk data out of government hands, as recommended by a review panel he appointed, Obama will leave it in place for now and ask lawmakers to weigh in.

The blend of decisions, to be outlined in a speech at the Justice Department and in a presidential guidelines memorandum, will be Obama's highest profile response to the disclosures about the National Security Agency made in recent months by Edward J. Snowden, a former NSA contractor who has fled to Russia.

But as intelligence officials have sorted through Obama's evolving position, they have been divided about how significant his adjustments will be.

—Peter Baker and Charlie Savage, The New York Times

WEATHER

Temperatures above average in Cambridge

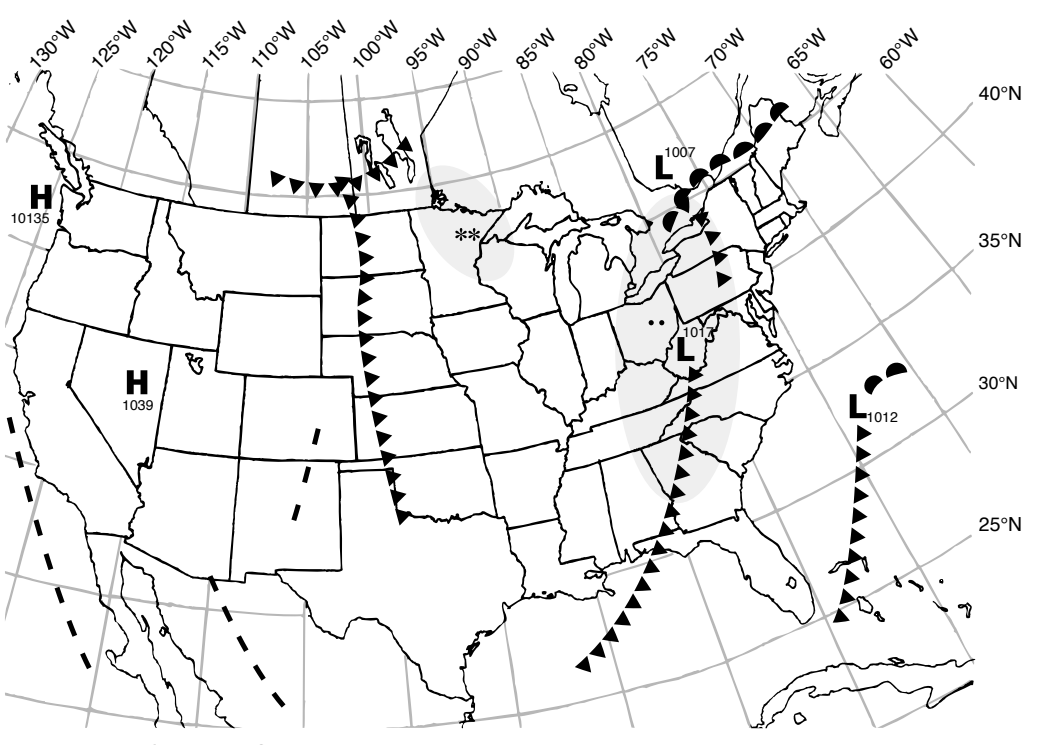
By Shaena Berlin
STAFF METEOROLOGIST

Over the past few days, temperatures more than 10 degrees higher than average melted most of the snow remaining from the last storm. The daily average for this week in Cambridge is normally below freezing (32°F), but we have barely dipped below freezing even at night since last week. Expect warmer weather to persist through Friday before a return to normal temperatures this weekend.

Other places are also experiencing above-normal temperatures. Highs above 100°F have hurt tennis players in the Australian Open, while southern California faces extreme fire danger and record warmth.

Extended Forecast

Today: Sunny and warm. High near 50°F (10°C). Light winds from the south.
Tonight: Cloudy with a low around 34°F (1°C). SW winds at 5–10 mph.
Tomorrow: Cloudy with a slight chance of rain. High around 42°F (6°C). Low near 31°F (0°C).
Light winds from the north.
Friday: Mostly sunny during the day, with clouds and a chance of precipitation overnight. High around 45°F (7°C). Low near 34°F (1°C). SW winds around 10 mph.
Saturday: Cloudy with rain and snow showers. High near 40°F (5°C). Low around 23°F (-5°C).



Situation for Noon Eastern Time, Wednesday, January 15, 2014

Weather Systems	Weather Fronts	Precipitation Symbols			Other Symbols
			Snow	Rain	
H High Pressure	Trough	Showers	* ▽	• ▽	Fog
L Low Pressure	Warm Front	Light	*	•	Thunderstorm
§ Hurricane	Cold Front	Moderate	**	••	Haze
	Stationary Front	Heavy	⁂	∴	Compiled by MIT Meteorology Staff and *The Tech*

OPINION OPINION OPINION

The Tech (ISSN 0148-9607) is published on Tuesdays and Fridays during the academic year (except during MIT vacations), Wednesdays during January, and monthly during the summer by The Tech, Room W20-483, 84 Massachusetts Avenue, Cambridge, Mass. 02139. Subscriptions are $50.00 per year (third class). **POSTMASTER:** Please send all address changes to our mailing address: The Tech, P.O. Box 397029, Cambridge, Mass. 02139-7029. **TELEPHONE:** Editorial: (617) 253-1541. Business: (617) 258-8324. Facsimile: (617) 258-8226. *Advertising, subscription, and typesetting rates available.*

Taming the firehose

Students should focus more on pre-semester preparation

By Mat Peterson

One of the reasons MIT is one of the best universities in the world is because it is hard. The workload is vast, the problems are difficult, the exams can feel impossible, grading is harsh, and it often feels like there just isn't enough time in the day. But there is an often-overlooked reason the Institute is challenging — for most, the problem isn't a lack of desire, ambition, or effort, but rather a lack of proper preparation.

Often neglected, preparation can make a major difference in an undergraduate career. On a larger level, some students simply come in with a stronger background. That's harder to address. My solution is for the micro-level problem: individual preparation for each semester.

Imagine that the content of a given class is constructed like a pyramid. At the beginning of the semester we start out by laying the foundation, the bottom layers of the pyramid. The foundation holds up the rest of the structure, but if one of the blocks of knowledge is never placed, the pyramid grows but missing blocks in one layer lead to missing blocks in the next. By not carefully understanding each concept, the ensuing concepts become more difficult to learn. By the end of the semester, you have a mangled mess of concepts that don't form a coherent body of knowledge.

> **Proper preparation should not get lost in the noise of the first few weeks of the semester.**

Whenever I've prepared for a semester, it turns out great. Unfortunately, I haven't always listened to my own advice. Proper preparation should not get lost in the noise of the first few weeks of the semester. Because the beginning of the semester is sprinkled with review material, it is often perceived as trivial and a waste of time. Students are also preoccupied by rush, recruitment, and other activities that they jump into during the beginning of the year. Furthermore, many students attempt to sample too many classes in the first weeks of the semester to give them all sufficient attention. Preparing before the semester begins gives you the opportunity to be distracted by the on-goings of the first couple weeks without sacrificing a solid understanding of the foundations of each class.

Because it is so easy for students get off track, I cannot emphasize enough the importance of preparing for a semester before it begins. My first step is always to look around for information about the class and its contents. OpenCourseWare (OCW) is a good resource as well as class websites for previous years. If I find a syllabus, I familiarize myself with what subjects are covered in the first weeks. If there are lecture notes and problem sets, I learn the material that is covered in the first problem set and then I do that problem set. This might seem a little excessive, but I have found it tremendously helpful.

MIT is academically difficult, but proper preparation can make it a more enriching and enjoyable experience. As part of your preparation for this coming semester, take some time to think about what mistakes you have made in previous semesters and try to correct them. The first step towards any solution is understanding the problem.

Mat Peterson is a member of the Class of 2015.

CORRECTIONS

A guest column on CityDays in the April 20, 2012 issue gave the incorrect class year for Cory D. Hernandez. He is a member of the Class of 2014, not 2013.

A Campus Life article on Alexis Ohanian in last Wednesday's issue misspelled his last name as "Ohanion."

OPINION POLICY

Editorials are the official opinion of *The Tech*. They are written by the Editorial Board, which consists of Chairman Sarah Ritter, Editor in Chief Anne Cai, Managing Editor Ian M. Gorodisher, Executive Editor Deborah Chen, and Opinion Editor Jacob London.

Dissents are the signed opinions of editorial board members choosing to publish their disagreement with the editorial.

Letters to the editor, **columns**, and **editorial cartoons** are written by individuals and represent the opinion of the author, not necessarily that of the newspaper. Electronic submissions are encouraged and should be sent to *letters@tech.mit.edu*. Hard copy submissions should be addressed to *The Tech*, P.O. Box 397029, Cambridge, Mass. 02139-7029, or sent by interdepartmental mail to Room W20-483. All submissions are due by 4:30 p.m. two days before the date of publication.

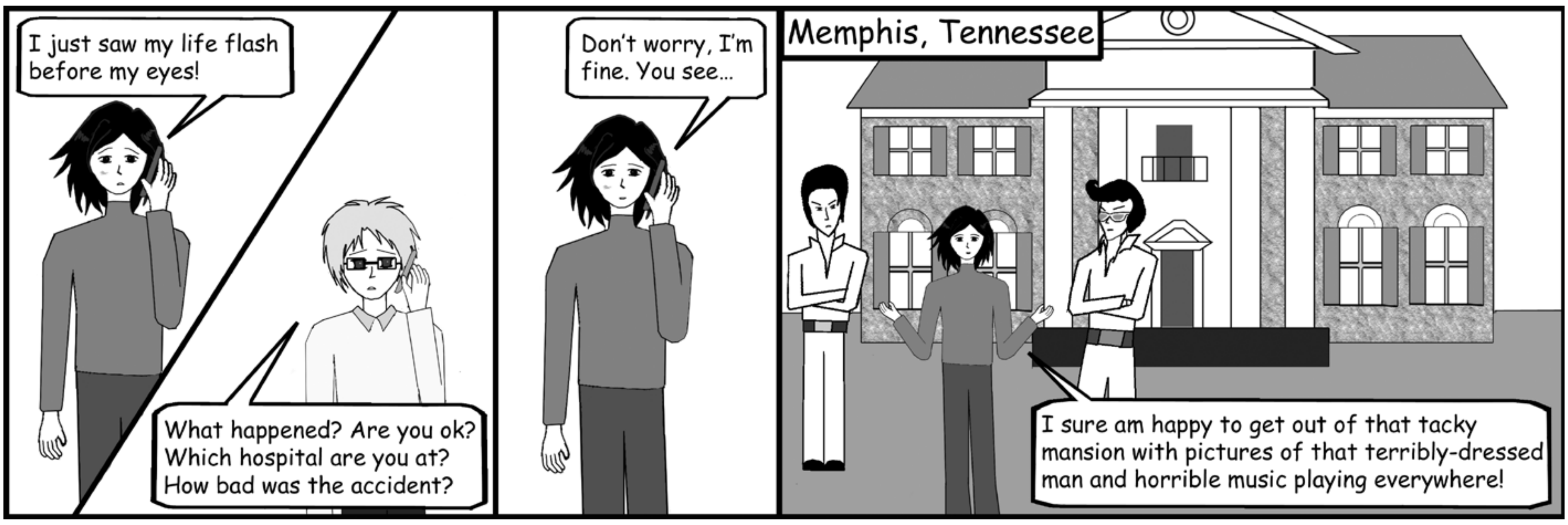
Letters, columns, and cartoons must bear the authors' signatures, addresses, and phone numbers. Unsigned letters will not be accepted. *The Tech* reserves the right to edit or condense letters; shorter letters will be given higher priority. Once submitted, all letters become property of *The Tech*, and will not be returned. Letters, columns, and cartoons may also be posted on *The Tech*'s Web site and/or printed or published in any other format or medium now known or later that becomes known. *The Tech* makes no commitment to publish all the letters received.

Guest columns are opinion articles submitted by members of the MIT or local community.

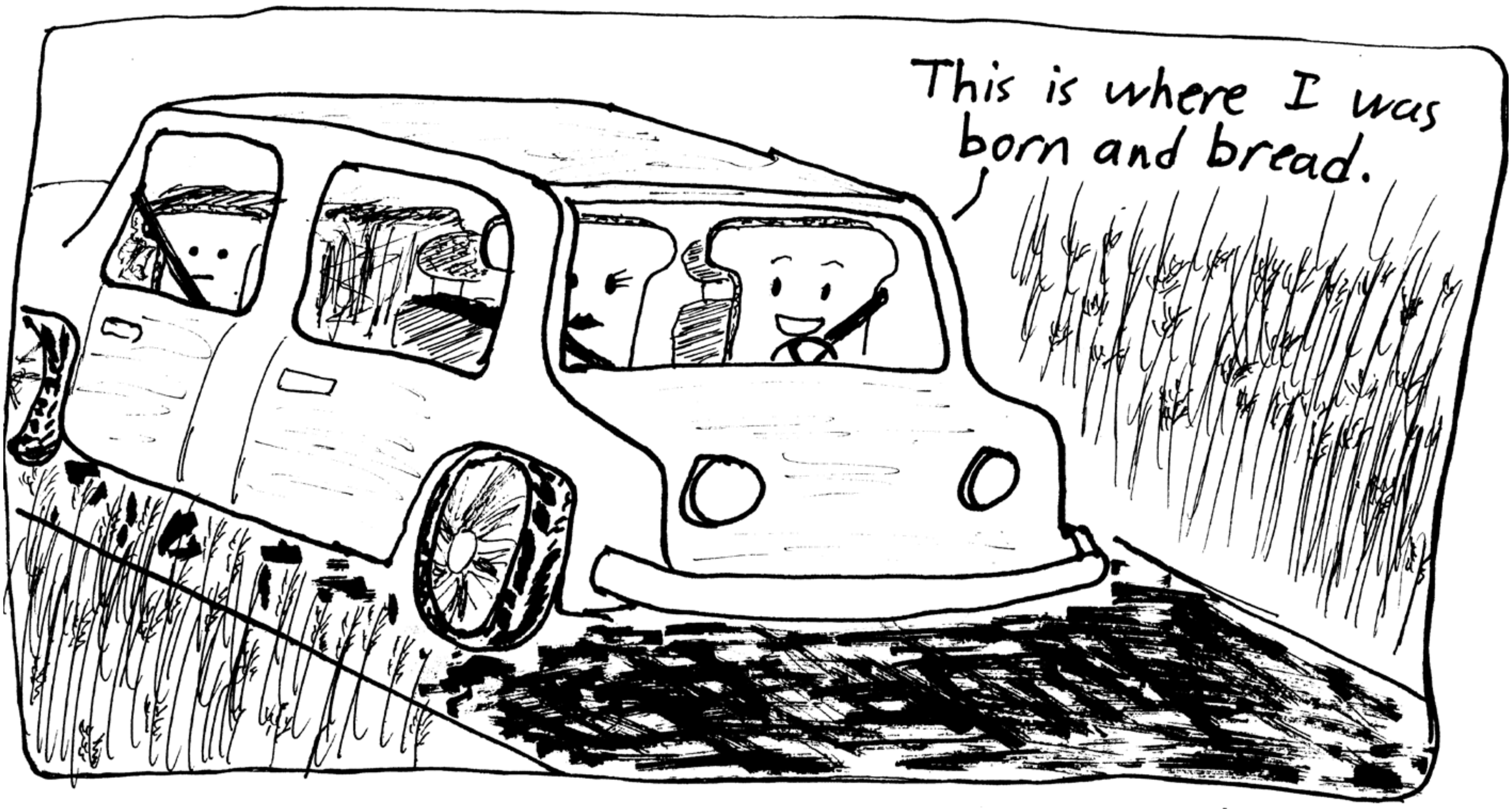
TO REACH US

The Tech's telephone number is (617) 253-1541. Email is the easiest way to reach any member of our staff. If you are unsure whom to contact, send mail to *general@tech.mit.edu*, and it will be directed to the appropriate person. You can reach the editor in chief by emailing *eic@tech.mit.edu*. Please send press releases, requests for coverage, and information about errors that call for correction to *news@tech.mit.edu*. Letters to the editor should be sent to *letters@tech.mit.edu*. *The Tech* can be found on the World Wide Web at *http://tech.mit.edu*.

Somewhere on the Search for Meaning by Letitia Li



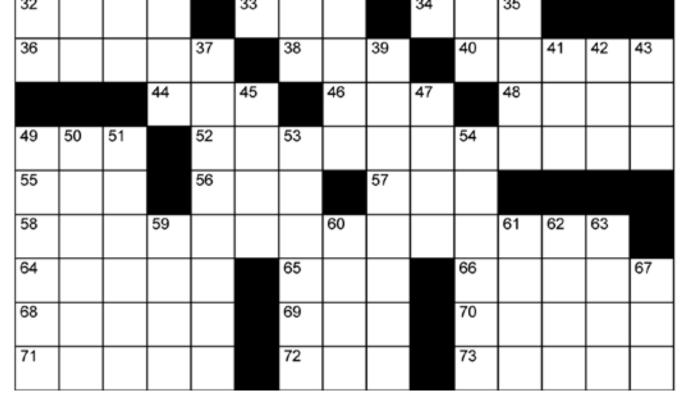
Strangers to Fiction by Deena Wang



Dad puns transcend species and fiber content.

Crossword by Kevin Der

Solution, page 13



ACROSS

1 Canyon
6 Flying animal that uses echolocation
9 Prefix with violet
14 Screwdriver alcohol
15 ___ Kappa Nu
16 Anther openings through which pollen is released
17 Give a commencement address, say
18 Capote's nickname
19 World of Warcraft guild events
20 58-Across whose participants are given mathematical expressions
23 Soccer star Hamm
24 Yoko ___
25 Rand who wrote "Atlas Shrugged"
26 58-Across whose participants solve puzzles over a long weekend
31 Do-over, in tennis
32 Hitchcock's "___ Window"
33 ___-di-dah
34 "___ who?"
36 Like sugar and molasses, before the colonies revolted
38 Singer Rawls
40 Lab measurement
44 Slangy affirmative
46 Place of higher education, to a Brit
48 Steam ___ (eatery in Building 7)
49 ___ English, language of "Beowulf"
52 58-Across whose participants might learn dating or dinner etiquette
55 Course 7, casually
56 Tyler of "Armageddon"
57 Apple pie ___ mode
58 20-, 26-, or 52-Across, e.g.
64 Viking hall beverages
65 Unit meas. of electrical current
66 ___ gas
68 Cars
69 Campus store purchase
70 Ancient Greek marketplace
71 Vertebrae
72 Keyboard counterpart of "home"
73 Check out again

DOWN

1 Central Square's ___ Pharmacy
2 Arizona native
3 Gulf bordering Yemen and Somalia
4 32-card game
5 "Not unless I'm forced to!"
6 Lando's act in Episode V
7 Gillette razor brand
8 Audrey in "Amélie"
9 Torn from the ground
10 Student ___ (form of financial aid)
11 ___ council (event on "Survivor")
12 Overnight flight
13 Approval
21 ___ Scout cookie
22 Middle-earth's Prancing Pony and others
26 Actor in "The A-Team" and "Rocky III"
27 Vote in favor
28 Lisa Simpson's instrument, for short
29 Parker who co-wrote "Book of Mormon"
30 Time to attack, in the military
35 Actor/director Braff of "Garden State"
37 Fallen, in social circles
39 Like some parts of a genome
41 Fields Medal winner Terence ___
42 E.T.'s ship, e.g.
43 Director Brooks
45 Poker whiz Ivey
47 Castaway's spot
49 White House family
50 Arrange into a syzygy, as planets
51 Astronomer Giovanni who gave his name to a comet
53 Fly a plane
54 Delicacy often paired with champagne
59 Japanese noodles
60 "Hear, hear!"
61 Directed or undirected one, in a graph
62 Element after fluorine
63 Weight of a container
67 Snell's ___ (concept in optics)

Easy Sudoku

Solution, page 13

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

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

Easy Techdoku

Solution, page 13

3+	30×		24×		6×
	12×		60×		
2–		2×			15×
		60×			
180×		24×		12×	
			2–		

Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–6. Follow the mathematical operations for each box.

Sudoku

Solution, page 13

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

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

Techdoku

Solution, page 13

48×		1–			5
2–		10+		72×	
	12×		22+		
3+					6×
		1–		5	
30×			12×		1

Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–6. Follow the mathematical operations for each box.

WEBCOMIC REVIEW

Of aliens and orgasms

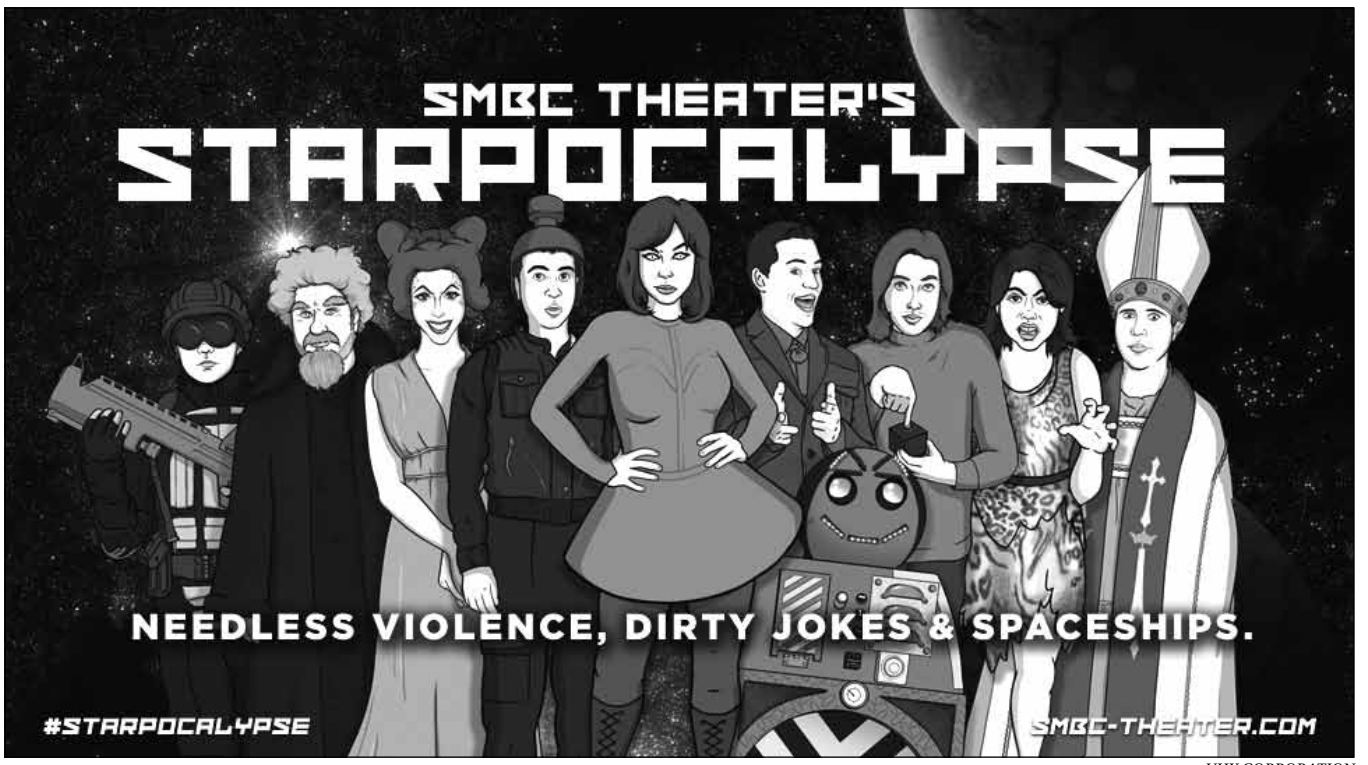
The long anticipated web series from *SMBC Theater*

By Kristen Sunter
STAFF WRITER

Fans of Saturday Morning Breakfast Cereal (SMBC) rejoice — the long awaited, crowd-funded webcomic series has finally launched! *Starpocalypse*, the first of three series, is a space opera set in the far future where the last liberal arts professor and his brother, a physics professor, have outlived their usefulness to a society where everyone can achieve instant orgasms through existing technology. In a desperate attempt to find some purpose for philosophy, they encounter a being in outer space who claims that she is the long-lost god who created humanity. But she's entirely mad and takes them hostage. They can either refuse to take her to Earth and die a painful, head exploding death or rely on their academic prowess to convince her to spare humanity and humanity to worship her. After all, any sufficiently advanced alien is indistinguishable from god.

Like the webcomic SMBC, the comedy hinges on deeper statements about human nature.

Like the webcomic and previous sketches from *SMBC Theater*, the comedy hinges on deeper statements about human nature. The webcomic is particularly thought-provoking when the subject is alternative and often irreverent ways of looking at theology. Add aliens that act as a foil to humanity, and it's a winning combination for SMBC fans. *SMBC Theater*, which was created by James Ashby and Zach Weinersmith, generally depicts everyday circumstances, so they didn't rely on high production values or elaborate sets. *Starpocalypse* ventures beyond the stories that previous sketches could tell convincingly without special effects, to explore a new range of themes.



VHX CORPORATION

***SMBC Theater*'s first major webseries, *Starpocalypse*, is a comedy** about humans abandoning religion, philosophy, art, and leaders specializing in technology, warfare and instant orgasms.

The special effects were possible because *Starpocalypse* was backed by a very successful Kickstarter campaign. Although they only asked for $15,000, they exceeded this goal by more than $60,000 with donations from over 2,400 backers in August 2011. Now we can finally see what this financial support and the long lead-time have produced. Between attractive sets like the well-built bridge of the space ship and the filmmaking experience that the team has accrued over the years, *Starpocalypse* has brought SMBC Theater to the next level.

The pacing of many web series suffers because the segments are meant to be viewed both serially and all at once after the last episode is aired. The amped-up fun of five video segments combined into one makes the full series a little too high octane, like binge watching on a show that has no episodes devoted to character development. I'd recommend viewing *Starpocalypse* episodes interspersed with the most popular SMBC Theater sketches. The SMBC Theater segments are easy to view in a large dose because, like other sketch comedy shows, the subject matter and characters change every sketch and so it continues to feel fresh. A sex-obsessed god and the graphic depictions of her fantasies can stand to be diluted a bit.

Starpocalypse might not be as poignant as some of the SMBC comics, but it's zany and dirty, like the webcomic writ large into a forty-minute show. One common criticism of SMBC from people who can't quite get into it is the frequency of sex jokes. You might read two great comics that speak to your existential angst or love of science, but then there's a punch line about penises. It's understandably not for everyone, so be warned, *Starpocalypse* is an onslaught of orgasming. But they make an effort far exceeding what you'd expect from a web series — there are no mere graph jokes here.

INTERVIEW

James Ashby on *Starpocalypse*

SMBC Theater co-founder speaks with *The Tech*

By Kristen Sunter
STAFF WRITER

James Ashby founded *SMBC Theater* with Saturday Morning Breakfast Cereal comics writer Zach Weinersmith in 2009, and they have just released *Starpocalypse*, the first of three planned web series.

The Tech: Were you always planning on making a web series or did the idea come after working on the SMBC Theater sketches? In your Kickstarter campaign, you initially asked for $15,000. What was the plan?

James Ashby: We really wanted to do something "science fiction-y", but we never had the cash for it. With $15,000, we would have made a really fancy sketch or one episode of a web series. When we got $76,000, we were like, we gotta go all out. It's a really exciting amount of money but also a scary amount of money because it means that our audience is going to expect something really phenomenal, as well they should, but also that maybe folks didn't have a clear understanding of how little money that really is to do video production.

TT: How did you come up with the idea for *Starpocalypse*?

JA: Religion is based at least to some degree on a lack of logic, which makes it very fascinating and somewhat funny in some interesting ways. In the story of God talking to Abraham before Sodom and Gomorrah, God says, I hate the towns, I'm going to destroy them, and Abraham says, what if I can find a thousand good people? And God says, "Oh well, if you find a thousand good people, I guess I won't blow up the cities." "Okay, great, what if I can find 500 good people?" That idea of haggling with God about whether or not God is going to kill everybody seems hilarious to me. I liked the idea of marrying it with some of the tropes about ancient aliens.

TT: What parts of the series are you most proud of?

JA: Episodes 4 and 5, in the Hall of Science. That was all shot in a homemade green screen room in a very tiny office about 12 feet wide by maybe 20 feet deep. But it had a very small, kind of rickety, not entirely up to code balcony so that we could get all the angles we needed and all the various directions. All of the council pods are actually one pod: we built one pod, and we shot it a thousand different angles with different people in it, and we put all that together in postproduction. The same is true for everybody in that scene. All of those people were actually filmed separately against a green screen because that's all we could afford to do, and we had to put that together later.

TT: What was the hardest part of making this series?

JA: For me, probably the hardest part was getting other people to join me in this crazy plan and keeping them inspired because, at the end of the day, after writing the script and making a few funny faces in front of the camera, we were out of the skill set that I had to contribute. I can't do special effects so I had to beg a whole lot. We have really wonderful EFX people who donated their time and work because they really liked the idea and they wanted to help out. Without that, it would not have been possible. I'm working to build in a royalty system for Starpocalypse. All of the merchandise for Starpocalypse is going to be geared such that none of the money goes to Zachary, myself or SMBC Theater or the company. It all goes directly to the cast, crew and the effects crew that made Starpocalypse possible.

'Probably the hardest part was getting other people to join me in this crazy plan and keeping them inspired.'

TT: What the production schedule was like?

JA: Physical production was about three months because it was done on weekends and around people's day jobs because we didn't have money to pay people and we couldn't ask them to be homeless. Then we started postproduction. We had thought we had a couple of people lined up for special effects who ended up not being able to help out, and then we didn't know anybody who could do this. I had to find a way to find people who could, and we got very very lucky. We posted a note on Zach's comic and on our Facebook page to say, "Hey, we're looking for effects people." One of our Kickstarter backers sent me a note through the Kickstarter system saying, if you're looking for people I'd be willing to potentially help out. He ended up putting in hundreds of hours.

TT: Do you know when the next two series are going to be out?

JA: When we started *SMBC Theater* in 2009, there was a real importance in updating every week. We were worried that if we disappeared for too long, people would forget us. But at this point, the cacophony online is just so overwhelming that it's more important to have something really good than to have something constant and okay because people learn not to listen to you.

There are a couple different possibilities for the third series, but for the second we're pondering a cartoon. Some time in the summer or fall we're going to start talking about what's coming next for *SMBC Theater*, and in the mean time, we'll be working very hard on it behind the scenes.

TT: Are you going to be doing any more *SMBC Theater* sketches in the meantime?

JA: We've wrapped them up. If you look at sketch shows, four years is about how long you've got before it starts to get a little bit redundant. We made 170 sketches about all kinds of crazy weird topics and loved every moment of it. I'm really proud of a good 75 percent of them, so that's not bad.

We're going to be giving away the old sketches once a week for the next year until they're all released into the Creative Commons, so that people are more than free to download them, remix them, chop them up, do whatever they want.

GAME REVIEW

A Tale of Two Betas

Hearthstone vs. *Scrolls*

By Keith Yost
STAFF WRITER

Given that *Magic: The Gathering* has been around for two decades, I have to imagine virtually everybody reading this paper has at least a passing familiarity with the popular trading card game. At a minimum, we've all seen one of its millions of players playing it, and those of us who actually got into the game could come up with a dozen ways to describe it. Maybe "complex," or "deep," or "competitive." Personally, I'd summarize it in three words: "Expensive as hell."

It ate my monthly allowance as a kid, and a decent chunk of my leisure money as an adult. Skill mattered, luck mattered, but owning the right cards mattered as well. And every dollar spent was just treading water — it wasn't long until a new set of cards was released and you had to lay down more cash just to keep up with the Joneses. The only sort of arms truce you could broker with friends was to play draft games, wherein you'd put everyone on more or less even footing by taking turns picking cards from randomized packs to form your decks. But that was hardly better — it's not like booster packs of MTG cards grew on trees.

I had hoped against hope that when an online version of the game was released (over a decade ago), that the cost of playing would go down. Surely the game's makers, freed from printing and distribution costs, would show mercy on us lowly addicts? But sadly, it was not to be: MTG Online was pricey in 2002 and it's still a pricey pastime today.

It's rather surprising therefore, that it has taken this long for serious competitors to arise and challenge MTG's high priced online trading card game monopoly. Sure, it's hard to think that an upstart rival will create a more balanced and intricate game in the face of MTG's 20-year head start … but delivering something almost as good? At a lower price point? It could only have been a matter of time before big game companies took a stab at such a market.

Thus, we have two online card games to review today: *Scrolls* by Mojang (makers of Minecraft), and *Hearthstone* by Blizzard (leveraging their World of Warcraft IP). Both games are currently in beta testing, though both are developed enough that it seems fair to judge them as if they were released games. Here is where they sort out in a head-to-head comparison.

Price

Both games are dirt cheap. *Scrolls* is $21, and it didn't take me more than a few days to obtain a full play set of cards. The rate at which the game gives you in-game currency is fairly generous, and most importantly, it is easy to trade cards with others.

Hearthstone is free to play, but it is much stingier with its in-game currency, and even after weeks of play, I am nowhere near having anything resembling a full play set. Furthermore, you cannot trade cards with other players — leading to a lot of mostly worthless duplicates. If I spent $21 on card packs through Blizzard's store, I still wouldn't obtain cards faster than I did in Scrolls.

Advantage: Scrolls

Game depth

Both games are much simpler than *Magic*, both preferring to make something faster and more accessible than MTG's rule-heavy system. But while *Hearthstone* seems like *Magic* stripped down to bare bones, *Scrolls* introduces clever new dynamics into the game that make it more understandable while retaining some degree of the strategic depth that MTG features. In some ways, *Scrolls* is even better than MTG — its mana system, for example, replaces the randomness of MTG's mana system with one that requires careful decision making by the player.

Hearthstone, by contrast, feels heavily pared down. The game still presents challenges, and as with any card game of this type, constructing the right deck is half the challenge, but the gameplay itself is nowhere close to *Magic*, while *Scrolls* feels like an actual competitor.

Advantage: Scrolls

BLIZZARD ENTERTAINMENT

Malfurion Stormrage from the game *Hearthstone*.

Player interaction

As already stated, *Scrolls* has something of an advantage when it comes to player interaction, since *Scrolls* allows for card trading while *Hearthstone* does not. But in some ways, I've found that less is more. In *Scrolls*, players can chat with each other during the game. At first glance, a chat system is a pleasant feature, but in practice, what is there really to chat about? In roughly two-thirds of the games I played, my opponents found it necessary to inform me that my card-draw/control deck was, quote, "the gayest shiit ive evr seen" and, that because I had the audacity to play such an elegant and unusual deck, I should "go eat a dick and die of cancer." In *Hearthstone*, friends can chat with one another, but randomly matched strangers are limited to a set of six "emotes" like, "Hello!" or "Well Played!" and while I'm sure many *Hearthstone* players would tell me to go stand in a fire if they could, it makes for a better experience that they can't.

Advantage: Hearthstone

Constructed play

Building your own deck is a core component of strategy card games. Knowing what cards to include and exclude is sometimes a bigger part of the game than actually playing a match itself. And generally speaking, the larger the pool of cards to choose from in a card game, the more challenging and satisfying it is to build a well-tuned deck.

In the case of *Scrolls* vs. *Hearthstone*, it seems to me that despite having a larger set of cards, Hearthstone offers less challenge in the way of deck construction. It's not just that the deck size in Hearthstone is smaller than Scrolls — some *Hearthstone* cards (usually rarer cards) are very clearly better than others, and a very large fraction of them serve more or less the same role in a deck. In *Scrolls*, while there are generally fewer cards to choose from in any given deck, the choices feel more meaningful and the variety of decks much greater. In my little control deck, I went through at least 20 different iterations as I played, and even just swapping in or out a couple cards could completely change how the deck felt. In *Hearthstone*, every one of my decks feels like a collection of more or less the same cards. There are a couple exceptions, but for the most part they all play the same way: put out creatures, kill the opponent.

Moreover, *Scrolls* has the right take on a matchmaking system. No hidden matchmaking rating — they give you the exact estimate that the system uses for how well you play, and at any time you can compare your number against everyone else's. Being an 1800 rated player meant something, it told you what your expected odds were against players and gave you a real idea of where you were at. Hearthstone hides your rating, replacing it instead with a series of tiers — it's not until you reach the final tier that you get some semblance how well you're really doing, and even then, it's just a ranking of you versus everyone else in the final tier. I made it to 6th best in North America briefly, but still had no idea how high or low I was relative to 1st place or 100th place. Plus, the spot was worthless — Blizzard's seeming plan is to reset the system every month or two and knock you back down to square one.

Advantage: Scrolls

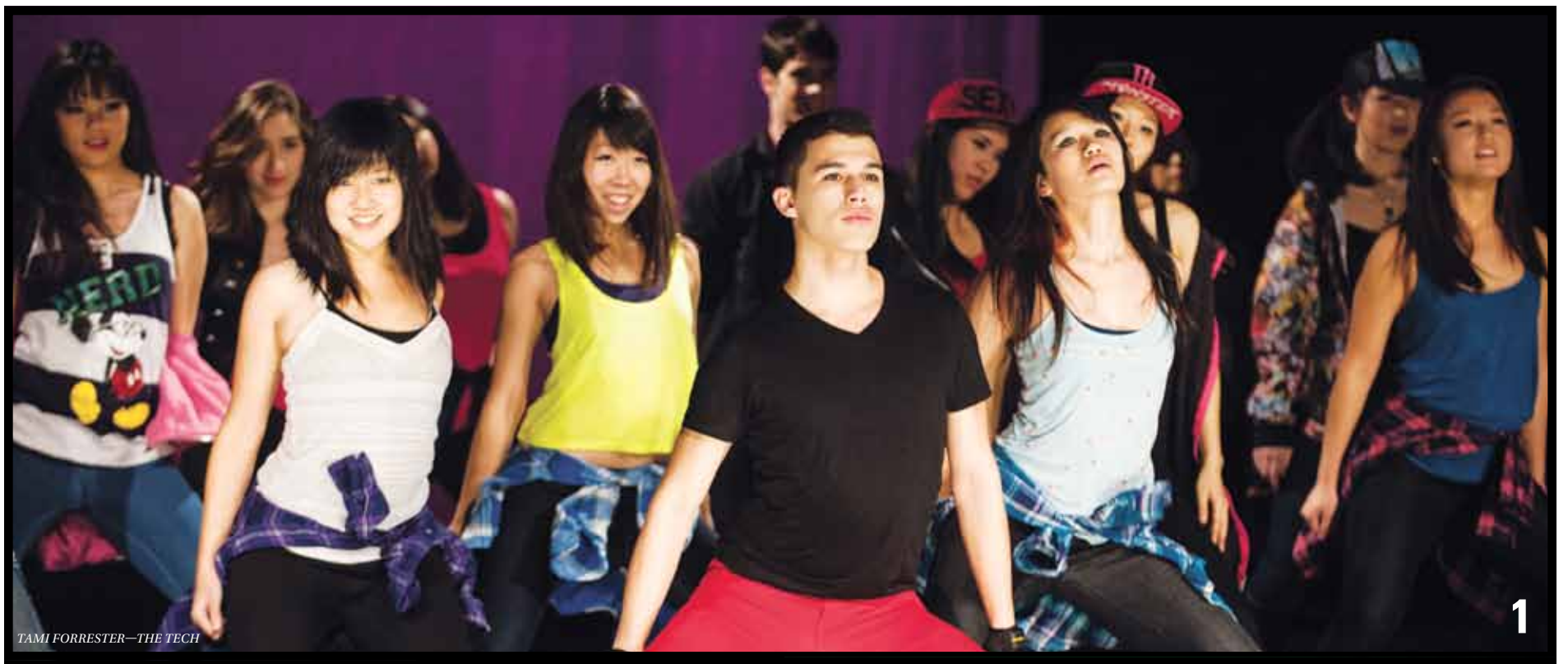
Draft play

Of course, Constructed Play is only half the story with a proper trading card game. Many players prefer a draft format, which truncates the deck construction process by having players choose cards one at a time from a randomly generated, limited set of options. Drafting a deck is as challenging as constructing a deck, but with the added bonus that you never end up playing the same deck twice, keeping the game fresh and exciting. *Scrolls* has richer overall gameplay and is more satisfying to play in a constructed format, but where *Hearthstone* takes the edge is in draft. The mana system of *Scrolls* is heavily biased toward single-resource decks, limiting the potential of a draft format. In *Hearthstone*, you choose between one of nine small card sets, but can also add cards from one large neutral set. The consequence of this is that the draft format feels natural in Hearthstone — some of the game's problems (like some cards being simply better versions of other cards) disappear when neither you nor your opponent can pick from every single card in the game. In *Scrolls*, draft feels forced, as if it were an afterthought, shoehorned in only after seeing the success of draft games in *Hearthstone*. In time, Mojang can balance their card set for draft play, but without a major overhaul, it seems unlikely that they'll get far in draft with the game mechanics they've created.

Advantage: Hearthstone

Final verdict

For long-time fans of trading card games, *Scrolls* seems like the superior option. Compared to *Hearthstone*, it's a deeper game with more variety that, even in its beta form, captures much of the fun of playing *Magic*. For casual trading card game players, or *Magic* fans who prefer draft, *Hearthstone*, despite its flaws, seems the better choice. It won't serve up the same complexity that *Magic* has, but it's quick and fresh and free to boot.



Asian Dance Team

1. **Members of MIT's Asian Dance Team** perform to two EvoL Kpop songs.
2. **Performers in "Girl By the Water"** present a Dai ethnicity piece from the Yunnan Province of China.
3. **MIT Asian Dance Team performed a classic-modern fusion piece with swords** to portray the contrast between a delicate lily and a deadly weapon.
4. **Performers from the MIT Lion Dance group entertain the audience with a stylized routine, most of which comes from the Southern tradition.** The routine also incorporates elements from modern choreography.
5. **Ladies of MIT Asian Dance Team perform** the classical piece "The Moonlit Lotus."

MIT Asian Dance Team presented "Illusions," their Fall 2013 Showcase, in Kresge's Little Theatre, on Thursday, Dec. 12, and Friday, Dec. 13. The event featured performances from numerous groups including Syncopasian, Lion Dance and the Ohms, and the Cambridge Center for Chinese Culture, and contained a wide variety of Asian performing arts.

CAMPUS LIFE

EVENTS JAN. 15 – JAN. 21

WEDNESDAY

(1:00 p.m. – 2:00 p.m.) Pleasures of Poetry — 14E-304

(3:30 p.m.) Chemistry and Biology of Antibiotics class — 68-180

THURSDAY

(8:00 a.m. – 1:00 p.m.) Choose to Reuse — 32

(2:00 p.m. – 2:30 p.m.) It's Always Darkest Before the Cosmic Dawn lecture — 37-252

FRIDAY

(11:30 p.m. – 1:30 p.m.) TIM, MIT's Mascot's 100th Birthday Party — W20-lobby

(3:00 p.m. – 4:00 p.m.) Director Gavin Hood & MIT alum Matt Butler present "The Making of Ender's Game," attendance gains free admission to movie

(4:00 p.m. – 6:00 p.m.) LSC shows *Ender's Game* — 26-100

SATURDAY

(9:30 a.m. – 10:45 a.m.) Free Figure Skating and Ice Dance classes — Johnson Ice Rink

(3:00 p.m. – 6:00 p.m.) Boston Chamber Music Society Winter Concert — Kresge Auditorium

MONDAY

(7:00 p.m. – 9:00 p.m.) Advancing Toward the Equality of Women and Men, dinner provided — W11-155

TUESDAY

(12:00 p.m. – 1:30 p.m.) Feyman Lectures: *The Great Conservation Principles* — 6-120

(2:00 p.m. – 3:00 p.m.) Having more Time per Minute - An Introduction to Time Management, sign-up by 1/20 — E51-145

Send your campus events to *events@tech.mit.edu*.

DIGITAL CHESS REVIEW

One chess champion per laptop

New chess engines bring ancient game to unprecedented heights

By Roberto Perez-Franco
STAFF WRITER

Search in YouTube for "too weak, too slow" and you will find a video of two young men sitting across from each other at a small table, frantically moving carved tokens on a wooden grid and slapping a clock mercilessly. They are fighting each other to the death, with bravado and gusto, in one of the oldest battlefields known to the human mind: the chessboard. The cocky guy in the green shirt, with the looks of a Viking and the nose of a boxer, is a 22-year-old chap named Magnus Carlsen, who happens to be the strongest chess player to ever walk the earth. The other guy, at the receiving end of Magnus' Muhammad Ali-esque taunts ("Too weak, too slow! C'mon! What, you wanna play?") is his close friend and sparring partner, Grandmaster Laurent Fressinet.

The three-way rumble between Houdini, Komodo, and Stockfish revived enthusiasm in computer chess and spurred a sort of arms race.

Mean as he may sound, the awful truth is that Carlsen is right: Fressinet, and almost everyone else on the planet, is indeed too weak and too slow for him. None of us mere humans stand a chance against him: he is too fast, too strong and too accurate. Less than two months ago, he beat World Champion Vishy Anand in a match without losing a single game. Yet even Magnus, at the peak of his powers, refuses to meet one opponent in a match, notwithstanding the incessant pleadings from chess fans. That opponent is here in front of me as I type, quietly waiting for the champ to accept the challenge. Carlsen won't budge, and is wise in doing so, because — as he and all other Grandmasters know — even he himself is too weak and too slow to stand a chance against this opponent. In case you haven't figured it out yet, the opponent I'm talking about is my laptop… and yours!

Back in 1996, when most of the current MIT undergrads were still in the process of being potty trained, Gary Kasparov — the Carlsen of the previous generation — lost his first game ever against Deep Blue, a top-secret, multi-million dollar supercomputer that IBM built using thousands of chess-specific processors with the sole purpose of defeating this one individual. Today, thanks to the increase in computing power of the average computer and to the appearance of a new generation of chess software, there is no longer need of specialized hardware to beat the best human: any decent laptop would maul World Champion Magnus Carlsen in a match.

At the core of this new software are algorithms that evaluate chess positions and calculate variations in order to decide on the best move. These algorithms are called chess engines, and — among the myriad currently available — at least two dozen have an estimated playing strength (or ELO) higher than the best human ever. Seldom have humans reached the rarefied stratosphere of speed and precision where these chess engines fight. Arguably the strongest chess engine of all is Houdini, developed by Robert Houdart. Since its appearance in the chess world back in 2010, Houdini has been widely regarded as the best chess player ever in the long and rich history of the game. A new version is released every year, and each one exceeds the previous one. The current release, Houdini 4, is the de facto gold standard against which all other chess engines are measured.

Humans are not real competitors against Houdini, and for a long time, neither were other engines. But now, for the first time in four years, something else has reached Houdini's level of play. Not one, but two engines have risen with a legitimate challenge to the alpha dog: Komodo and Stockfish. Together, they made headlines in chess circles when they obtained the two highest scores in the most recent Thoresen Chess Engines Competition (TCEC), above Houdini and many other engines. TCEC is regarded, against the wishes of its organizer Martin Thoresen, as an unofficial world championship for chess engines. The TCEC final between Komodo and Stockfish was a very dramatic event, for many reasons. Not only was it the first time such a final did not feature Houdini, but also it was being played at the same time as the human World Chess Championship was being decided in Chennai, India.

At least for this author, the TCEC final was more exciting than the human championship. Stockfish qualified first for the final without losing a single game, while Komodo qualified second with no loses to Houdini. After a long and hard-fought series of 48 games, Komodo won the final by a narrow margin over Stockfish. In a dramatic twist, Komodo's main programmer, Don Dailey (who once worked at MIT) didn't get to see the triumph; he died of acute leukemia on the same day the final started. His partner in the development of Komodo, Grandmaster Larry Kaufman, an MIT alum himself, dedicated the victory to Don. Together with Komodo's new programmer, Mark Lefler, Larry released the victorious version of Komodo under the name Komodo TCEC, to a fan base that was clamoring for it like teenagers in line for a Justin Bieber concert. In a touching gesture of gallantry and admiration, Stockfish's team, led by developers Tord Romstad, Marco Costalba, and Joona Kiiski, also released the runner-up version of Stockfish under the moniker "DD," an open homage to Don Dailey.

The three-way rumble between Houdini, Komodo and Stockfish in the latest TCEC season revived enthusiasm in computer chess and spurred a sort of arms race, as the teams behind each engine prepare stronger versions for the next TCEC, due to start in late January. Larry Kaufman, regarded as an expert on how to evaluate positions in chess, has thoroughly "taught" Komodo the ropes. As a result, Komodo's play in long games is rock solid, earning praise from world-class experts such as Boris Avrukh and Roman Dzindzichashvili. Not to be outdone, team Stockfish is leveraging the power of open-source to summon the creative power of a dozen developers spread around the world, and is constantly testing new ideas using a cloud-based network of computers volunteered by Stockfish fans, who like the fact that Stockfish is offered free of cost and its code is available online.

There are a lot of expectations from thousands of fans around the world: Will Komodo retain the crown? Will Stockfish prove the superiority of the open-source model? Will Houdini regain and retain the top spot it enjoyed for so long? The answers to these questions remain to be seen. But, regardless of the next TCEC's result, the clear winner in this new rivalry is the world of chess, which has now access — even for free — to top-class chess analysis tools that were thought impossible just a generation ago.

ILLUSTRATION BY DEENA WANG—THE TECH

THE SECRET LIVES OF RESEARCHERS

Late thoughts on being a research scientist

Persevering through doubts about your career path

By Tyler Rohr

I have one of those roommates who is constantly curious, and often tactless, but usually insightful. She waits all of five minutes after I roll out of bed before insisting I explain to her how I perceive my relationship with my mother. Or, she wants to know if I think the app Tinder is morally okay. Most of the time, these questions fall by the wayside while the tea I'm brewing receives my full and undivided attention. However, the other day breakfast was served with a comment that caught my attention.

"Do you think — as a graduate student, as a future research scientist — you are as creative as you could otherwise be? Do you feel it allows you to be your best self?"

I wasn't immediately sure why, but I thought of something Bob Dylan had said in his elegy to the late, great Woody Guthrie.

"And there's something on yer mind you wanna be saying/That somebody someplace oughta be hearin'/But it's trapped on yer tongue and sealed in yer head/And it bothers you badly when your layin' in bed/And no matter how you try you just can't say it/And yer scared to yer soul you just might forget it."

That's pretty much the answer though, right? Being human is pain, glory, triumph, and tragedy. Whether we say, or do, or create, or discover, it's that "something." And maybe you don't have the something yet, or maybe you don't even feel it yet, but it's there, welling up inside of you and all that could possibly matter is that you can share it, and hopefully make some thing better for someone because of it. Until you find it, until you say it, until you do it, there will always be that haunting fear that you might lose it before anyone else has a chance to hear it.

> **I am learning how to be my best self, my most creative self, through science and through research.**

But that's the journey. Whatever it is you have to contribute, you're always searching for the best possible way to channel it. You have to keep searching, keep asking, through which avenue can you be your best self? Through Art? Through Policy? Through Love? Through Science? That's my path of late; I chose Science. But, no matter what channel, what path, you'll always wonder. Does this allow me to be creative in a way that can truly affect someone? Will someone ever look at my work and say, "This is Bob Dylan to me, this is the poetry of everything?" Will people feel what I have done, really feel it?

In the day-to-day trenches of research, through the endless paper revisions and through the results that might seem whole galaxies removed from anything practical, I have doubt. Doubt that the coupled solution to another system of PDEs couldn't possibly be creative. Doubt that quantifying the phenology of sea ice couldn't possibly improve anybody's life. But if you persevere long enough to look behind that doubt, there is a rich beauty in research that is so hard to see until you're actually there.

That's what I am learning. I am learning how to be my best self, my most creative self, through science and through research. Research is not as obviously creative as other avenues. The tools (the knowledge of continuum mechanics, of carbonate speciation, of whatever it is you might need to know) are not immediately accessible; there is no obvious brush or typewriter. But once you devote the tedious time to develop your skills, the pallet is infinite. Learning all of these tools just provides the pieces needed to even see the puzzle. From there, your entire job is to think of things in ways that no one has ever thought of before, to figure things out that no one has ever understood before. That sounds pretty creative to me.

Though, even at your most creative, it is not trivial to resolve how a young scientist can really affect something. Viewed as a whole, it is easy to see how science is capital "G" Good, in a moral sense of the word, in a way truly Good people would be proud of. Science is the backbone of civil society. But in the deep recesses of your hyper-defined specialization, that can be hard to imagine. At times I struggle to believe my analysis of biogeochemical models of the Southern Ocean is in fact critical to fighting and understanding climate change, as I so boldly implore to NSF. But there are motivations to work past that. Perhaps it's the sacrifice to something bigger than you, the idea that your small contribution might be a critical, even if unromantic, link in a chain that is part of something monumental. Or perhaps it's the drive and earnest belief that one day your young and reckless mind will make a paradigm shattering revelation. Whatever it is, believe that what we do is Good, capital "G" Good.

So, yeah, I feel alright about this avenue for me, but that doesn't mean I shouldn't constantly question it. That's the whole foundation of good science anyway, right? So during the day I'll try to search for the secrets of the natural world, and at night, I'll ponder thoughtfully with my roommate, listening to OK Computer on vinyl and trying to reconcile who I am as a person and who I am as a scientist.

THE NATURALIST'S NOTEBOOK

Cold fish and icy insects

How does a change in temperature impact nature?

By Davie Rolnick
STAFF COLUMNIST

Poor naked wretches, whereso'er you are,
That bide the pelting of this pitiless storm,
How shall your houseless heads and unfed sides,
Your loop'd and window'd raggedness, defend you
From seasons such as these?
—King Lear, Act 3, Scene 4

For the past two weeks, Americans have shivered and commiserated with each other as ludicrously cold temperatures descended upon most of the country. Four degrees in New York City. Negative forty in Minnesota. Skating in South Carolina. Did all the animals in the country just die of cold?

Nope. Wild animals are used to surviving a brief cold spell, even if we humans aren't. Mammals find shelter, or burrow into the snow and stay warm that way. Birds fluff up their feathers for more insulation. Many insects, as well as the wood frog, have the ability to freeze solid with no ill effects. (You can do this at home by pumping most of the water out of your cells and replacing it with glycerin.)

Forestry experts are hopeful, however, that the polar vortex has slowed the spread of exotic pests. The emerald ash borer is an iridescent green beetle with cute, goggle eyes that has decimated the population of ash trees in Massachusetts. The woolly adelgid, resembling a tiny piece of white fluff, sucks the juices out of hemlocks. Both the borer and the adelgid are from Asia, and are susceptible to extreme cold in ways that native species are not. Recent winters haven't been cold enough to kill them off, but this year there is a chance that their populations will go down. In addition, there will probably also be a decline in those nasty deer ticks that carry Lyme disease. Though ticks are native to New England, they do die if you deep-freeze them.

> **Forestry experts are hopeful, however, that the polar vortex has slowed the spread of exotic pests.**

Our recent cold spell was relatively brief. What happens if the entire winter is cold? In that case, some small ponds remain frozen for so long that fish die for lack of oxygen. This is bad for fish, but can be great for frogs and dragonflies, which are eaten by fish. A colder winter can also mean more snow on the ground. This favors animals such as mice, which make tunnels in the snow to hide from predators. Deer, however, have a harder time finding food, and their long legs make it difficult to wade through deep snowdrifts. Once spring arrives, more snow means more meltwater, and so a cold winter leads to an abundance of spring flowers and foliage. The moral of the story: weather is complicated and has far-reaching effects.

Animals have thermal limits, and if these limits are pushed too far, species are forced to relocate or go extinct. The fauna of New England has already changed significantly because of climate change. Chirpy gray birds called tufted titmice have appeared at birdfeeders and are chasing away other birds. A few years ago, the northern winters were too cold for them, but now they are making inroads into Canada. Southern butterflies like the giant swallowtail and zabulon skipper have become common here in the past few years, and once-common butterflies like the atlantis fritillary have grown rare. Plant species are moving too, but for lack of legs, they often cannot shift their ranges as fast as animals. And organisms that live on mountaintops are in big trouble, since they have nowhere colder to go.

In the ocean, herring and other fish are also moving north to follow the colder waters and the retreating arctic phytoplankton. As a consequence, countries such as Iceland are discovering that their waters are suddenly teeming with fish. On the other hand, herring have diminished in the waters around Alaska. Steller sea lions (which look like seals with ears) live in Alaska and used to eat herring. Now they have to eat pollock, which doesn't seem like a problem, since there is a lot of pollock. But pollock doesn't have as much oil as herring, so the sea lions can fill their stomachs and still not get enough calories. Recently, the population of sea lions has plummeted, and many scientists blame the "junk food" fish that replaced the nutritious herring.

It can be hard to understand the significance of small changes in temperature. When I read that temperatures have risen by 1.4 degrees since 1850, my first reaction is "That's all? Why can't the fish cope with being a bit warmer?" But then I remember that I rarely have to cope with the real temperature. Most of us humans live inside, and we have nice things like sweaters and air conditioners to keep our bodies at just the temperature we want. Fish don't have sweaters.

Imagine what happens when you get into the shower and the water is a bit too hot or cold. If you're like me, you dive for the knob or jump out of the shower. It seems like an eternity before the water is the right temperature, and then it is the most exquisite bliss. That's because when you're in the shower, you don't have a sweater on and you can't feel the AC. In short, you are dealing with the temperature of your surroundings. This is what fish have to do all the time! In fact, it's even more extreme for them, because the water is inside them, as well as outside. It's no wonder that the herring are moving north.

> **Animals have thermal limits, and if these limits are pushed too far, species are forced to relocate or go extinct.**

There are really two kinds of extreme weather: short-term and long-term. Some weather incidents are brief and spectacular, like a polar vortex where bad stuff happens very quickly and is also finished very quickly. You may have to rebuild your house after the tornado, but at least it will be sunny while you do it. Long-term weather patterns are less dramatic, but nonetheless powerful. People tend to focus on the day-to-day extremes, because that's what we see most easily, and it makes for good news stories. From an ecological standpoint, however, there is significance both in the polar vortex and in the warming winter.

MIT Medical on Follow My Health

Using new healthcare portal

Medical, from Page 1

ners at MIT Medical, such as vital signs. Tytell continued by saying the portal will also make prescription and vaccination records available to patients and provide a secure channel for patients to communicate with their doctor.

Joyce states another reason Medical decided to switch portal providers was that Patient Online decided they weren't going to embellish their product further, and their product might not meet future federal regulations, as well as the new portal provides more flexibility for patients.

Under their terms of service, Follow My Health is permitted to sell both "aggregate" and "blinded" patient data, but Joyce claimed "they're not [doing so] because we've talked to them about that." She added that "any company can sell any blind data to anybody... that meets HIPAA regulations." Blinded data, Joyce explained, is de-identified. "It's not going to give them my name, [for example]. It's going to tell them [my age], but it's not going to give them my name. It's not going to give them any information that could potentially trace back to me." Joyce also said that blinded data is not going to put patients with rare diseases at risk.

Follow My Health does not replace traditional paper records, as MIT hasn't used paper records for several years, according to Joyce. Instead, Follow My Health intends to mirror some of the information stored in MIT Medical's internal patient database.

Neither Follow My Health nor Patient Online charge a fee to hospitals or patients to use their service, according to their respective websites.

News Briefs, from Page 1

Rafael Reif warned about a potential innovation deficit due to decreased federal funding towards research in the coming years.

Reif argues that federal funding has been responsible for many modern breakthroughs in technology since World War II that have improved human life and contributed to economic growth.

He highlights three MIT projects that would not have been possible without basic research funded by the government: edX, healthcare research, and 3-D printing. The initial support from the Department of Defense, National Institutes of Health, and National Science Foundation helped develop many necessary of the inputs for these projects, such as the Internet for edX.

Without continuing strong federal support of research, Reif believes, the "public-private partnership that has made the U.S. research enterprise the envy of the world" could be in jeopardy.

MIT website hacked on Swartz's death anniversary

An MIT website, *cogen.mit.edu*, was hacked this past Saturday by the hacktivist group, Anonymous, on the anniversary of Aaron Swartz's suicide. The website displayed a message titled "the day we fight back" and now is unavailable. According to *U.S. News and World Report*, the hack called for a mass Internet protest scheduled for Feb. 11, sponsored by Demand Progress, Electronic Frontier, Mozilla, and Reddit, among other organizations. Soon after Swartz's death last year, Anonymous also claimed responsibility of hacking a number of MIT websites calling the case a "grotesque miscarriage of justice." In response to the tragedy and associated questions last year, President L. Rafael Reif commissioned Professor Hal Abelson PhD '73 to investigate the incident which later found that MIT maintained neutrality throughout the trial.

—Anthony Yu and Tushar Kamath

BOSTON FIRE TWITTER PHOTO

A frozen pipe on the night of Saturday, Jan. 4 forced several students out of MIT fraternity Lambda Chi Alpha. According to firefighters, the basement was flooded with almost ten feet of water.

Solution to Easy Sodoku

from page 6

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

Solution to Sodoku

from page 6

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

Solution to Easy Techdoku

from page 6

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

Solution to Techdoku

from page 6

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

Solution to Crossword

from page 5

C	H	A	S	M	■	B	A	T	■	U	L	T	R	A
V	O	D	K	A	■	E	T	A	■	P	O	R	E	S
S	P	E	A	K	■	T	R	U	■	R	A	I	D	S
■	I	N	T	E	G	R	A	T	I	O	N	B	E	E
■	■	■	■	M	I	A	■	O	N	O	■	A	Y	N
M	Y	S	T	E	R	Y	H	U	N	T	■	L	E	T
R	E	A	R	■	L	A	H	■	S	E	Z	■	■	■
T	A	X	E	D	■	L	O	U	■	D	A	T	U	M
■	■	■	Y	E	P	■	U	N	I	■	C	A	F	E
O	L	D	■	C	H	A	R	M	S	C	H	O	O	L
B	I	O	■	L	I	V	■	A	L	A	■	■	■	■
A	N	N	U	A	L	I	A	P	E	V	E	N	T	■
M	E	A	D	S	■	A	M	P	■	I	D	E	A	L
A	U	T	O	S	■	T	E	E	■	A	G	O	R	A
S	P	I	N	E	■	E	N	D	■	R	E	N	E	W

OBITUARY

James Roberge, MIT faculty since 1967, dies at 75

Electrical engineering prof. revered for teaching, mentoring students and newer faculty

By Patsy Sampson

James K. Roberge, a professor of electrical engineering and a member of the MIT faculty since 1967, died Friday, Jan. 10, at age 75. Roberge continued teaching in the Department of Electrical Engineering and Computer Science (EECS) through last semester.

Roberge was cited by colleagues for his mentorship of students and of newer faculty.

Born in Jersey City, N.J., in 1938, Roberge came to MIT in 1956, earning his SB, SM, and ScD degrees, all in electrical engineering. For nearly all of his professional career, Roberge worked for MIT — from postdoc to full professor, a position he attained in 1976. Starting in 1969, Roberge also performed research as a visiting scientist at MIT's Lincoln Laboratory.

At Lincoln Lab, Roberge's research interests in the areas of electronic circuits and systems design led him to work in a division involved in space communications, instrumentation, and optical communications. His designs have flown on nine satellites.

Vincent W.S. Chan, the Joan and Irwin Jacobs Professor of Electrical Engineering and Computer Science, headed the division at Lincoln Lab in which Roberge worked. Chan says that Roberge's most important contributions were in ultrahigh-efficiency power converters for spacecraft and high-precision optical tracking electronics for space-laser communications.

"[Roberge] brought together his knowledge of circuit designs, control system theory, and a large dose of ingenuity to design these systems," Chan notes. Despite the fact that some of Roberge's work was done in the 1980s and 1990s, Chan says, "it still represents the state of the art."

Roberge was also cited by colleagues for his mentorship of students and of newer faculty. Charles G. Sodini, the Clarence J. LeBel Professor of Electrical Engineering, notes: "I taught 6.301, Solid-State Circuits, and 6.302, Feedback Systems, as a recitation instructor for Jim. It was a pleasure to learn the material from someone who had it in his DNA."

He encouraged a number of students who are now following in his footsteps.

Roberge was also revered for his teaching and mentoring — encouraging a number of students who are now following in his academic and research footsteps. David L. Trumper '80, a professor of mechanical engineering, began his association with Roberge as an undergraduate in 6.301 and 6.302 — classes that he says "opened up analog circuits as a design discipline."

Through his research and eye for practical application, he received 12 patents and worked with more than 160 consulting clients.

Roberge served as Trumper's undergraduate thesis advisor, and later as his PhD advisor. Trumper recalls Roberge's "keen insights and easy confidence that pretty much any problem could be solved if you looked at it from the right perspective."

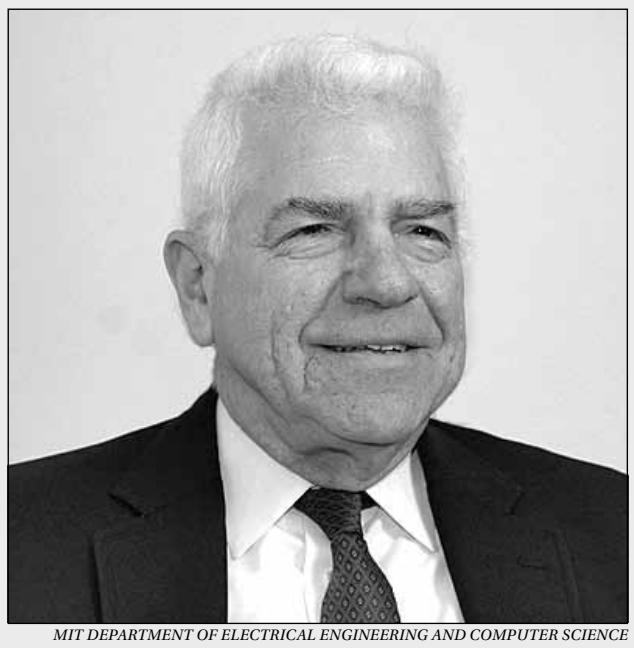
Kent H. Lundberg, currently a visiting senior lecturer in EECS, was Roberge's student while earning his SM and PhD in electrical engineering at MIT. Lundberg — who had taught 6.331 with Roberge since 1994 and co-taught 6.331 with him last semester — says that "knowing Professor Roberge was the best part of my education at MIT."

Through his research and eye for practical application, Roberge received 12 patents and worked with more than 160 consulting clients. He was co-founder of the Hybrid Systems Corporation, later acquired by Sprague, and of the Aerogage Corporation. Roberge also authored several books, including "Operational Amplifiers: Theory and Practice" — a text widely recognized as authoritative.

EECS department head Anantha P. Chandrakasan, the Joseph F. and Nancy P. Keithley Professor of Electrical Engineering, summarized Roberge's impact in an announcement to colleagues, saying: "Jim was a wonderful colleague, teacher, researcher and mentor. He was legendary for his teaching of analog circuits (6.002, 6.301, 6.302, 6.331) and his approach to these subjects had a profound influence on generations of students."

Roberge is survived by his wife, Nancy J. Roberge; his son, James D. Roberge; and his daughter, Anne E. Roberge. A funeral service will be held at 10 a.m. Tuesday, Jan. 14, at the Douglass Funeral Home, 51 Worthen Rd., Lexington, Mass. Donations in Roberge's memory may be made to the MIT Scholarship Fund.

Reprinted with permission of the MIT News Office: https://web.mit.edu/newsoffice/.



MIT DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

MIT funding will increase from bill

Compromise on budget benefits basic research at US universities

Budget, from Page 1

In fiscal year 2013, the program's funding was first reduced from $25 million to $14 million. MIT stopped accepting graduate students into the program in March 2012.

The bill also will help MIT, Harvard, and other research universities with its inclusion of $7.1 billion for National Science Foundation funding. NSF is an independent federal agency that funds about 20 percent of all federally supported basic research in American colleges.

The National Institutes of Health, the world's largest funder of medical research, would receive $29.9 billion. In 2012, Boston drew the highest National Institutes of Health funding out of any city in the nation, securing total grants of $1.78 billion.

Head Start will also receive a $1 billion funding boost nationwide, a program whose forced cuts announced in March hurt low-income families in Massachusetts and other states. The early childhood development program served 13,295 Massachusetts children in 2012.

As the 2013 school year began, 2,015 children in the state were projected to no longer qualify for services due to funding cuts, the *Globe* reported in September.

The measure, unveiled two days before funding for federal agencies is set to lapse, was released by House Appropriations Committee Chairman Harold Rogers, the Kentucky Republican, and his Senate counterpart Barbara Mikulski, the Maryland Democrat. The bill is scheduled for a vote before the GOP-led House Wednesday.

OBITUARY

Boris Magasanik, professor emeritus, dies at 94

Genetics pioneer transformed Department of Biology as head from 1967 to 1977

By Andrew Clark
MIT NEWS OFFICE

Boris Magasanik, the Jacques Monod Professor Emeritus of Microbiology, passed away on Dec. 25 at his home in Cambridge. He was 94.

Magasanik was recruited by Salvador Luria to join MIT's Department of Biology in 1960, leaving his post as a professor of bacteriology at Harvard Medical School to help the Institute establish a presence in the then-new field of molecular biology. In the succeeding years, Magasanik crossed disciplinary boundaries between metabolic biochemistry, enzyme regulation, microbial genetics and physiology, and molecular biology, becoming a pioneer in the study of gene regulation.

From 1967 to 1977, Magasanik was head of the Department of Biology, leading a period of growth marked by outstanding and imaginative faculty hiring, says Chris A. Kaiser PhD '87, who is a MacVicar Professor of Biology at MIT. Throughout his long career, Magasanik was an accomplished and inspiring teacher of both undergraduates and graduate students. His devotion to teaching, Kaiser said, helped establish the biology department as a center of excellence not only for research, but also for education.

Magasanik taught several different courses at MIT. Graham C. Walker, who is an American Cancer Society Research Professor of Biology at MIT, who co-taught a course on microbial physiology with Magasanik for more than three decades, remembers his remarkable ability to weave together various perspectives as he brought the scientific material to life. In 1998, Magasanik helped establish a "lecture/discussion" course, called "Biological Regulatory Mechanisms," that required undergraduates to read and write about primary research literature, says Alan D. Grossman, the Praecis Professor of Biology, who started the course with Magasanik. Magasanik continued to teach in both courses until 2010.

Born in Kharkov, Ukraine, on Dec. 19, 1919, Magasanik spent his formative years in Vienna, pursuing his university degree until the Nazis expelled all Jews from university studies. He then moved to New York, in 1938, where he completed his bachelor's degree at City College of New York. During World War II, Magasanik served in the U.S. Army as a medical technician, spending more than three years in Europe.

After the war, Magasanik returned to New York to pursue his PhD at Columbia University, receiving his degree in 1948. He spent more than a decade at Harvard Medical School, and then joined MIT in 1960 — in part, out of a desire to teach both undergraduate and graduate students.

A member of the National Academy of Sciences (NAS), the Institute of Medicine, and the American Academy of Arts and Sciences, Magasanik received many honors, including the NAS's Waksman Award in 1993 and the Abbott-ASM Lifetime Achievement Award in 2000. Over the course of his career, Magasanik published many influential papers, primarily on microbial physiology and the regulation of gene expression in yeast and bacteria.

For most of his career, Magasanik studied how microbial cells alter expression of metabolic enzymes in response to available nutrients. He was the first to demonstrate nitrogen regulation, which is the process by which bacterial genes required for the assimilation of nitrogen are regulated by the amount of nitrogen available in their environment. His studies of nitrogen regulation in bacteria led Magasanik to fundamental discoveries in bacterial gene regulation, including the identification of a special form of RNA polymerase needed for transcription of nitrogen-regulated genes, and the delineation of the mechanism of conserved intracellular signaling circuits in bacterial cells known as two-component systems.

Magasanik played a central role in shaping the trajectory of the Department of Biology at MIT, Kaiser says, steering it toward the burgeoning field of molecular biology. During his time as department head, the department nearly doubled in size and recruited world-class scientists to MIT. After his tenure, "the department was rated as one of the best, if not the best, biology department in the country," says professor emeritus of biochemistry Gene Brown, who succeeded Magasanik as department head and later served as dean of the School of Science.

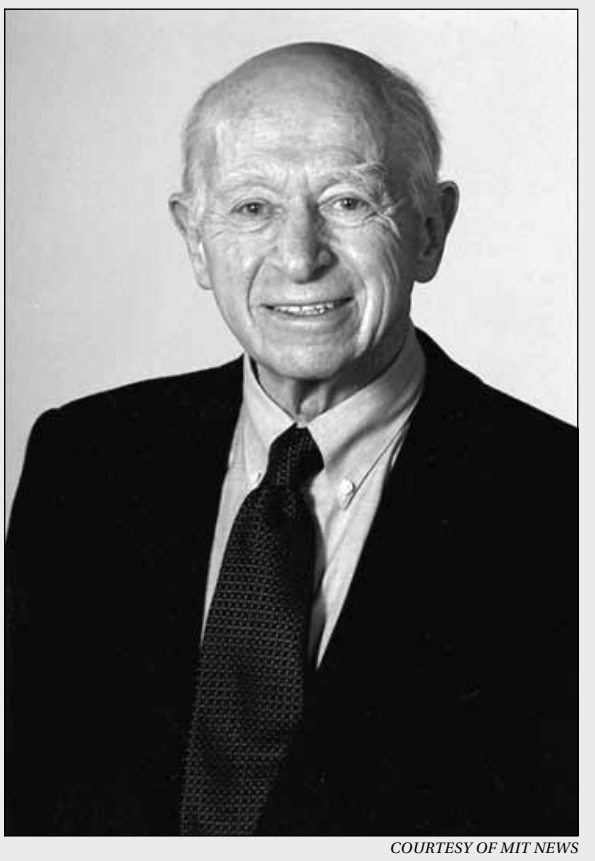
Highly regarded by his peers, Magasanik was known for the extraordinary breadth of his knowledge. "He was a brilliant polymath," recalls Kaiser, who met Magasanik as a graduate student in the 1980s. As knowledgeable as Magasanik was in the classroom, he showed unparalleled erudition outside it as well, Kaiser said: "He could speak intelligently about an enormous number of subjects, from history to arts of all different cultures. Boris was a true Renaissance man."

As a scientist, teacher, mentor, and friend, Magasanik had a profound effect on the lives of many. While on sabbatical in Jacques Monod's lab at the Pasteur Institute in Paris in 1959, he and his late wife, Adele, took it upon themselves to teach English to Agnes Ullmann, a microbiologist who is now retired from the Pasteur Institute."Boris had a phenomenal general culture; we went often to exhibitions and Boris was a perfect guide," Ullman says. "We will all miss Boris, because he was an exceptional human being and a great friend and scientist."

Magasanik was predeceased by Adele, his wife of many years, in 1991. He is survived by his second wife, Helen Donis-Keller; his stepdaughter, Christine Donis-Keller, and her husband, William Seeley; and by two grandchildren, Parker and Raines.

Plans are underway for a memorial service to be held at MIT. Gifts in Magasanik's memory can be sent to the Museum of Fine Arts in Boston or to Sancta Maria's Windsor House in Cambridge.

Reprinted with permission of MIT News Office: http://web.mit.edu/newsoffice.



COURTESY OF MIT NEWS

Track & field wins first

MIT finishes first at Bates Invitational

By Charlotte Brackett
DAPER STAFF

After having last raced over a month ago, the MIT men's indoor track and field team continued its 2013-14 at the Bates Invitational on Saturday afternoon, finishing first with 194 points. Host Bates College was second with 100 and Colby College came in third with 67 points.

After finishing in second place in the preliminaries of the 60 meter Hurdles with a time of 8.86, Michael S. Kaba '16 went on to take first in the finals with an 8.61. Tyler S. Singer-Clark '14 came in second in the event in 7.17 and Taylor Njaka was third with a 7.22. Later on in the afternoon, Singer-Clark won the 200 meter, leading two other Engineers that finished soon after him. Singer-Clark completed the event with a 22.83, Kaba was second in 23.12 and States Lee '16 was third with a 23.14.

MIT took first in both the 400 meter and 600 meter, with Lee winning the 400 in 50.68 and Chadd Kiggins crossing the line in the 600 in 1:23.20. Samuel G. Parker '15 and Justin L. Bullock '14 led the way in the 800 meter, coming in first and second place just a few tenths of a second apart with times of 1:59.28 and 1:59.86.

Tech raced very well in the 3,000 meter, claiming the top five spots. Roy A. Wedge '14 was first with a time of 8:52.37, Matthew G. Jordan '16 came in second in 8:54.26 and Matt McEachern was third with an 8:57.96. Allen Leung was fourth with a 9:00.26 and, rounding out the top five was Brian Gilligan with his time of 9:06.01.

Both the 4x400 meter relay and the Distance Medley Relay were won by MIT. The MIT 4x400 A relay finished over three and a half seconds ahead of Bates' A relay with its time of 3:28.04, and Tech's DMR A relay left a four second gap between it and Colby's A relay, crossing the line with a 10:46.47.

> **Both the 4x400 meter relay and the Distance Medley Relay were won by MIT.**

John Thomas won the High Jump with a 6-00.00 and Adrian C. Samsel '16 came in third with a 5-10.00. In the Triple Jump, Angel S. Echevarria '16 and Carrington Motley '16 were first and second with jumps of 44-06.75 and 43-11.75 respectively. Motley also came in second place in the Long Jump with a distance of 21-06.00, just narrowly behind the first place finisher from Colby with his 21-06.25. Kenneth B. Cooper '13 was second in both the Weight Throw, with a 59-07.00, and the Shot Put, with a throw of 52-07.50.

Next up for the Engineers is the Bowdoin Quad, which will take place at Bowdoin College on Saturday, Jan. 18, starting at 12:30 p.m.

UPCOMING HOME EVENTS

Wednesday, January 15

Men's basketball vs. U.S. Coast Guard Academy	6 p.m. Rockwell Cage
Women's basketball vs. Babson College	8 p.m. Rockwell Cage

Friday, January 17

Men's volleyball vs. Fanshawe College	7 p.m. Rockwell Cage

Saturday, January 18

Men's basketball vs. Springfield College	2 p.m. Rockwell Cage

Sunday, January 19

Women's basketball vs. Emerson College	2 p.m. Rockwell Cage

Tuesday, January 21

Squash vs. Boston College	7 p.m. Zesiger Center Squash Courts

Swimming and diving defeats the Coast Guard

The MIT women's swimming and diving team defeats NEWAC rival Coast Guard at a home meet on Saturday afternoon

By Charlotte Brackett
DAPER STAFF

Racing for the first time in over a month, the MIT women's swimming and diving team defeated New England Women's and Men's Athletic Conference (NEWMAC) rival U.S. Coast Guard Academy at home on Saturday afternoon by a score of 195-83. Throughout the day, the Engineers were able to swim events not normally raced at dual meets and claimed first place in 13 of the 16 events.

MIT started the day by taking first through third place in the 400-yard medley relay, with the A relay leading the way with a time of 4:03.74. The B relay followed soon after in second place with a 4:08.65 and the C relay touched in third in 4:13.16. In the first individual event, the 1,000-yard freestyle, Emmie Ryan '15 was victorious with her time of 10:56.91, while Sarah A. Weiss '14 was second in 11:26.00.

> **MIT claimed first, second, and third place in the 50-yard backstroke.**

MIT claimed first, second, and third place in the 50-yard backstroke, an event the Engineers rarely get to swim in dual meets. Veronika Jedryka '17 touched first in 28.47, Katherine X. Yu '16 came in second with a 29.13 and Isabella M. Voelkl '17 was third with a time of 29.45. Jedryka would later go on to win the 500-yard freestyle as well, touching 16 seconds ahead of the competition with her time of 5:15.05. The 50-yard breaststroke was a strong event for the Engineers, who took first through fourth. Kristen N. Finney '16 led the charge with a 31.05, Christy K. Rogers '14 touched directly after in 31.15, Emily L. Tsang '17 was third with a 32.21 and Michelle M. Cunningham '15 came in fourth with a time of 32.76.

Teresa de Figueiredo won the 200-yard butterfly with her time of 2:13.47, while Lena Yang '16 took first in the 50-yard freestyle in 24.88. Joanna R. Yeh '14 and Cunningham were second and third with times of 25.40 and 25.43 respectively. Before taking a 15 minute break, Grace B. Connors '16 came in first place on the 1-meter diving board with a score 239.76. Jessica L. Wass '14 placed third with her score of 199.27. Connors came in second place on the 3-meter board with a score of 218.25 and Wass was third with 182.55.

> **Rogers won her first individual event of the day, the 200-yard backstroke, with a time of 2:10.13, leading a group of three other Engineers.**

Rogers won her first individual event of the day, the 200-yard backstroke, with a time 2:10.13, leading a group of three other Engineers. Yu came in second place in 2:12.14, Jane W. He '15 touched in third with a 2:12.49 and classmate Taylor M. Pearl '15 was fourth in 2:16.53. Finney claimed first in her second event of the day, swimming a time of 2:30.49 in the 200-yard breaststroke, and Tammy Tai '17 touched in second with a 2:33.19. Danielle A. Garside '16 and Yeh took first and second place in the 50-yard butterfly with their times of 27.26 and 27.60 respectively and, in the final individual event of the day, the 200-yard Individual Medley, Tai finished in first with a 2:13.74. She was followed by Tsang in second in 2:14.70 and de Figueiredo in third place with a 2:16.97.

To end the day, the MIT 200-yard freestyle C relay took first place with its time of 1:41.69. The relay, composed of Yang, Hannah E. Huynh '17, Tsang and Yu, touched two full seconds ahead of Coast Guard's A relay that finished in second.

MIT will be on the road for the next two meets. On Saturday, Jan. 18, the Engineers will travel to face Tufts University at 1:00 p.m. and, the following Saturday, Jan. 24, Tech will go to Williamstown, Mass. to take on Williams College at 4:00 p.m.