

# Building 12 could be demolished by Summer 2014

## Will make room for construction of the new Nano-Materials, Structures, and Systems Lab



MELISSA RENÉE SCHUMACHER—THE TECH

**Building 12 could be demolished as early as Summer 2014**, pending approval from the City of Cambridge. The building's demolition will make way for the Nano-Materials, Structures, and Systems Lab (nMaSS), to be completed in 2018.

By Stan Gill  
NEWS EDITOR

Turning left off of the infinite corridor at Cafe Four could soon lead to a new destination. Director of Campus Planning, Engineering & Construction Richard L. Amster, confirmed that Building 12 could be demolished as early as this summer, pending approval by the City of Cambridge. The removal of the building will make way for the Nano-Materials, Structures, and Systems Lab (nMaSS), which is projected to be completed in 2018.

Amster said that Building 12 is currently "a tired old building that sub-optimizes the use of space at its incredible location." Amster also mentioned that the location of nMaSS on the building 12 site is beneficial because it serves as a crossroads for a lot of technical work related to the research that will go on at nMaSS. The Department of Materials Science and Engineering labs in Building 4 and the Research Laboratory of Electronics (RLE) in Buildings 26, 36, and 38 are all nearby.

The construction of nMaSS will bring together research and equipment related to nanotechnology and materials that are currently spread across several different areas of campus. The new building will also include clean room space and other amenities to accommodate new,

more sensitive research equipment. In a video released in April 2011 outlining the MIT 2030 plan, former MIT President Susan J. Hockfield referred to the construction of nMaSS as the Institute's "highest academic priority" in the plan for campus development.

The first floor of Building 12 gets a fair amount of traffic during the day. It is currently the home of a few classrooms, an athena cluster, the Global Education and Career Development Offices (GECD), the Writing and Communication Center, and the Undergraduate Practice Opportunities Program (UPOP), among other programs. The offices in Building 12 have been notified of the impending move and are beginning to formulate their plans find alternate space on campus.

One of the biggest changes for students will be the relocation of the offices that make up the GECD, the Career Services Center (including the interview cubes), the Prehealth Advising Office, and the Global Education office. All of those offices will be moving to E39 on Main Street sometime around the end of May, GECD executive director Melanie L. Parker said. Although the change does mean that the GECD offices will be farther away from the center of student activity, Parker views the move positively. She noted a number of key changes

Building 12 Page 7

### NEWS BRIEFS

#### Five MIT professors designated fellows in American Association for the Advancement of Science

According to an MIT News Office press release, the American Association for the Advancement of Science (AAAS) included five MIT professors in the group of 388 scientists it named as fellows last Tuesday.

According to its website, the AAAS, publisher of the journal *Science* and self-described "World's Largest General Scientific Society" bestows the award for "meritorious efforts to advance science

or its applications."

According to the MIT News Office, Robert Langer ScD '74, professor of Chemical Engineering and Biological Engineering, received the award for drug release system and biomaterial inventions.

Thomas A. Herring, a geophysics professor in Earth, Atmospheric and Planetary Sciences, was recognized for his work in geodetic measurements systems, which, according to his department website, include GPS and Satellite Laser Altimetry.

News briefs, Page 7

### FROM THE ARCHIVES

## 1983: MIT's first sorority rush

### After first rush, Alpha Phi included 62 pledges

By Edward Whang

*Editor's Note: This article originally ran 30 years ago in Issue 54 of Volume 103 of The Tech on Friday, Dec. 2, 1983. "From the Archives" is the first of a recurring segment where we reprint articles from The Tech's archives that are relevant or interesting to today's MIT community.*

MIT's first sorority, Alpha Phi, recently completed its first rush period. "We went into it not knowing what to expect, but it turned out really, really well," said Pamela

M. Gannon '84, president of Alpha Phi.

Gannon said 31 of the 33 bids offered were accepted.

Alpha Phi cannot rush during Residence and Orientation Week until the female population of coed dormitories reaches 30 percent, according to the conditions set by the Office of the Dean for Student Affairs. "This rule was designed so that we could avoid the pressures of rush week and wouldn't draw too many women away from the dorms,"

Alpha Phi Page 8

## Willis H. Ware, computer engineer, dies

### Pioneering electrical engineer for early computer design dies at age 93

By John Markoff  
THE NEW YORK TIMES

Willis H. Ware SM '42, an electrical engineer who in the late 1940s helped build a machine that would become a blueprint for computer design in the 20th century, and who later played an important role in defining the importance of personal privacy in the information age, died Nov. 22 at his home in Santa Monica, Calif. He was 93.

His death was confirmed by his family.

Ware's experience working on a classified World War II project to identify friendly aircraft led mathematician John von Neumann to recruit him to help de-

velop a computer at the Institute for Advanced Study in Princeton, N.J., in 1946.

That machine was not the first digital computer, but it was based on a set of design ideas described by von Neumann that were broadly influential — first on the design of computers built by scientists around the world, and then on an early IBM computer known as the 701. Many of these concepts are still visible in the structure of modern computers and smartphones.

Ware, part of a small group of engineers working on that machine, was first to try to engineer many of the components that would become vital for modern computers. His experience in designing high-speed electronic circuits during World War II was essential to his

design work on the computer at the Institute for Advanced Study, said George Dyson, a historian who has written extensively about the project.

Ware, who worked at the RAND Corp. for more than 55 years, was also one of the first people to gain a broad view of the effect computers were having on society, in their impact on automation and the threats they posed to privacy.

"The computer will touch men everywhere and in every way, almost on a minute-to-minute basis," he wrote in 1966. "Every man will communicate through a computer, whatever he does. It will change and reshape his life, modify his career and force him to accept a life

Ware Page 14

### BOSTON BALLET: THE NUTCRACKER

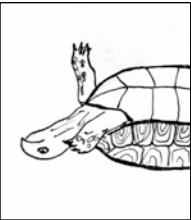
Opening night of *The Nutcracker* with the Boston Ballet dazzles.  
ARTS, p. 9

### MIT STUDENTS ON FOOD

What and where do MIT students eat?  
CAMPUS LIFE, p. 12

### WHERE DID MY BREAK GO?

Thanksgiving weekend is a combination of delusions and panic.  
FUN, p. 6



### THE MENU OF THE ANIMAL KINGDOM

Butterflies. Your eyelashes. Assorted small rocks. Fog. What else is on the menu.  
CAMPUS LIFE, p. 11

### HONESTY ABOUT ETHICS

The tough choices that come along with serious consideration of ethics.  
OPINION, p. 4

### SECTIONS

World & Nation . . . 2  
Opinion . . . . . 4  
Fun Pages . . . . . 5  
Arts . . . . . 9  
Campus Life . . . 11  
Sports . . . . . 20



—Salman Masood, *The New York Times*

Although the Obama adminis-

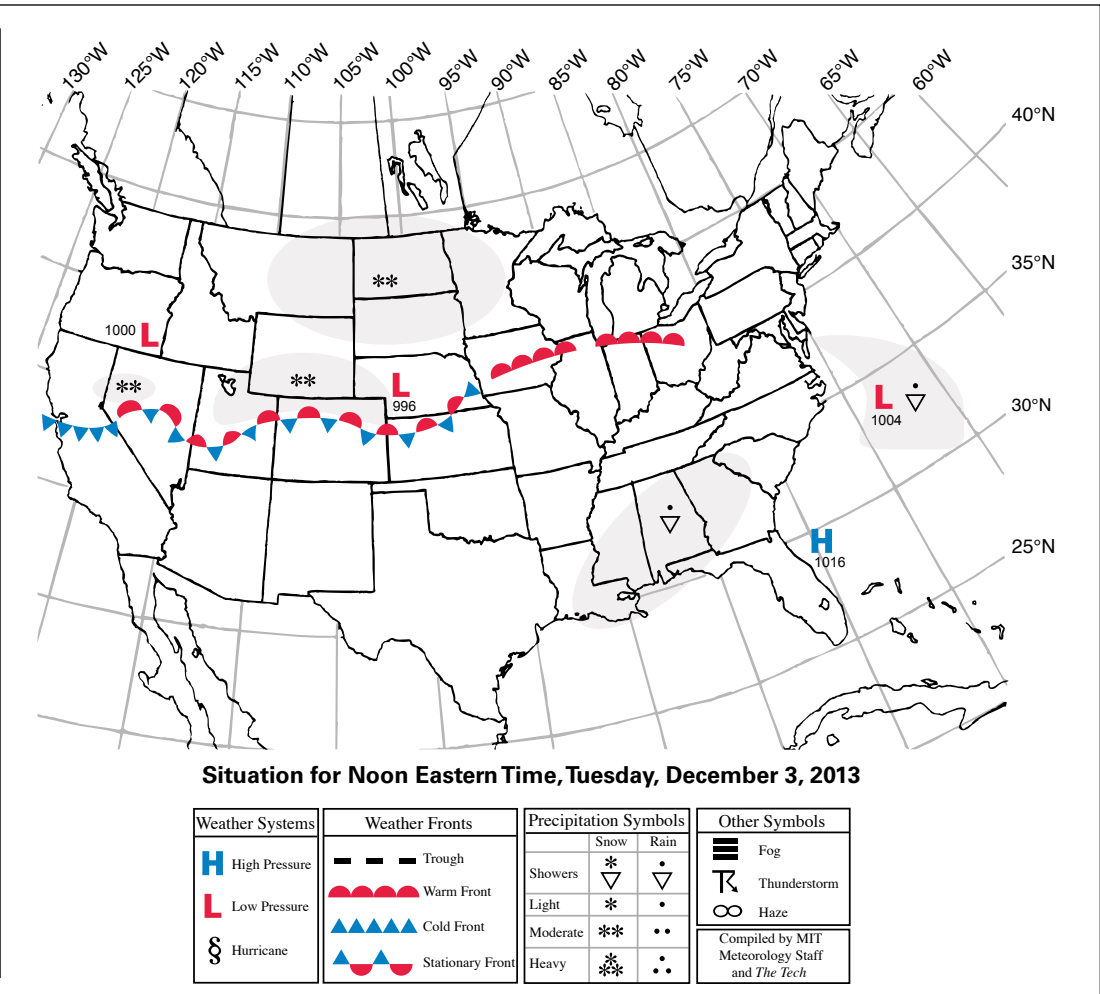
And U.S. officials have told the Japanese that the Federal Aviation Administration's decision was a safety recommendation — far short of an order, though major

Still, the official said, Biden would not deliver a formal diplomatic protest to Beijing, where he is to meet with President Xi Jinping on Wednesday. His aides are determined not to allow the matter to dominate his trip, during which the vice president also hopes to build support for a trans-Pacific trade agreement and coordinate a response to the nuclear threat in North Korea.

"Accountability should be key priority of international community, and I want to make this point again and again as the Geneva 2 talks begin," she said, alluding to the second international conference on Syria scheduled to start in Geneva on Jan. 22.

On the west coast, however, temperatures will be much colder than average in the next few days. A low-pressure system is moving down from the Pacific Northwest over the Central Plains, bringing up to a foot of snow to the Rocky Mountains. Behind this system, a mass of cold air will settle over the western U.S. for several days. In places like the San Francisco Bay area, this may cause record-breaking low temperatures approaching and even passing the freezing mark.

**Friday:** Cloudy with a chance of showers, high of 49°F (9°C).



# Economies worldwide are showing momentum

By Nelson D. Schwartz  
*THE NEW YORK TIMES*

Bucking fears of a sharp brake on growth after the government shutdown in the United States and earlier signs of distress in Europe and Asia, global manufacturing activity sped up in November, raising hopes for a broader global economic turnaround in the coming year.

In the U.S., figures released on Monday showed factories operating at the most robust pace since the spring of 2011, and well above the level economists had expected for the month. Separate surveys out Monday in Europe and China also offered encouraging signs in a sector often considered a bellwether for the global economy.

Experts attributed the rebound in the U.S. to demand from a recovering construction sector, as well as rising exports. Overseas, German factories helped push manufacturing in Europe forward, while China also showed unexpected strength.

“The news is a bit more encouraging when you look at advanced

economies,” said Tal Shapsa, an international economist with Barclays. “The recovery is gradual and isn’t spectacular, but in an environment of fiscal headwinds, it looks good.”

That caution in the face of the better data extended to Wall Street, where stocks fell slightly Monday after rising more than 2 percent in the last month. For the year, however, the Standard & Poor’s 500 stock index was up more than 26 percent, reflecting a view in the markets that business remains on the upswing for large companies despite a series of blows from government cutbacks around the world.

The S&P 500 declined 4.91 points, or 0.3 percent, to 1,800.90. The Dow Jones industrial average dropped 77.64 points, or 0.5 percent, to close at 16,008.77. The Nasdaq composite index fell 14.63 points, or 0.4 percent, to 4,045.26.

In government bond trading, the price of the Treasury’s 10-year note fell 14/32, to 99 19/32, while its yield rose to 2.80 percent, from 2.75 percent late Friday.

If the recovery in the manufacturing sector reaches into the labor market and hiring picks up in the U.S., it could encourage the Federal Reserve to begin easing back on its stimulus efforts later this month or early next year.

After expectations that the central bank would begin this tapering earlier in the fall, policymakers wavered amid softer data and waited for more signals of stronger growth before cutting back on monthly bond purchases aimed at keeping interest rates low and encouraging more hiring of out-of-work Americans.

A stronger clue about the Fed’s course of action will come on Friday, when the Labor Department reports on job creation and unemployment for November. The data for October was significantly better than expected, despite the government shutdown, and the consensus among economists polled by Bloomberg is that the economy may have created about 180,000 new jobs in November, while the unemployment rate fell to 7.1 percent from 7.3 percent in October.

# Insurgents strike in major Nigerian city

By Alan Cowell  
*THE NEW YORK TIMES*

LONDON — Authorities in northeastern Nigeria imposed a 24-hour curfew around the region’s main city on Monday after Islamic militants staged an audacious attack apparently aimed at a government air base, news reports said, describing the assault as among the most dramatic in the insurgents’ campaign to create an Islamic state.

The attack countered reports in recent months that the group had been defeated in the city, Maiduguri, even though it remained a deadly threat elsewhere. Some analysts, moreover, said the assault could raise questions about the authorities’ claims to have pushed the insurgents into remote areas.

Baba Ahmed Jidda, a spokesman for Borno State, where the assault occurred, said in a statement that “the imposition of the curfew is necessitated by an attack in Maiduguri by people suspected to be Boko

Haram members in the early hours” of Monday. While the precise target was not made clear in the announcement, news reports said hundreds of militants attacked an air force base on the outskirts of the city, where the militant Boko Haram movement was founded a decade ago.

The attack was said to have started around 3 a.m. Jidda urged citizens to be “calm and law-abiding until the situation is put under control, as the security agencies will do everything possible to maintain lives and property of the citizenry.”

“Only vehicles on emergency calls and essential services are allowed to move during the period,” the statement said.

The Boko Haram movement is said to have ties to al-Qaida’s regional affiliate in North and West Africa. Last month, the State Department labeled the movement and an affiliate, Ansaru, as foreign terrorist organizations, saying they were responsible for thousands of killings in northern and central Nigeria.

In October, officials, activists and residents of Maiduguri said a network of youthful, informer-led vigilantes had pushed Boko Haram militants out of the city, permitting it to regenerate after years of strife.

The militants want to impose a strict form of Islamic Shariah law in the region. On Monday, the militants were said in news reports to have launched their attack with cries in Arabic of “God is great.” The number of casualties was unclear, but The Associated Press said scores of people may be dead.

In May, President Goodluck Jonathan declared a state of emergency in Borno and two other states as the military launched a major offensive against the group, forcing the insurgents to retreat to more remote areas. In its war against the Nigerian state, Boko Haram has singled out government institutions, especially schools, for attack. One of its tenets is that Western-style education, not based on the Quran, in conventional schools is sinful and un-Islamic.

# Ukrainian protesters control landmark plaza

By David M. Herszenhorn  
*THE NEW YORK TIMES*

KIEV, Ukraine — Even as thousands of protesters occupied Independence Square, blockaded the Cabinet Ministry and continued to demand his resignation, President Viktor F. Yanukovich of Ukraine on Monday defended his refusal to sign accords with the European Union, said he was on the verge of securing lower gas prices from Russia, and urged opposition politicians to wait for presidential elections in 2015 to challenge him.

On the day after a huge protest by hundreds of thousands of people in Kiev, the capital, and by thousands more in other cities, Yanukovich struck a casual pose, sitting in an armchair for an interview with four television stations. He seemed to brush aside the unrest in the country, saying he would leave as scheduled for a state visit to China on Tuesday and taking the opportunity to

note that the government intended to increase financing for road repair next year.

To many here, it was unclear if Yanukovich’s calm demeanor reflected supreme confidence, complete denial or some combination of the two. Other political leaders in Ukraine acknowledged that the authorities were facing a serious civil disturbance, including the occupation by protesters of Kiev City Hall and the large Trade Unions building nearby, as well as a blockade of the Cabinet Ministry, which prevented top officials from reaching their offices.

Prime Minister Mykola Azarov, in a meeting with Western ambassadors, complained about the widening unrest, saying, “This has all the signs of a coup.” Opposition leaders in Parliament said they would call for vote of no-confidence in the government Tuesday, while protest leaders appeared to be digging in for a long battle on the streets, establishing a tent city in Independence Square

that included first aid stations and canteens.

Yanukovich’s remarks during the interview suggested that he was reaching out even further for help from Russia, where President Vladimir V. Putin on Monday remarked, “The events in Ukraine seem more like a pogrom than a revolution.” Russia had exerted heavy pressure to convince Yanukovich to scuttle the political and free trade agreements with Europe, threatening trade sanctions that could decimate the Ukrainian economy. Yanukovich, in the television interview, said that he planned to initiate negotiations this week with Russia to extend a strategic partnership agreement dating from 1997. He said that both Ukraine and Russia were acting in their own economic interests by seeking to strengthen ties, and he took a jab at the protesters who demanded that he sign the accords with Europe, suggesting that they were not acting in accordance with Western values.

# New York ruling on sales tax collection by online retailers will stand

WASHINGTON — The U.S. Supreme Court on Monday let stand a ruling from New York’s highest court requiring Internet retailers to collect sales taxes even if they have no physical presence in the state.

As is their custom, the justices gave no reasons for their decision not to hear the case, which involved Amazon.com, the online giant, and a smaller competitor, Overstock.com. The two companies challenged a 2008 state law that required online companies to collect sales taxes on purchases made by New York residents.

Brick-and-mortar companies often complain that they are put at a competitive disadvantage when they are required to collect sales taxes and online companies are not.

In March, the New York Court of Appeals ruled that the companies had a sufficient presence in the state because of affiliated independent sites that linked to the retailers in return for a commission. “The bottom line,” Chief Judge Jonathan Lippman wrote for the majority, “is that if a vendor is paying New York residents to actively solicit business in this state, there is no reason why that vendor should not shoulder the appropriate tax burden.”

The chief judge added that it might be time to reconsider the basic rule that states may not collect taxes from out-of-state companies without some physical presence in the state, a principle recognized by the U.S. Supreme Court in its 1992 decision in Quill Corp. v. North Dakota.

“The world has changed dramatically in the last two decades,” Lippman wrote, “and it may be that the physical presence test is outdated. An entity may now have a profound impact upon a foreign jurisdiction solely through its virtual projection via the Internet. That question, however, would be for the United States Supreme Court to consider.”

Monday’s order indicated that such reconsideration must wait.  
—Adam Liptak, *The New York Times*

# Brussels to investigate deal for UK nuclear plant

LONDON — European regulators said Monday they expected to conduct a full inquiry into a deal to build Britain’s first nuclear power station since 1995, threatening delays that could undermine investment plans for the 16-billion-pound project.

The concern in Brussels is that the terms of the contract might involve British government subsidies that violate European competition rules. The issue would be whether the rates the government has guaranteed to the power plant’s operators for 35 years would distort the market for electricity in the European Union.

“We are starting to analyze what is in the British proposal,” the European competition commissioner, Joaquín Almunia, said at a Brussels conference on Monday. “Probably we will open a formal investigation,” he said. His comments, which were reported by Reuters, were confirmed by Almunia’s office.

Almunia said he had received formal notification from Britain two or three weeks ago about the agreement reached in October with EDF, the French state-controlled utility, to build the plant at Hinkley Point in southwest England.

The European Commission, which is the antitrust regulator for the 28-nation European Union, is empowered to ensure that the bloc’s single market is not distorted by state subsidies.

However, the deal is controversial within Britain, as well, not only because it gives the French company EDF guarantees of profit from the electricity generated — whose rates will be paid mainly by Britons — but also because the deal would open the door to financing from China. EDF is working out an agreement with two large Chinese state nuclear companies to take 30 to 40 percent of the project.

Because no other deal of this type has been put before European regulators, the outcome is unpredictable.

—Stephen Castle and Stanley Reed, *The New York Times*

# Derailed train being pushed, not pulled, revives safety question

NEW YORK — To any engineer on the Metro-North Railroad’s Hudson line, the stretch where a train derailed Sunday was well-known: It includes one of the sharpest curves in the system, with tracks swinging east along the Harlem River, splitting from an Amtrak corridor that remains on a relative straightaway beside the Hudson River.

The maximum allowable speed, according to the Metropolitan Transportation Authority, falls to 30 mph, from 70 mph, for trains going along the curve. It is unclear how fast the train was going Sunday morning, but an MTA official said the train’s operator reported that when he realized it was heading into the curve too quickly, he “dumped the brakes,” an emergency maneuver, and though the train slowed somewhat, it then derailed. It was too early to tell whether the investigation would corroborate that account, and if so, whether the operator or another factor was responsible for the speed.

Officials said the crash’s cause might not be known definitively for days, if not longer. But the derailment raised a series of questions about what might have contributed to the only accident resulting in passenger deaths in Metro-North’s history.

Dumping brakes is a last-resort move typically reserved for averting collisions with other trains or cars stuck at crossings, said Grady C. Cothen, a retired federal railroad regulator. “If he did that, then it would have been an act of considerable alarm,” Cothen said.

The train, which was heading south to Grand Central Terminal, was operated under a so-called push-pull model: For northbound trips, it is pulled from the front by a locomotive; for southbound trips, it is pushed from the rear.

The setup has been adopted widely because of its practicality: Trains do not need to turn around if the locomotive can remain in the same position at the end of a line. The arrangement is used often on the Metro-North Railroad, though not on the Long Island Rail Road, said Aaron Donovan, a spokesman for the transportation authority.

But rail safety experts have at times questioned the performance of push-pull systems in the event of derailments, wondering whether accidents were exacerbated by the force from the rear.

—Matt Flegenheimer and Patrick McGeehan, *The New York Times*

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# Are we willing to be honest about ethics?

*Moral thought brings tough choices*

Nothing would excite me more than to see individuals, institutions, businesses, and governments placing more emphasis on ethics. I applaud MIT President Rafael Reif's recent article in *The Tech* "Ethics education at the Institute" requesting that we enhance our ethical awareness. However, as beneficial as placing a higher emphasis on ethics might prove, we must also accept that a keener perception of ethics would place a much greater responsibility on the Institute. The consequence of a serious inquiry into ethics will be a heavy burden to bear.

ture and, most importantly, severe global consequences for all living creatures. As Patrick Brown recently pointed out in his opinion piece in *The Tech*, we are already facing a 5° C increase in temperature if we exploit *existing* fossil fuel reserves. How can we in good conscience train students to discover more oil?

Divesting is a wonderful gesture, but anyone concerned with the ethical behavior of the Institute must see it as just the beginning. If not, it quickly becomes a high-five to fossil fuel companies reminding them that, at best, we pose the faintest threat to their future and will only consider ethical changes when under direct pressure or when our public perception is at stake. I support Fossil Free MIT, but I also believe that divesting is not enough. Divestment must be the beginning of a much longer journey for this Institute and Rafael Reif has started us down that path by encouraging us to think more about ethics.

So, what might real change regarding ethics look like? Consider an individual who many of us will be able to relate to — Lewis Fry Richardson. Richardson, a twentieth century English mathemati-

cian and meteorologist, made early contributions to numerical weather forecasting. Notably, Richardson was also a devout pacifist and refused to serve in World War I. Instead, he volunteered for a Quaker ambulance service during the war. Because he was unwilling to serve in the military, he was barred from holding most academic positions for the remainder of his career. However, his passion for science led him to continue his research, professionally when possible, independently when not. He quit a position as a meteorologist when the position came under control of the British Air Ministry. When he learned that some of his work benefited the chemical weapons industry, he went so far as to destroy his unpublished research on the topic. If we are truly devoted to practicing ethically-minded science, we must carefully consider how far we are willing to go.

If we are committed to opposing climate change and are willing to accept the consequences of our actions, we must not only divest from fossil fuel companies, we must curtail all behavior that contributes to the fossil fuel industry, independent of the negative consequences to the Institute. A serious consideration of ethics is not undertaken if we are only willing to make the easy decisions, but go no further. If we want to travel down the ethical path, the future decisions of the Institute will be much rockier than we currently imagine. Lewis Fry Richardson understood the burden that ethics places on scientific research. Do we?

*Paul Richardson is a graduate student in the department of Earth, Atmospheric, and Planetary Sciences.*



In last Tuesday's issue, the interview with photographer Nora Vrublevska incorrectly stated that the print of the MIT boathouse was developed in a darkroom, when it was only

printed in a darkroom. Also, the article stated images were  
inject printed, when they were inkjet printed. Vrublevska  
would also like to thank Jennifer Recklet Tassi, whose name  
was originally printed as Jennifer Recklet.

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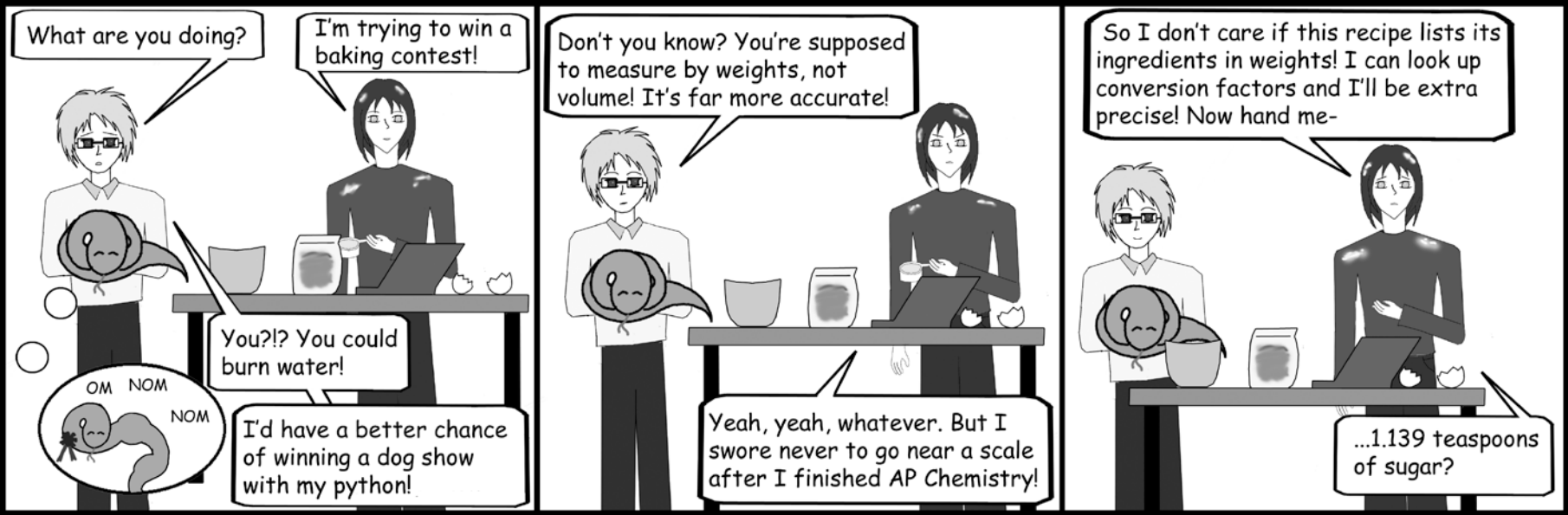
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Somewhere on the Search for Meaning by Letitia Li



Strangers to Fiction by Deena Wang



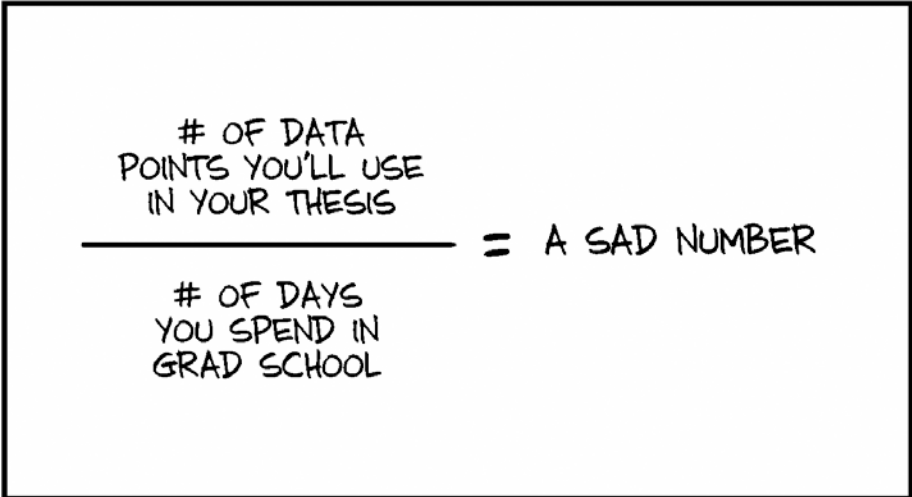
Techdoku I

Solution, page 8

13+		24x		12x	
	3x		12+		2
1		5+		6	4
16x			2-	6+	
2-		5x		15x	
	6		6x		1



by Jorge Cham



WWW.PHDCOMICS.COM



Saturday Stumper by S.N.

Solution, page 8

ACROSS

- 1 It may put pressure on you
- 10 Dude
- 15 Evocativeness
- 16 Kid's character who "speaks for the trees"
- 17 Off the record
- 18 Still
- 19 Aristotle's "ornament to the young"
- 20 It means "practitioner"
- 21 Jump on
- 22 Hustles
- 23 At all
- 25 Son of Jacob
- 26 Propeller center
- 27 Ring aide
- 28 Any of three Mikado characters
- 29 SUVs no longer made
- 31 Lack of interest
- 33 Name
- 34 Ingest impolitely
- 38 Up
- 42 Dairy dweller
- 43 Cover slip

DOWN

- 46 Fools
- 48 "Serving Up Safe Buffets" publisher
- 49 \_\_ games
- 50 Marat/Sade character
- 51 Puccini seamstress
- 52 Compañero
- 54 Quasi-opposite of "flash"
- 55 Miscellaneous
- 56 Going by
- 57 Supermodel Gisele Bündchen, e.g.
- 59 Major cocoa producer
- 60 You'll find it in 180,000+ Wikipedia articles
- 61 Preserves, perhaps
- 62 Goodreads.com genre
- 1 Fashion statement
- 2 Site in a poor-protection simile
- 3 Unsuccessful 2020 Olympics contender
- 4 Sociologist's studies
- 5 Martial-arts weapon

- 6 Spread (out)
- 7 Choose ritually
- 8 Push preceder, perhaps
- 9 Substance of a 1963 treaty
- 10 Place for a lesser 33
- Across
- 11 Unique
- 12 Big name in shoestrings
- 13 President re-elected in 2009
- 14 Stretch
- 23 Raven's tail
- 24 Place cited but not entered in Luke 2:7
- 27 Columbus landfall of 1492
- 28 It's not a big thing
- 30 Round number
- 32 Implements
- 35 Putting one's stamp on
- 36 Buffalo and emu
- 37 Informal refusal
- 39 "Absolutely"
- 40 Lock
- 41 Back
- 42 Oral objection
- 43 Certain string sounds

1	2	3	4	5	6	7	8	9		10	11	12	13	14
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43	44	45								47			48	
49												51		
52												55		
56										57		58		
59										60				
61										62				

- 44 Its logo has three tuning forks
- 45 Most important
- 47 Toothpick target
- 50 End notes
- 51 Mario Prada's birthplace
- 53 Dude
- 55 First-known variable star
- 58 Word from the Sanskrit for "absorption"

BY ERIKA TRENT

SUNDAY

THE MOMENT YOU  
REALIZE YOU HAVE  
TO DO WORK...



↑

I'M GONNA FINISH ALL MY P-SETS,  
APPLY TO 10 SCHOLARSHIPS  
AND START STUDYING FOR FINALS!

FOOD COMAS,  
TV MARATHONS  
& ENDLESS  
WEB-SURFING

HOW MUCH WORK  
YOU HAVE TO DO

HOW MUCH WORK  
YOU INTEND TO DO

HOW MUCH WORK YOU  
REALISITICALLY  
EXPECT YOU'LL DO

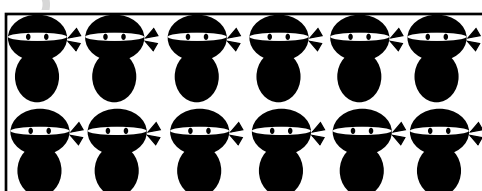
HOW MUCH WORK  
YOU ACTUALLY DO

Solution, page 8

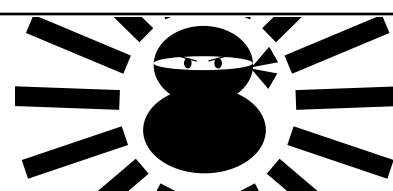
	4					5		1
		9	7		4			3
		8	1			4	9	7
1			4	7				
				6	3			2
9	7	1			5	6		
4			6		2	3		
3		6					1	

Solution, page 8

80x		180x		6x	
3				2	
48x			1÷		2-
12x			3		
1		360x			
240x					3



## WE'RE SEEKING TO BUILD OUR FORCES



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News briefs, from Page 1

James M. Utterback PhD '69, a Professor of Management and Innovation at the Sloan School of Management researches product development in corporate strategy according to his Sloan website.

Charles E. Leiserson, a professor of Electrical Engineering and Computer Science (EECS) and another new fellow, researches parallel computing theory according to his department website.

Wayne O'Neil, a professor in the Department of Linguistics, was recognized for research in the history of Germanic languages and scientific linguistics in education according to the press release.

David J. Perreault new EECS associate department head

The Electrical Engineering and Computer Science (EECS)

Department announced Nov. 27 that David J. Perreault PhD '97 would take over as associate EECS department head according to a press release from the MIT News Office. This follows the news that Munther A. Dahleh, who held the associate EECS department role since July 2011, would begin a new role as the acting director of the Engineering Systems Division (ESD) on Dec. 1.

According to the press release, Perreault is most well known for high frequency power converters, and three start-ups have emerged from his research group. He has also been a member of and held managerial roles in the Research Laboratory of Electronics (RLE) and Microsystems Technology Laboratories (MTL).

Collier Medal created in memory of fallen officer

On Nov. 25, MIT Executive Vice President and Treasurer

Israel Ruiz SM '01 announced to the MIT community the creation of the Collier Medal. The award, provided for by the Sean A. Collier Memorial Fund, will be given each year "to an individual or group that embodies the character and qualities that Officer Collier exhibited as a member of the MIT community and in all aspects of his life," according to Ruiz's letter.

The letter also announced that nominations would be accepted through Jan. 10, 2014 for the award, to be given out at the MIT Excellence Awards ceremony on Feb. 25, 2014.

Ruiz said work was underway to design a permanent memorial to Collier to be located in a garden between the Koch Institute and Stata Center and announced that a groundbreaking for its construction would occur on April 18, 2014, the first anniversary of his death.

—Austin Hess

# Building 12 due for demolition in 2014

Building 12, from Page 1

that will result from having a larger space in E39, including dedicated small offices for interviews rather than the current cubicle setup, larger offices so her staff can meet more easily with groups of students, and dedicated conference room space so they can hold events in their own consistent location.

"The Institute is making every effort to accommodate our needs," Parker said. "We will work hard to transcend the distance between our new office and MIT." She also mentioned that the GECD is working on adding on-demand web services, communication through Skype or phone, evening hours, and possibly even a satellite office on main campus in order to be closer to the students.

"A lot of aspects of E39 will be bet-

ter than what we have now," Parker said.

As for the other residents the building, the Writing Center, whose future space remains undetermined, will remain open until the end of the semester, according to the Writing and Communications Center Director Steven Strang. Bethany A. Walsh, UPOP Program Coordinator for Student Relations, said that the tentative plan for the UPOP office will involve a move to Building 1 into space currently occupied by the Office of Engineering Outreach Programs (OEOP). Jonathan D. Reed '02, Special Liason to Student for IS&T said that the Athena cluster in 12-182 will close permanently in June in preparation for the building's demolition. All groups with space in the building should be relocated well before the building is demolished this summer.

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Be a restaurant critic.

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FROM THE ARCHIVES

# Alpha Phi, first MIT sorority, held first rush in 1983

*Organization was still a colony, had become member of IFC during ‘initial period’*

Alpha Phi, from Page 1

Gannon said.

Alpha Phi will remain a colony, with all 62 current members remaining pledges, until the sorority’s national initiation in February. Sorority members will participate in pledge training during December. “Pledge training consists of learning about the Alpha Phi international organization, learning about the MIT chapter’s own history, and for the pledges to learn about each other,” Gannon said.

Alpha Phi is currently a member of the InterFraternity Conference with “initial period” status, which means it pays half the regular dues but has no vote in the organization. Alpha Phi chose to delay becoming a full member of the conference until after the national initiation,

Gannon said.

Alpha Phi held three main events during its rush, starting with an open house on Sept. 30. The sorority advertised the event with posters and sent every freshman and sophomore woman an invitation.

**The sorority advertised with posters and sent every freshman and sophomore woman an invitation.**

The members of the sorority next held a party for prospective pledges. “Whereas anyone could come to the open house, only those invited by word of mouth could

come” to the second party, Gannon said. Alpha Phi held a formal presentation Oct. 27 to explain the goals and expectations of the sorority.

“Alpha Phi didn’t have its own house, so members couldn’t show us around; otherwise, this rush was pretty much like the rushes of rush week,” said Caroline W. Wang ’86, a new pledge. “I didn’t know that many girls at MIT, and I want to get more active at MIT. I think joining Alpha Phi will help.”

Diane M. Hess ’85, a pledge since last year, thought Alpha Phi’s rush differed from those of rush week. “It wasn’t such a rush. It was spread over a few weeks rather than just happening in one week.”

The sorority expects to hold a party with a dormitory next term, Gannon said. “We are planning a

party with a dorm rather than with a fraternity in order to build good relationships with dorms. There are a lot of anti-fraternity and anti-sorority

**Club Amherst was formed in the fall of 1982 by 11 undergraduate women interested in starting an alternative living group for women, according to Gannon. They worked closely with the Dean’s Office.**

feelings that we want to avoid,” she said.

Club Amherst was formed in the fall of 1982 by 11 undergraduate women interested in starting an alternative living group for women, according to Gannon. They worked closely with the Dean’s Office and chose to become affiliated with Alpha Phi International Fraternity last

spring, she said.

“The women that started Club Amherst saw the fraternity system and its positive aspects. They

thought that sisterhood, grouping together, and the other benefits should be an option for women also. It is for these reasons that I joined Alpha Phi,” said Felicia A. Duran ’85, a new pledge.

Alpha Phi continues its search for a house with the help of the Dean’s Office. “We hope to find a house as soon as possible,” Gannon said.

GREAT IDEAS CHANGE THE WORLD

# Teaching Excellence

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### Nominating is easy

Email [shass-teaching-award@mit.edu](mailto:shass-teaching-award@mit.edu) by December 15. All non-visiting teachers in SHASS subjects are eligible (undergraduate and graduate faculty, lecturers, and TAs).

### Include

- Your name + email
- Name of your favorite teacher
- Subject(s) taken with that teacher
- Comments on: teaching effectiveness, approachability, responsiveness to student progress, and impact

### Nominate by December 15

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[shass.mit.edu/levitan](http://shass.mit.edu/levitan)

MIT SCHOOL OF HUMANITIES, ARTS, AND SOCIAL SCIENCES

### Solution to Sudoku

from page 10

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

### Solution to Crossword

from page 9

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

### Solution to Techdoku I

from page 9

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

### Solution to Techdoku II

from page 10

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

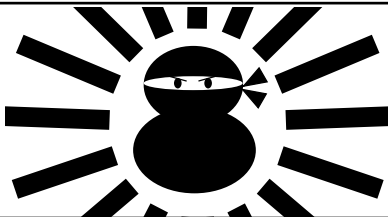
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WE'RE SEEKING TO  
BUILD OUR FORCES





## BALLET REVIEW

# Perfectly on point

*The Nutcracker* opening night at the Boston Ballet

**By Victoria Young**  
*STAFF WRITER*

Boston Opera House was glowing with holiday spirit as attendees eagerly squeezed into the ornate, lavish venue for a sold-out opening night of Mikko Nissinen's *The Nutcracker*. *The Nutcracker* is an extravagant, breath-taking production featuring eye-popping set changes, immaculately designed costumes, and energetic, striking choreography that takes the audience on an enchanting journey. Throughout the ballet, audiences alternated between erupting in laughter and breaking out in thunderous applause.

Set in the early 1880s by Artistic Director Mikko Nissinen and Robert Perdziola, the new production features 350 costumes in all, exquisitely hand-made and custom painted to match the gorgeous set designs. Mikko Nissinen's *The Nutcracker* is based on the libretto by Alexandre Dumas père titled *The Tale of the Nutcracker*, which is adapted from E.T.A. Hoffmann's story *The Nutcracker and the Mouse King*. Brought to life by talented, charismatic dancers and P.I. Tchaikovsky's famous score performed by the Boston Ballet Orchestra, the performance was decidedly delightful and magical. In Nissinen's words, "I couldn't be more thrilled with the new production. It's a sensational journey for those experiencing it for the first time, and for those who have been coming to *The Nutcracker* for generations."

***The Nutcracker***  
**Boston Ballet**  
**Artistic Director and**  
**Choreographer Mikko**  
**Nissinen**  
**Through Dec. 29**  
**Boston Opera House**

path as he entertains the children with magic tricks, including unwrapping two life-size dolls. The Harlequin and Columbine toys immaculately balance elegant pirouettes with convincingly jerky wind-up doll movements, eliciting whoops of delight from the audience.

After a series of cheery dances, including the memorably charming grandparents' dance, young Clara receives a nutcracker as a gift during the Christmas Eve party. As the party disperses and night falls, the jaw-droppingly beautiful Christmas Tree emerges. Its dazzlingly colorful lights launching us into the magical world of *The Nutcracker* as Clara begins to dream. As the clock strikes midnight, life-size rats comically pop onto the stage as part of Clara's nightmare, and quickly we fall into a nightmarish world where the monstrous Mouse King battles it out with the Nutcracker Prince. With some help from Clara, the Nutcracker Prince prevails and gratefully invites her on a journey into the Magical Forest.

Breathtakingly beautiful, the gorgeous lavender backdrop of ice-laden trees lead into the most incredible parts of the performances amongst the glittery snowfall. After being welcomed into the forest by dances from the Snowflakes and the Snow King and Queen, Clara and the Nutcracker Prince ascend back into the mist, upon a cloud built within the set, to the Nutcracker Prince's Kingdom. The most notable dances of the night begin here, as Clara enters the gate of the Kingdom and is greeted by the Sugar Plum Fairy, who gifts her with a glittering crown.

The series of spectacular dances kick off with the Spanish dancers, in burgundy

---

GENE SCHIAVONE

**Misa Kuranaga and Jeffrey Cirio leap simultaneously** in Boston Ballet's performance of *The Nutcracker*.



GENE SCHIAVONE

**The Party Scene** from Boston Ballet's performance of *The Nutcracker* featured young dancers from the Boston Ballet school.

red costumes, blazing across the stage with fiery steps. Then, in the most mesmerizing segment, the "Arabian," Petra Conti hypnotizes the audience with her undulating backbends, perfect splits, and fluid twirls. Charming, although not technically astounding, the piquant Chinese bring a flurry of color and flair to the stage in a brief dance. The long-awaited, famous Trepak draws notable excitement from the crowd as three Russian dancers energetically burst onto stage in split jumps, high kicks, and, of course, crowd-pleasing performances of *prisiadka*, or squat-kicks. The Dewdrop and her Flowers daintily

perform the waltz. Finally, the performance closed with spectacular dancing from The Sugar Plum Fairy and The Nutcracker Prince, leaving the audience completely spellbound by their powerful pirouettes, skillful lifts, and perfect extensions.

All in all, the 43 performances featured 11 different casts, showcasing the vast talent within the Company of the Boston Ballet in a dazzling, nonstop, two-hour performance that takes the audience into a truly wondrous world as a spirit-lifting kickoff to the holiday season. It is sure to leave you with sugar plum fairies dancing through your dreams.

## MOVIE REVIEW

# Hollywood remake still delivers

Vince Vaughn stars as the father of 533 in film based on the true story of a sperm donor

**By Rachel Katz**

*Delivery Man* follows a forty-year-old serial screw-up and truck driver for his family's butcher store who finds himself the defendant in a class-action lawsuit brought on by 142 of his children.

In need of quick cash, David Wozniak (Vince Vaughn) resorts to donating his

sperm 693 times under the assumed identifier “Starbuck,” careful to sign a paternal anonymity agreement before each donation. About 20 years later, he discovers that through some inexplicable fluke in the system, for a period of four years, the sperm bank gave his sperm to all of their clients. He’s fathered 533 children in total, many of whom want to know his identity,

and are willing to contest the validity of the anonymity clause in court. His best friend, an underachieving lawyer and stay at home dad, Brett (Chris Pratt), offers to take the case pro bono in hopes of proving his abilities in a case that would make history.

At the same time, David learns that his girlfriend is pregnant, and thus embarks on a journey of working to prove that he can be a father to one child while fighting his responsibility as a biological father to so many others. That is, until he opens the manila envelope containing the detailed profiles of the 142 children looking for their biological father. He can't be a father to all of them, he reasons, but maybe he can be a guardian angel of sorts.

**Vince Vaughn gave an impressive performance for the more serious aspects of the film, while Chris Pratt carried the humor.**

The movie is a Hollywood reimagining of the 2011 indie film entitled *Starbuck*, based on a true story. It comes from the mind of the same director and original screenplay co-writer, Ken Scott, but was



COURTESY OF DISNEY STUDIOS MOTION PICTURES

**Emma (Cobie Smulders) and David (Vince Vaughn) in *Delivery Man***, a comedy about a man who discovers that he has fathered 533 children through sperm donation.



## Delivery Man

**Directed by Ken Scott**

**Starring Vince Vaughn,  
Chris Pratt, and Cobie  
Smulders**

**Rated PG-13**

## Now Playing

recast and redone on a much bigger budget. This type of “hollywoodization” has been done before and turned out to be incredibly unsuccessful, so I was pleasantly surprised when *Delivery Man* still delivered. Vince Vaughn gave an impressive performance for the more serious aspects of the film, while Chris Pratt carried the humor. The plot kept its imaginative, if implausible, feel, and the screenplay was littered with moments that had the entire audience erupting in laughter. The soundtrack was comprised almost entirely of popular indie tunes, perhaps in homage to the story’s own categorical transition into the mainstream media.

This coming of age story is undeniably cute, if a bit cheesy, but will leave you smiling and satisfied. *Delivery Man* is definitely worth a watch.







THE NATURALIST’S NOTEBOOK

What’s on the menu?

Exotic recipes from around the animal kingdom

By Davie Rolnick  
STAFF COLUMNIST

Appetizers

*Assorted small rocks*  
Many birds eat rocks. That sparrow pecking away at the sidewalk may be after sand and gravel, not just crumbs. The reason for this geophagy is that birds don’t have teeth, so they grind up their food using an organ called a gizzard, which is right next to the stomach. The gizzard must be filled with grit and small stones to break up the food while the gizzard churns.  
*Sunlight*  
In general, animals can’t photosynthesize. But there is at least one exception: a sea slug of the species *Pteraeolidia ian-thina*. Sea slugs (also called nudibranchs) may be the showiest creatures on Earth. They look like a cross between a slug and a snowflake, and many species have such bright colors that they appear to glow. This particular one is blue-green, and it is filled with little algae that photosynthesize for it. Like a plant, it can sit in the sun all day and simply make its own food.

Disquieting as it may be, your own body is food for a large number of tiny creatures.

*Poison ivy berries*  
Don’t try this at home. Most people are allergic to the chemical urushiol, which is found in all parts of the poison ivy plant, including the ghostly white berries. Surprisingly, however, urushiol is only a problem for us humans, as well as for some other primates. If you are a bird, poison ivy berries are tasty and nutritious, and a great way to stock up on food before the winter.

Entrées

*Your eyelashes*  
Disquieting as it may be, your own body is food for a large number of tiny creatures. The eyelash mite is one of them, a microscopic organism (1/3 of a millimeter long) that is found exclusively in the hair follicles

of humans, especially around the face. About half of the population has them, and they don’t generally do any harm. But they are there, eating, sitting around, having sex on your eyebrows, and eventually dying. Curiously, though, they don’t poop at all; instead, they store up all their waste inside their bodies.  
*Frozen caterpillars*  
Birds in New England have a hard time during the winter. It’s cold and the food options are limited. There are some seeds and berries, but the insects have mostly gone into hiding or will hatch from eggs in the spring. The golden-crowned kinglet is a tiny bird whose song is a high-pitched squeak. It eats only insects, and it sticks around for the entire winter, rather than migrating south. This seems like a bad combination, but the kinglet is saved by a moth called the one-spotted variant. The caterpillars of this moth want to get an early start on eating leaves in the spring, so they hatch from their eggs in the fall and then stay out all winter on the branches of trees. Unlike most caterpillars, they can freeze solid with no ill effects, and they are camouflaged to look like twigs. Kinglets rely on these frozen caterpillars for food, hunting them diligently until spring, when the menu diversifies once again.  
*The shell of a dead tortoise*  
In Florida, there is a kind of tortoise called the gopher tortoise. The males fight with each other if they want the same female, and in these fights, one of the tortoises can get flipped over onto its back. In the sun, sometimes a flipped tortoise will die of heat and exhaustion before it can right itself. Now is the moment when the moth

*Ceratophaga vicinella* steps in. It flies over and lays eggs on the dead tortoise, and little caterpillars hatch. They don’t eat the body of the tortoise. Instead, they work away at the shell. If you tried to pick up the tortoise at this point, you would discover that it is anchored to the ground by a network of silken tubes, within each of which a caterpillar is hiding and munching on tortoiseshell.  
**Beverages**  
*Seawater*  
A number of birds live their whole lives at sea, eating things like fish and the carcasses of whales that float to the surface. Such birds, including albatrosses, petrels, and shearwaters, don’t come to land at all except to nest. As Tennyson’s Ancient Mariner discovered, the sea contains “water, water everywhere, but not a drop to drink.” Why isn’t this a problem for the albatross? Turns out that seabirds have a special organ called the salt gland, which concentrates the salt in seawater and excretes it through the nostrils at the base of the beak. This allows the albatross to drink nothing but saltwater.  
*A butterfly*  
There is a group of insects called “true bugs”. They include the stink bug, cicada, and aphid, and are technically the only insects that one should refer to as “bugs”. What sets them apart from other insects is their mouthparts: they can feed only through a stiff straw, which they normally keep folded away underneath the body. In most bugs, the straw is used for drinking the sap of plants, which is why gardeners hate aphids. However, some bugs drink the juices of animals instead. The ambush bug



ILLUSTRATION BY DEENA WANG —THE TECH

hides inside a flower and grabs any butterfly or other insect that happens by. Since most insects are not naturally drinkable, the ambush bug injects them with liquefying enzymes before inserting its straw and sucking them up. What’s left is a shriveled carcass that is barely recognizable.  
A few of these carnivorous bugs attack mammals, including humans. Darwin experimented with one of these, an assassin bug from South America. He was curious to see what happened when the insect bit him, so he let it bite him repeatedly. As it turned out, that particular species carries a nasty illness called Chagas’ Disease, and Darwin promptly died.  
*Fog*  
The Namibian desert is an unspeakably dry place. It never rains, but the desert is next to the ocean, which means that fog appears once or twice a month, rolls over the desert without condensing into droplets, and disappears again. There is a beetle in the genus *Stenocara* that manages to lives here. To obtain moisture, it waits for the fog to come, then uses its own back as a water-gathering device. Hydrophilic bumps on the beetle’s carapace serve to condense water, and hydrophobic troughs then channel the water into the beetle’s mouth. The technology on this beetle’s back is so advanced that the U.S. Army is working to replicate it.

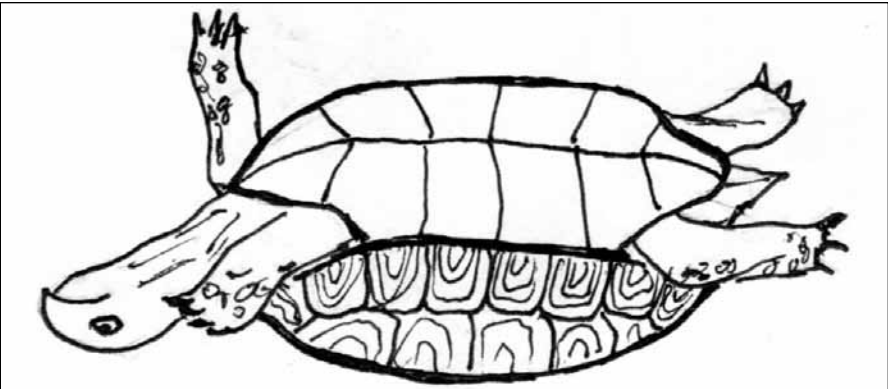


ILLUSTRATION BY DEENA WANG —THE TECH

EVENTS DEC. 03 – DEC. 09

TUESDAY

(8:00 p.m.) LSC shows *Ride Along* — 26-100

WEDNESDAY

(12:00 p.m. – 1:00 p.m.) Brown Bag Lunch Series: Corals of the deep sea — E38-300

(2:00 p.m. – 3:00 p.m.) xTalks: Online teacher education in Pakistan — 12-122

(6:00 p.m. – 8:00 p.m.) Introduction to Web Design using Wordpress, sponsored by the Sloan Coders — E51-361

THURSDAY

(4:30 p.m. – 6:00 p.m.) Will MIT Lead Against Climate Change? A Discussion on Divestment — 4-237

(5:00 p.m. – 7:00 p.m.) Long-Form Journalism: Inside “The Atlantic” — 66-110

FRIDAY

(7:00 p.m. – 10:00 p.m.) LSC shows *The Nightmare Before Christmas* — 26-100

SATURDAY

(1:00 p.m. – 5:00 p.m.) Anime Karaoke — W20-491

(2:00 p.m. – 6:00 p.m.) Fun Tech Forum: TECH SHOWTIME III: Arts in Ancient China — 26-100

SUNDAY

(4:00 p.m. – 5:30 p.m.) QWERTY is dead, long live QWERTY! The Birth of Input in Twentieth-Century China — E51-095

(7:00 p.m. – 10:00 p.m.) Bangladesh Victory Day Celebration — 50-140

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# Will MIT lead against Climate Change? A Discussion on Divestment

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Computer engineer W. Ware dies at 93

Ware, from Page 1

of continuous change.”

While at RAND, Ware led an early Pentagon study exploring computer security. Afterward he was asked by the secretary of commerce, Elliot L. Richardson, to lead a committee to address “personal privacy” in the computer era. Some of its policy recommendations were adopted in the Privacy Act of 1974.

The committee dealt with problems including the increasing reliance on “universal identifiers” like Social Security numbers.

“Willis Ware laid the foundation for modern privacy law,” Marc Rotenberg, executive director of the Electronic Privacy Information Center, said. “His insight was that, in the computer age, organizations that collected private information would have to take responsibility, and individuals who gave up personal information would need to get rights. That insight has informed virtually every discussion of privacy law ever since.”

Willis Howard Ware was born in Atlantic City, N.J., on Aug. 31, 1920, and developed an early passion for mechanical and electronic projects.

In an interview with the IEEE Computer Society in 2011, he traced his interest in engineering to a childhood observation. While riding his tricycle, he noticed that an older friend on a bicycle could pedal much faster than he could. He concluded that the lack of a chain on his trike was an obvious disadvantage.

He would go on to study electrical engineering at the University of Pennsylvania and the Massachusetts Institute of Technology. After graduating from MIT, he joined the Hazeltine Corp. to work on classified electronics projects. He obtained a PhD in electrical engineering at Princeton while working on the Institute for Advanced Study machine.

He moved to Los Angeles to work for North American Aviation, and in 1952 joined RAND, where he was manager of the department where engineer Paul Baran did early work on packet switching, a technology that was the basis for the Internet.

Ware is survived by two daughters, Alison Ware and Deborah Pinson; a son, David; and two grandchildren.

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# Retailer Amazon announces drone delivery plan

## Network of drones to deliver products still years away, depends on future regulations

By David Streitfeld  
THE NEW YORK TIMES

SAN FRANCISCO — Hard to believe, but there was once a time when the visionaries worked for the government. Rebuilding a ruined Europe, putting a man on the moon, ending poverty, connecting the American interior with highways — these were immense tasks undertaken, and often achieved, by bureaucrats.

The wild dreamers these days work for technology companies. Elon Musk, not content with making the first commercially viable electric car, has plans for a trainlike system that would speed travelers at 600 mph. Google, hard at work assembling the world’s information, has started a company to cheat death. Mark Zuckerberg has plans to put everyone in the world in touch.

**Package delivery by drone is a loopy idea, far-fetched and the subject of instant mockery on Twitter.**

And now Jeff Bezos, Amazon.com’s chief executive, says he is planning to take something that looks like a barbecue grill, attach eight propellers and a basket to it and use it to deliver small items to people’s houses. He sketched a vision where no one would ever have to get off their hammocks to get a resupply of Pringles or Milk Duds.

Package delivery by drone is a loopy idea, far-fetched and the subject of instant mockery on Twitter — but it is hard to deny its audacity.

“I am blown away by what I see coming out of the private sector these days,” said Andrew McAfee, co-founder of the Initiative on the Digital Economy at the MIT Sloan School of Management. “All the building blocks are in place for breakthroughs: The Internet goes everywhere. Everyone has a device connected to the network. And the cost of technology experimentation is so low. We don’t need one single entity with massive resources to deliver these really cool innovations.”

**Beyond Amazon’s meteoric stock price, its capacity to bring more goodies to more people in less time, and its ceaseless innovation, the company is enduring an unusual period of criticism.**

The announcement by Bezos on Sunday evening was one of those moments when the future suddenly seems much closer. But the news also served to emphasize a less appreciated hallmark of the tech world: its masterful use of public relations.

The revelation came at the end of a “60 Minutes” feature about Amazon and its preparations for Cyber Monday, the year’s most hyped online shopping day.

“We can do half-hour delivery,” Bezos said. He also said the drones could carry as much as 5 pounds and could fly 10 miles from the delivery center. “I don’t want anybody to think this is just around the corner,” he said in an uncharacteristic note of caution.

Which brought up the immediate question: Why announce it now? Amazon is so tight-lipped it will not often confirm what happened in the past, like how many Kindles it has

sold. It almost never talks about the future.

On the show, Bezos dodged a question about whether Amazon would soon unveil a set-top box. “I don’t want to talk about the future road map of our devices,” he said.

Unless, apparently, he did want to.

“Whether this ever amounts to anything, it was definitely a good PR move,” said Tory Patrick, leader of the retail technology practice at Walker Sands, a consultancy. “It’s

Cyber Monday and Amazon is on the brain.”

Beyond that — beyond Amazon’s meteoric stock price, its capacity to bring more goodies to more people in less time, its ceaseless innovation, its ability to make other retailers look hapless — the company is enduring an unusual period of criticism. Its success is breeding anger.

Amazon warehouse workers are striking in Germany. The French are proposing to restrain the company with a law that forbids discounting on books. And in Britain, sending an undercover reporter to an Amazon warehouse is becoming routine.

The most recent such investigation — which offered an indictment not only of Amazon but also of the culture that makes it such a success — was published last weekend in The Guardian.

Her fellow workers at Amazon, Carole Cadwalladr wrote, used to be

builders, hospitality managers, marketing graduates, technicians, carpenters and electricians.

“They owned their own businesses, and they were made redundant,” she added. “Or the business went bust. Or they had a stroke. Or their contract ended. They are people who had skilled jobs, or professional jobs, or just better-paying jobs. And now they work for Amazon, earning the minimum wage, and most of them are grateful to have that.”

In the United States, any resistance is much more muted. But Amazon fought back hard this fall against a new book, “The Everything Store” by Brad Stone, accusing it of containing an unbalanced depiction of the company as a brutal place to work.

“The timing is interesting,” said Sucharita Mulpuru, a Forrester analyst. “The drones could be a game-changer — 20 years from now.”

An Amazon Web page unveiled immediately after the “60 Minutes” broadcast was much more bold about the drone delivery service, which is called Prime Air. “We’ll be ready to enter commercial operations as soon as the necessary regulations are in place,” Amazon promised.

That, it said, meant 2015, when the Federal Aviation Administration will issue new rules for commercial drones. The FAA needed a year merely to prepare its 74-page plan for the integration of drones into the national airspace. Specific details on putting those rules into effect, the agency said when it released the plan last month, are still to come.

Sen. Edward Markey, D-Mass., a member of the Commerce, Science and Transportation Committee, said he was dissatisfied with the FAA plan

because he felt it had scant privacy protections. “Clear rules must be set that protect the privacy and safety of the public,” he said in a statement Monday.

Jaron Lanier, a technology skeptic who wrote “You Are Not a Gadget,” said the drones would encourage the sort of divisions that undermine society.

“I can easily picture a scenario where drones deliver things to upscale tech-savvy customers,” he said. “But note the implication, whether intended or not, that working-class truck drivers will no longer transgress geographic class lines. It’s also hard to imagine delivery drones flying unmolested in restive working class or poor areas. They’d become skeet or be ‘occupied,’ depending on the nature of the neighborhood.”

**The Federal Aviation Administration will issue new rules for commercial drones in 2015.**

McAfee, co-author of “The Second Machine Age: Work, Progress and Prosperity in a Time of Brilliant Technologies,” said he saw more benefits. “Amazon drives a big truck to the outskirts of town, unloads the drones, and they go run a bunch of final drops,” he said. “The roads will be less crowded. You’ll have less pollution.”

Patrick, the consultant, said there was no question of what people will want.

“If Amazon can pull this off, people will say, ‘This is awesome, I can get toilet paper in 30 minutes.’ And they will.”

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# Oxytocin and social behavior

## Could stimulate social behavior in autistic children

By Pam Belluck  
THE NEW YORK TIMES

Scientists have been eager to see if the hormone oxytocin, which plays a role in emotional bonding, trust, and many biological processes, can improve social behavior in people with autism. Some parents of children with autism have asked doctors to prescribe it, although it is not an approved treatment for autism, or have purchased lower-dose versions of the drug over the counter.

Scientifically, the jury is out, and experts say parents should wait until more is known. Importantly, nobody knows if oxytocin is safe or desirable to use regularly or long-term.

Now, the first study of how oxytocin affects the brains of children with autism finds hints of promise — and also suggestions of what its limitations might be.

On the promising side, the small

study, published Monday in the Proceedings of the National Academy of Sciences, found that the hormone, given as an inhalant, generated increased activity in parts of the brain involved in social connection. This suggests not only that oxytocin can stimulate social brain areas, but also that in children with autism these brain regions are not irrevocably damaged, but are plastic enough to be influenced.

The limitations could be linked to a finding that oxytocin prompted greater brain activity in children with the least severe autism. Some experts said that this could imply that oxytocin may work primarily in less-impaired people, but others said it might simply suggest that different doses are needed.

“Here we have a really clear demonstration that oxytocin is affecting brain activity in people with autism,” said Dr. Linmarie Sikich, director of the Adolescent and School-age Psychiatric Intervention

Research Program at University of North Carolina, who was not involved in the study. “What this shows is that the brains of people with autism aren’t incapable of responding in a more typical social way.”

Nonetheless, said Sikich, who will be leading a large federally funded trial of 300 children to evaluate behavioral effects of daily oxytocin for six or 12 months, “there’s still a big gap in knowing how much it will really change overall functioning and how to best use it.”

Some studies suggest that oxytocin, sometimes called the “love hormone,” improves the ability to empathize and connect socially, and may decrease repetitive behaviors. Others find little or no effect, and some research suggests that it can promote clannish and competitive feelings, or exacerbate symptoms in people already oversensitive to social cues.

In the new study, conducted by

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# Oxytocin research

## Social behavior, autism studied

the Yale Child Study Center, 17 children, ages 8 to 16, all with mild autism, inhaled a spray of oxytocin or placebo (researchers did not know which, and in another session each child received the other substance). The children were placed in a functional magnetic resonance imaging machine, an fMRI, and given a well-established test of social-emotional perception: matching emotions to photographs of people's eyes. They took a similar test involving objects, choosing if photos of fragments of vehicles corresponded to cars, trucks, and so on. During the "eyes" test, brain areas involved in social functions like empathy and reward — less active in children with autism — showed more activity after taking oxytocin than after placebo. Also, during the "vehicles" tests, oxytocin decreased activity in those brain areas more than the placebo, a result that especially excited some experts.

tention to a shape or object so you can get them to pay attention to a social stimulus, that's a big thing," said Deborah A. Fein, a psychology professor at the University of Connecticut. With oxytocin, the children did not do better on the social-emotional test, unlike in some other studies. But experts said that was not surprising, given the difficulty of answering challenging questions while staying still in an fMRI. "What I would look for is more evidence of looking in the eyes of parents, more attention to what parents are saying, less tendency to lecture parents on their National Geographic collection," Fein said. The Yale researchers did study oxytocin's effect on such social interactions and are analyzing those results for later publication, said Ilanit Gordon, a co-author of the study.

Oxytocin, Page 18

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# Investigating Oxytocin, behavior link

Study considers effect on children with autism, possible treatments

Oxytocin from Page 17

The Yale team suggests that oxytocin may be most useful not as an ongoing treatment to enhance general social skills, but as a tool to help children benefit more from behavioral therapy or specific social experiences.

Several experts agreed. “Most people believe that these drugs will not immediately improve social behavior or improve some of the more negative symptoms,” said Geraldine Dawson, director of the Center for Autism Diagnosis and Treatment at Duke University.

Instead, “Think of this as possibly priming the brain to make it more receptive to social information,” she said. “This may help to enhance that child’s response to behavioral therapy and early intervention, and may not have to be used long-term.”

The Yale study includes another intriguing result: that children whose saliva showed higher oxyto-

cin concentrations had more activity in the amygdala. That, experts said, may eventually mean that a simple saliva test could help identify who might benefit most from oxytocin.

One participant in the Yale study, Jesse, then 15, said he could tell immediately which spray was oxytocin because he became giggly, “laughing uncontrollably — it was like they gave me laughing gas.” The effects did not last long, said Jesse, whose parents asked a reporter to withhold his last name.

Since then, his parents started buying low-dose over-the-counter oxytocin spray, which they keep at home and with the high school nurse. Occasionally, when Jesse, who has Asperger’s syndrome, has a “panic attack or spiraling, it just sort of shuts off that mood, and it doesn’t come back,” said his mother, Jackie.

Or, as Jesse described it, when “I’m really stressed or sad, pretty quickly I start feeling a lot more

calm. It sort of disrupted the thoughts that were making me nervous.”

Gordon does not recommend such use.

**Bales said early repeated use might tell the brain to make less oxytocin than it would produce naturally.**

“I don’t want a wave of parents now giving their children oxytocin,” she said. “We’re not seeing that giving oxytocin equals treating autism, not yet.”

Both animal and human studies give reasons for caution. While early research found that oxytocin promoted pair bonding in prairie voles, newer studies found that giving the equivalent of several years’ worth of daily oxytocin to adolescent male

prairie voles made them behave abnormally, bonding with strange voles rather than their partners, said Karen Bales, a psychologist at the University of California, Davis, who conducted the research.

She said early repeated use might tell the brain to make less oxytocin than it would produce naturally.

A study of healthy men found that inhaling oxytocin made them more biased against outsiders. And when people with borderline personality disorder took oxytocin, they became more distrustful, possibly because they were already socially hypersensitive.

Even if it ends up easing autistic symptoms, autism is so complex and varied that oxytocin is unlikely to work for everyone. People with different oxytocin receptor genes may respond differently, for example.

“We’re still really in the early stages of understanding whether oxytocin is going to be an effective treatment for autism,” Dawson said.



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# Ohms

STALY CHIN

A heartfelt embrace during *Four Idiots*, The Ohm’s fall concert that was held on Saturday Nov. 23 in 10-250. Their concert featured mashups of popular South-Asian and American music, as well as punny skits. The Ohms is MIT’s first South-Asian coed a cappella group.

# Chorallaries

SARAH LIU—THE TECH

Emily M. Salvador ’16 sings a solo in “The Engineers’ Drinking Song” during *Suit & Tie*, the Chorallaries concert on Friday, Nov. 22. MIT’s first coed a cappella group, the Chorallaries’ repertoire is arranged by its group members and features a wide range of popular American music.



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# Muses

STALY CHIN

Megan L. Mansfield ’16 sings a solo during *Monty Python and the Holy Muse!*, the fall concert hosted by the Muses on Sunday, Nov. 24 in 6-120. MIT’s only all-female a cappella group, the Muses perform arrangements of contemporary hits.



# Resonance

TAMI FORRESTER—THE TECH

Luther V. Banner ’16 sings a solo during *Resolectric*, Resonance’s fall concert on Saturday, Nov. 23 in 10-250. The concert featured guest performances from the Counterpoints of Clark University and the CharlieChords of Berklee. Resonance is a coed a capella group that covers contemporary music hits.



# Swimming and diving team receives 2 awards

MIT Winter Invitational on Dec. 6 and 7

By Charlotte Brackett  
DAPER STAFF

Following a strong weekend of competition, the MIT men's swimming and diving team received two conference weekly honors, as announced by the New England Women's and Men's Athletic Conference (NEWMAC) on the afternoon of Monday, Nov. 25. The 200-yard medley relay that was made up of Bradley A. Mattix '16, Michael J. Liao '14, Sean R. Corcoran '16, and Austin D. Fathman '15 was named Relay of the Week, while Liao also received Swimmer of the Week honors for his individual swims.

Tech traveled to Maine on Nov. 23 for its second meet of the season, ending the day with a 215-82 victory over host Bowdoin College and a 240-57 win over Babson College. MIT won 13 of the events, taking first through third place in an impressive eight events and

claiming first through fourth in three of them. To start the meet off, the Engineers' 200 medley relay finished in first place with a time of 1:34.65, winning by over three seconds.

Liao's first individual win came in the 100-yard breaststroke when he swam a 57.74 and finished over a second and a half ahead of the competition. Later on in the day, he went a 2:07.14 in the 200-yard breaststroke, winning the event by seven seconds. He improved in both of his events by over a second from the meet against Springfield College three weeks ago. The senior was also part of the 400-yard freestyle relay that touched in second place with a time of 3:16.10.

Tech will host the annual MIT Winter Invitational on Friday and Saturday, Dec. 6-7. The first session of the meet will begin at 6:30 p.m. on Friday, and two sessions will take place the following day, with one at 10:00 a.m. and the other at 5:30 p.m. MIT has won the meet each year since it was first started during the 2007-08 season.

# MIT squash team falls to Colby College, 7-2

Next competition against Bryant U.

By Charlotte Brackett  
DAPER STAFF

At the final home match of the weekend, the MIT squash team were defeated by Colby College by a score of 7-2, with the lone wins coming from Nikhil N. Punwaney '17 at No. 1 and Tyler M. Finkelstein '17 at No. 2. After falling to Wesleyan and Bowdoin yesterday, the Engineers now have a record of 4-4 on the season following an undefeated start to their season.

Each of the MIT players played a handful of strong games and put up a fight every time. In the top spot, Punwaney picked up the Engineers' first win, dropping the first game to

CJ Smith, 11-9, before coming back to win the final three, 11-6, 11-7, 11-7. Finkelstein won all three of his games against Patrick McCarthy, 11-4, 11-8, 11-8. At No. 3, Thomas C. Cowan '17 had a good third game, narrowly falling to Hugh Doherty, 12-10. He fell in the first two as well, 11-5, 11-6. Gray Riley '15 dropped his match at No. 5 to Trey Simpson, 11-5, 11-8, 11-7.

Abhiranjan Mitra '14 played a strong first game against Will Hochman at No. 6, keeping the score close the entire time and ultimately falling, 11-9. He dropped the other two games, 11-3, 11-4. At the No. 8 position, Sarah C. Fay '15 kept opponent Steve Carroll within reach throughout the entire match, falling 11-8, 11-5, 11-4.

MIT has less than two weeks until its next competition, hosting Bryant University at 7:00 p.m. on Dec. 7.



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**4:00-5:30PM**

We show how Theory of Computation has revolutionized our millenary notion of a proof, revealing its unexpected applications to our new digital world.

In particular, we shall demonstrate how interaction can make proofs much easier to verify, dramatically limit the amount of knowledge released, and yield the most secure identification schemes to date.

Largely based on joint work with Shafi Goldwasser.

*Silvio Micali has received his Laurea in Mathematics from the University of Rome, and his PhD in Computer Science from the University of California at Berkeley. Since 1983 he has been a member of the MIT faculty, in Electrical Engineering and Computer Science Department, and of the Computer Science and Artificial Intelligence Laboratory.*







*Silvio's research interests are cryptography, zero knowledge, pseudo-random generation, secure protocols, and mechanism design.*

*Silvio has received the Turing Award, the Gödel Prize, and the RSA prize. He is a member of the National Academy of Sciences, the National Academy of Engineering, and the American Academy of Arts and Sciences.*

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