

MIT News

News of the
MIT Community

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SARA SEAGER WANTS TO FIND OTHER WORLDS .

Her satellite the size of
a small suitcase may just
help us spot them.



A blue moon sets over the
snow-dappled MIT campus
on Halloween morning.

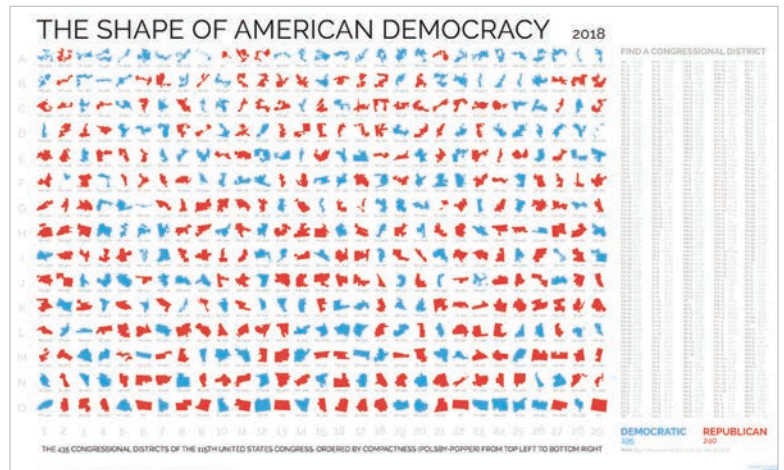


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This cartographic chart shows the 435 US congressional districts' shapes and the parties holding each seat as of 2018. It's part of the "Bending Lines" exhibition developed by the Boston Public Library's Leventhal Map & Education Center.

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Sustaining our mission, shaping the conversation

Despite the pandemic, MIT remains focused on solving the world's most pressing problems. And the work of a nonpartisan student organization reminds us that in the US, we all play a critical role in defining the national agenda.



Looking back to the start of the pandemic, I am struck by our community's formidable strength. In March 2020, we did not know what it would take to sustain MIT's great mission through this crisis. Since then, we have found a way together, and we have made it work. That accomplishment belongs to every member of our community—and thanks to our immense shared effort, MIT is still MIT. We forge ahead with the same passion for the Institute's mission, the same distinctive practical optimism, the same gaze toward the future. And many members of our community, including our alumni, are actively pursuing research and innovation

to better understand the virus and help humanity contain it.

As the United States strives to respond to complex crises from covid-19 to climate change, I believe that the perspective of our community—analytical, hands-on, grounded in facts and science, attuned to complex systems, and undaunted by hard problems—should be very well represented in the national conversation.

One way each of us can help bring that about is through voting. So I am delighted to highlight the ongoing work of MITvote, a student-run, nonpartisan organization focused exclusively on encouraging MIT students to register and vote and to become

civically engaged. Thanks to MITvote, from 2014 to 2018, voter turnout among our students more than tripled. And this past fall, MITvote volunteers personally emailed 7,502 MIT students who are US citizens, to help each of them form a voting plan.

MITvote's results would be impressive on any campus. But I especially admire its success because I have been at MIT long enough to know that sometimes people who are deeply focused on science and engineering feel that politics is not for them. They may believe that it is irrational or even irrelevant, or that one vote cannot make a difference.

For those who feel that way, I would like to reframe the issue. When we listen to a symphony orchestra, amid all that sound, the addition of any single instrument may be hard to hear. But when the whole brass section starts playing, it changes everything. So I hope that each of us can think of voting in this way: Not as a "solo" gesture. Not as the act of a single individual that may or may not be noticed. But as a great shared civic act that we all perform together, in concert.

As individuals, we naturally disagree on many questions. But I am convinced that through active civic engagement, including voting at the local, state, and federal levels and extending far beyond that, too, the people of MIT can be profoundly useful to their communities and to society as a whole.

L. RAFAEL REIF

Slowing the spread

Capping gatherings at 10 people could significantly reduce covid-19 infection rates.

From the choir rehearsal in Washington to family gatherings in Chicago, numerous covid-19 “superspreading” events have seen one person infect many others. MIT researchers who studied about 60 such events found that they have a much larger impact than expected.

“Superspreading events are likely more important than most of us had initially realized,” says senior author James Collins, a professor of medical engineering and science. If we can control them, he adds, “we have a much greater chance of getting this pandemic under control.”

For SARS-CoV-2, the “basic reproduction number” is around 3, meaning that on average, each person infected will spread it to about three others. But some don’t spread the disease to anyone, while “superspreaders” can infect dozens. Defining superspreaders as those who passed the virus to more than six others, Collins and postdoc Felix Wong identified 45 superspreading events from the current SARS-CoV-2 pandemic and 15 events from the 2003 SARS-CoV outbreak, all documented in scientific journals. During most of these events, between 10 and 55 people were infected, but two from 2003 involved more than 100 people.

Given commonly used statistical distributions in which the typical patient infects three others, events in which the disease spreads to dozens of people would



be considered very unlikely. A normal distribution would resemble a bell curve with a peak around three and a rapidly tapering tail in both directions, meaning the probability of an extreme event declines exponentially as the number of infections moves farther from the average.

But by applying mathematical tools often used in the finance and insurance industries to model extreme events, the researchers found that the distribution of coronavirus transmissions has a fat tail rather than a tapering one, implying that even though superspreading events are extreme, they are still likely to occur.

While many factors may contribute to making someone a superspreader, the

researchers focused on how many people an infected person comes into contact with. They created and compared two network models, both with an average of 10 contacts per person. But one had an exponentially declining distribution of contacts, while the other had a fat tail in which some people had many contacts. In that model, many more people became infected through superspreading events. Transmission stopped, however, when people with more than 10 contacts were taken out of the network.

The findings suggest that capping gatherings at 10 could significantly reduce the number of superspreading events and lower the overall number of infections, the researchers say. —Anne Trafton



Supermassive award

An MIT alumna shares a Nobel for detecting a black hole at the center of our galaxy.

In October, astrophysicist Andrea Ghez '87 became the fourth woman to win the Nobel Prize in Physics and the 38th in the list of MIT graduates with Nobels to their names.

Ghez, a professor at UCLA, and Reinhard Genzel, a professor emeritus at UC Berkeley, share half the prize for the discovery of a supermassive black hole at the center of the Milky Way.

Using some of the world's largest and most powerful telescopes, teams led by the two physicists have peered through interstellar gas and dust to study the orbits of stars at the galaxy's center, revealing that an incredibly massive yet unseen object appears to be pulling on the stars and flinging them around at enormous speeds.

"What Andrea Ghez and Reinhard Genzel did was one of the coolest things ever—revealing stars in the center of our galaxy orbiting a black hole too small to see

with a telescope," says Peter Fisher, head of MIT's Department of Physics.

"Indeed, we now have understood that these behemoths live at the center of most galaxies," says Nergis Mavalvala, PhD '97, a professor of astrophysics and dean of MIT's School of Science. "All of her career, Andrea has been an awe-inspiring scientist and educator, and a role model for women and girls."

The other half of the prize was awarded to Roger Penrose, professor emeritus of mathematics at Oxford University, for using ingenious mathematical models to prove that black holes are a direct consequence of Albert Einstein's general theory of relativity, even though Einstein himself did not believe they could exist.

"I hope I can inspire other young women into the field," Ghez said at a press conference. "It's a field that has so many pleasures, and if you are passionate about the science, there's so much that can be done." —**Jennifer Chu**

Life on Venus?

Our neighbor's atmosphere harbors evidence of a gas associated with living things.

The search for extraterrestrial life has largely focused on Mars, but scientists at MIT, Cardiff University, and elsewhere reported surprising findings in September of what may be signs of life in the clouds of Venus.

While Venus is similar to Earth in size, mass, and rocky composition, its surface temperatures reach 900 °F, and its atmosphere is suffused with thick clouds of sulfuric acid billions of times more acidic than any environment on Earth.

There is, however, a narrow band 48 to 60 kilometers above the surface where temperatures range from 30 to 200 °F. In this temperate region the astronomers detected a pattern of light associated with phosphine, a stinky, poisonous gas that MIT astronomers have shown cannot be produced on rocky planets by any means other than living organisms. The team used computer models to explore all other mechanisms that might produce phosphine in Venus's harsh environment and came up empty.

If there is indeed life on Venus, the researchers say, it is some "aerial" form that exists only in this band of clouds. "A long time ago, Venus is thought to have had oceans, and was probably habitable like Earth," says coauthor Clara Sousa-Silva, a former research scientist in the Department of Earth, Atmospheric, and Planetary Sciences. "As Venus became less hospitable, life would have had to adapt, and they could now be in this narrow envelope of the atmosphere where they can still survive." —**Jennifer Chu**

Cooking without fire

New evidence suggests ancient humans could have boiled their food in hot springs.

How did early humans prepare food before they mastered the use of fire? Research led by Earth, Atmospheric, and Planetary Sciences professor Roger Summons has raised the intriguing possibility that they took advantage of hot springs for boiling.

Studying sediments deposited around 1.7 million years ago near Olduvai Gorge in Tanzania, where anthropologists have discovered many hominid fossils and stone tools, lead author Ainara Sistiaga, a postdoc at MIT and the University of Copenhagen, and colleagues were surprised to find lipids produced by bacteria that thrive only in waters such as the hot springs of Yellowstone National Park.

The signature of these heat-loving bacteria in the sediments suggests that similar springs existed near those sites



Ainara Sistiaga collects samples at Olduvai Gorge.

when early humans lived there. “As far as we can tell, this is the first time researchers have put forth concrete evidence for the possibility that people were using hydrothermal environments as a resource, where animals would’ve been gathering, and where the potential to cook was available,” says Summons.

Though it’s not known how or even whether these human ancestors would

have used the springs for cooking, they could have butchered animals and dipped the meat in the hot water, and they could also have boiled roots and tubers. They might even have fished out animals that met their demise by falling in.

“If there was a wildebeest that fell into the water and was cooked,” Sistiaga says, “why wouldn’t you eat it?”

—Jennifer Chu

One-shot flu shot

By targeting a different part of the viral protein, a new type of vaccine could protect against influenza year after year.

Each year, the flu vaccine has to be redesigned to account for new mutations.

Researchers at MIT and the Ragon Institute of MIT, Mass. General, and Harvard are hoping for a better way.

The problem is that while the vaccine prompts production of antibodies against the flu virus, those antibodies tend to target a viral protein segment that is especially prone to mutation. If the antibodies could bind to the stable protein “stem” instead of its changeable “head,” they could protect

against any flu strain, and people wouldn’t need to get new shots year after year.

The researchers, led by Arup K. Chakraborty of MIT and Daniel Lingwood of the Ragon Institute, used computational modeling to explore why the immune system focuses on the protein head and whether it can be “trained” to target the stem instead. The result of their work is a vaccine made of nanoparticles coated with flu proteins that do just that. In studies of mice with humanized immune systems, the researchers

showed that their vaccine elicits an antibody response to the protein stem, raising possibilities that could finally end the arms race between vaccine designers and the ever-changing virus.

“The reason we’re excited about this work,” says Chakraborty, “is that it is a small step toward developing a flu shot that you just take once, or a few times, and the resulting antibody response is likely to protect against seasonal flu strains and pandemic strains as well.” —Anne Trafton

What happens when the internet of things converges with the speed of 5G and the reasoning of artificial intelligence?

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Solving the social dilemma

When is the last time you checked Twitter, Facebook, or Instagram? Last night? Before breakfast? Five minutes ago?

If you do have a social-media habit, of course, you are not alone: about 3.5 billion people are active participants. Globally, during a typical day, people post 500 million tweets, share over 10 billion pieces of Facebook content, and watch over a billion hours of YouTube video. Since our brains are wired to process social information, it's hardly surprising this technology has grown so popular so fast. But as most people are also aware, it has a dark side.

"Social media disrupts our elections, our economy, and our health," says Sloan professor Sinan Aral. In *The Hype Machine* (Penguin Random House, 2020, \$28), Aral details why social-media platforms have become so successful yet so problematic.

"This machine exists in every facet of our lives," Aral says. "What do we do? How do we achieve the promise of this machine and avoid the peril? We're at a crossroads."

Aral, who has been studying social networking for 20 years, was part of the team behind a 2018 study showing that false news stories shared on Twitter were 70% more likely to be retweeted than true ones. Why? Most likely because false news has greater novelty value and provokes stronger reactions—especially disgust and surprise.

And such responses are precisely what bring in audiences and revenue. "The business models that run the social-media industrial complex have a lot to do with the

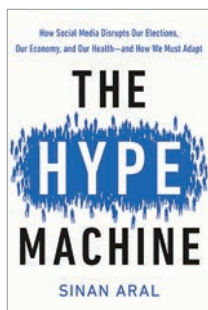
outcomes we're seeing," Aral says. "It's an attention economy, and businesses want you engaged. How do they get engagement? Well, they give you little dopamine hits, and ... get you riled up."

The political implications are sobering. During the 2016 US presidential campaign, Russia spread false information to at least 126 million people on Facebook and another 20 million on Instagram. "I think we need to be a lot more vigilant than we are," says Aral.

To that end, he favors automated and user-generated labeling of false news, and measures to minimize the ad revenue that content creators can collect from misinformation. He believes federal privacy measures are potentially useful and calls for data portability and interoperability, so consumers "could freely switch from one network to another." He does not endorse breaking up Facebook, suggesting instead that the social-media economy needs structural reform.

But without change, he adds, Facebook and the others risk civic backlash. "If you get me angry and riled up, I might click more in the short term, but I might also grow really tired and annoyed by how this is making my life miserable, and I might turn you off entirely," he says. But bad outcomes are not inevitable—for the companies or for society.

"Technology is what we make it," he says, "and we are abdicating our responsibility to steer technology toward good and away from bad. That is the path I try to illuminate in this book." —Peter Dizikes



Sloan professor Sinan Aral tries to figure out how to keep social media from ruining our world.

Recent books from the MIT community

Make It Clear: Speak and Write to Persuade and Inform

By the late Patrick Henry Winston '65, SM '67, PhD '70, former director of the MIT AI Lab and later the Ford Professor of Artificial Intelligence and Computer Science, with a foreword by Gill Pratt '83, SM '87, PhD '90
MIT PRESS, 2020, \$34.95

Geospatial Intelligence: Origins and Evolution

By Robert M. Clark '59
GEORGETOWN UNIVERSITY PRESS, 2020, \$149.95

Scientific Journeys: A Physicist Explores the Culture, History, and Personalities of Science

By H. Frederick Dylla '70, SM '71, PhD '75
SPRINGER, 2020, \$27.99

The Career Toolkit: Essential Skills for Success That No One Taught You

By Mark A. Herschberg '95, MEng '97, '05, a founding mentor of UPOP
COGNOSCO MEDIA, 2021, \$28.95

Local Estimation from the Ground Up

By Sivan Toledo, PhD '95
SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS, 2020, \$67

Entitled: How Male Privilege Hurts Women

By Kate Manne, PhD '11
CROWN, 2020, \$27

Apollo Memories

By W. David Carrier '65, SM '66, ScD '69; foreword by Apollo 17 astronaut Harrison H. Schmitt
CG PUBLISHING/APOGEE BOOKS, 2020, \$26.95

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A final fall on campus

October 12, 2020—Today I ate lunch outside in Cambridge with three of my friends, all fellow Course 16 seniors. I've eaten countless lunches with them before: burritos in the Unified lounge, grain bowls at every picnic table in Kendall Square, sushi in the Stud, Chinese food in the lobby of the Koch building. This time was a little different. We were able to eat together on this particular fall afternoon because we'd all tested negative for covid-19 twice this week. We wore masks, ordered takeout using an app, and sat six feet apart outside as we sipped our ciders and ate our sandwiches.

The Class of 2021 was given just 12 weeks in the dorms, stretching from the end of August to mid-November. Twelve weeks is all I need. I spent all spring and all summer 3,000 miles from MIT, attending virtual classes from my parents' basement in Seattle. After long and eye-melting days of video lectures and online p-sets, I would finally close Zoom and immediately open FaceTime to talk to a pixelated version of my girlfriend, our conversation flickering in and out with my overburdened internet connection. Some days, I wouldn't close Zoom at all; I would leave one meeting and join another, a painstakingly scheduled group video call for friends living in four different time zones. Despite frequent walks and bike rides outside with my family, I felt like a brain in a jar, a mind without

a body, living a life mediated through my 13-inch laptop screen.

When weeks quarantining at home with my parents and younger brothers stretched into months, all I wanted was one last chance to see my friends in person, to say goodbye from six feet apart before we graduated and scattered across the country and the world for good. My time on campus this year may be short, but I'm incredibly glad that I got my chance. Moreover, the limits on this time have given me a strong sense of clarity—I can't turn down an invitation to lunch when there are so few lunches left.

This fall, after spending one week in quarantine at the start of the semester, MIT allowed me to see a small group of five friends, called my "pod," without physical distancing. As long as our dorm isn't on a "pod pause for public health," we can hang out in each other's rooms without masks, and we can ride in each other's cars. Hungry for contact with people my own age, I do almost everything with my pod, a group of friends I used to live with in MacGregor. We moved to Simmons together this fall, intent on getting bigger dorm rooms with extra desks for our take-home lab kits. We eat, we play endless rounds of Guitar Hero, we argue over the merits of various 2.009 project ideas, we watch *The Boys* and dissect its juxtaposition of political allegory with epic, gory, unsubtle battle scenes, and we do it all together. Beyond my pod, I can p-set with my friends outdoors on a terrace, and it's a major upgrade over our usual p-set Zooms. I can see my girlfriend, who

None of us expected our last semester at MIT to be like this. But it was good to be together again.

By Alex Meredith '21

recently graduated from MIT and lives in Somerville, for picnics in a local park; we have to sit on separate picnic blankets, but six feet is nothing compared to 3,000 miles.

On Monday mornings, before my virtual 9:30 a.m. class, I walk to the Z Center with two friends to get tested for covid before breakfast. We're all on a mandatory meal plan now, and we're all on a mandatory biweekly covid testing plan. We get our nostrils swabbed, and then we get takeout oatmeal and eggs from the Student Center, where our weekday breakfasts and lunches are served, and we eat outside in the

Podmates Ben Koenig '21, Ellery Rajagopal '21, Rolando Rodarte '21, and Alex Meredith '21 on the 7th-floor terrace at Simmons Hall.





Alex Meredith '21 (center) on a hike in the White Mountains with podmates Ellery Rajagopal '21 (left) and Ben Koenig '21.

A group of senior friends take advantage of being on campus in the fall to go kayaking on the Charles.



morning sun. This feels normal, and my months at home in quarantine feel fake.

Sometimes, cycling through video lectures, in-person recitations, covid tests, weekly Zoom calls with my rowing team, and pod hangouts, I forget that I can't stay at this new and different MIT forever. An N95 mask sits on my shelf as a reminder of my plane ride home in November. My mom biked six miles to pick it up from one of her friends, and showed me YouTube videos demonstrating how to find the proper seal. She helped me fit another N95 to my face in August outside the airport, but I'll have to seal my mask myself for the flight home.

In November, when I carefully don my N95, I will board my third flight home to Seattle in 2020. I flew back in January after my rowing team's training trip to Florida, got my wisdom teeth out, and spent most of IAP on my parents' couch, drinking smoothies and watching the HBO mini-series *Chernobyl* with my dad. I thought that would be my last long stay at home during college, or possibly ever. Barely

six weeks later, I was clutching a precious container of Clorox wipes while boarding a plane out of a deserted Logan Airport. I was home again by Pi Day.

When we got word this summer that seniors could return to MIT for the fall, I initially jumped at the chance, but my resolve to return faded as the summer went on, eroded by waves of pandemic anxiety. I worried about outbreaks in the dorms, inedible quarantine food, deep social isolation, the cost of on-campus housing when I would be taking mostly virtual classes, the prospect of being expelled for forgetting to fill out my daily health attestation. And if I contracted covid, I risked infecting my family and every single person on my flight home.

But in a pandemic, there's no community without trust. Terrified as I was, I trusted MIT enough to come back. And in return, MIT trusts me to get my biweekly covid tests, maintain physical distancing with everyone outside my pod, and follow the ever-changing rules of life on campus. It's a tenuous trust, easily broken by one

bad apple, one off-campus party that turns into a superspreading event. But I've chosen to trust my fellow MIT students; I am responsible for protecting my classmates' lives, and I trust them to protect mine.

The Class of 2021 won't get Senior Nights or Senior Ball or, without a vaccine, an in-person graduation. Instead, we get MIT-branded masks and a deep sense of mutual trust and camaraderie. It's strange to have a fall semester without morning rowing practices or in-person lectures or any gatherings at all of more than 10 people. But I'm glad I'm here on campus with my classmates as I navigate this new reality. I'm grateful for these 12 weeks of hikes with my pod, outdoor movies with my Simmons floormates, and lunches with my friends—12 weeks to make some memories and say our goodbyes before we slip into the uncertain future. ■

Alex Meredith '21, an aero-astro major, will finish her MIT undergraduate degree online before returning to Cambridge for grad school next fall.

First-year fall, off campus

With only seniors and grad students on campus, we first-years began our MIT careers over Zoom in our hometowns. Or in my case, in an apartment just off campus.

By Amber Velez '24

October 9, 2020—My physics professor spilled his coffee today. A few comments popped up in the chat—*Apparently today's topic is fluid dynamics, kids*—and the professor was smiling. I was smiling, too, but nobody knew; in a Zoom class of 30 students, there's no nodding to a friend across the room. It was a nice moment, but it hurt, because after five grueling weeks of class there would have been camaraderie in person. There is some community now, in jokes on the Zoom chat, but you have to focus to see it. We're navigating this online adventure together, but sometimes it feels like going it alone.

I'm living off campus in Cambridge, in a third-story apartment with rust stains in the bathtub, furnished with sofas we found on the street. My roommates are also MIT first-years.

Many MIT students are studying from home, but I'd just spent a gap year in different parts of the world, and I didn't think I'd grow if I stayed in my parents' house. I couldn't be on campus, but I could at least be in Cambridge. It turns out many first-years felt the same way.

My roommates and I found each other back in August. Campus Preview Weekend took place virtually this year, and when it was announced in July that only seniors would be invited to campus in the fall, first-years who'd met online in April started to post about finding housing. Someone

made a group text about it on GroupMe, and the GroupMe groups multiplied to connect people seeking giant expensive Airbnbs in the outskirts of Boston, renting retreat cabins in Utah, and taking rooms on Memorial Drive. I found two roommates and a cheap, spacious apartment, but the apartment turned out to be a scam.

I embarked on a second, more frantic round of apartment searching and roommate seeking. It seemed impossible to find an apartment that was affordable, close to campus, open to a four-month lease, willing to rent to 19-year-olds, and—importantly—real. Making that happen was harder than any test I've taken, more stressful than backpacking through Europe alone. But we did it, and I've come from Tucson, Arizona, to carve out a place with first-years from San Diego, New York, and Miami. We're trying to make it feel like MIT.

At any given moment, somebody is studying. Some of our classes overlap, and we help each other with p-sets, commiserate and complain, and celebrate when someone does well. We've patched together a little lifeboat in this vast sea of students, spread over the world.

And just as we hunted for furniture on the street, we're scavenging for pieces of the college experience: all of us convening in the kitchen at midnight, eating bread with olive oil because we're stressed. We're tuning in to politics, cooking for each other, asking about the meaning of life at 2 a.m. and again at noon. One of my roommates had never tried that MIT staple, boba tea. Now, thanks to the rest of us, she's hooked on it.

Maybe it's MIT culture or maybe it's Zoom, but the worries of high school are gone—no one cares if you dress fashionably, or even change out of pajamas. There is less of a clamor to dominate the discussion, and the Zoom chat is always full of questions. People try to look smart, sometimes, but we're outgrowing it; no one tries to make anyone feel stupid. I can mess up derivatives and still be treated as intelligent.

So college is inviting, but it's also lonely. In breakout rooms and study sessions, I've heard a dozen people say, "It's just so hard to make friends." By the time classes are out and meetings are over,

Amber Velez '24 masks up when venturing out in Cambridge.



Roommates Amber Velez, Alexandra Sherman, and Monserrate Garzon Navarro work on p-sets in their apartment on a couch they found on the street.

our eyes are sore from looking at a computer screen, and we miss the company of warm breathing bodies. I'm longing for the opportunity to pass acquaintances in the hall.

I think I'm feeling college feelings. The vibe that the entire class understands everything and you alone are lost is stronger, because you can't read confusion in fuzzy Zoom thumbnails. So too is the sense that everyone but you is connected to communities you somehow haven't found.

But I'm also feeling the uniquely MIT vibe of everyone driving toward a dozen goals at once. I'm working on a fantasy novel, training for a marathon, researching with an environmental group, and blogging for Admissions, and all my classmates are just as busy. I've picked up MIT lingo, and I can say I'm not completely hosed. I love the rush of puzzling out a problem, and the spark of understanding as my GIR classes revisit topics from high school that I'd memorized by rote but hadn't really understood. I'm learning from professors with passion for their topic. I'm finally taking classes that I care about.

Nearly every day, I run by MIT. Somehow, a campus I once thought hideous has become beautiful to me. In my longing for the college experience, in all



its stressful late-night glory, what once looked like ugly dorm buildings and sterile labs seem lovely. The pavement is solid underfoot, the steps at 77 Mass Ave mere feet away, yet I can't go inside, so the whole place feels like a dream. Like a story I've been telling myself for a long, long time.

Very soon now, we'll be there. As I write this in October, spring on campus

is a possibility for juniors, sophomores, and first-years.

Until then, we're wandering through limbo, and it's dark. We glimpse faces every now and then, hold our work up to the laptop camera while we collaborate on p-sets. We're thousands of miles apart as we explain to each other the physics of traveling light waves.

So I'm riding out this storm in the lifeboat of my living group. Tonight, I have a pint of ice cream to consume and half a physics p-set to complete. And when I wake up tomorrow, I will cross off one more day. ■

We've patched together a little lifeboat in this vast sea of students, spread over the world. And just as we hunted for furniture on the street, we're scavenging for pieces of the college experience.

Amber Velez '24 plans to learn to fire-spin and join too many clubs as soon as she's allowed to move on campus.



My satellite would fit in a small suitcase. But it could help us find other worlds.

BY
Sara Seager

PORTRAIT BY
Webb Chappell

Sara Seager has thought long and hard about the math: the odds that Earth harbors the only life in the universe are almost impossible. “The greatest discovery astronomers could possibly make is that we’re not alone,” writes the MIT astrophysicist in her new memoir *The Smallest Lights in the Universe*. “Humanity has searched the heavens for a reflection of ourselves for centuries; to see

Sara Seager with a telescope in her yard, awaiting the darkness of the night sky.

someone or something else, inhabiting another Earth—that’s the dream.”

A pioneer in the search for exoplanets, or planets orbiting other stars, she came up with the now-standard practice of studying the atmospheres of planets by analyzing the light that filters through them. Seager, who won a MacArthur Foundation “genius” grant, is the Class of 1941 Professor of Planetary Science and has appointments in the Departments of Physics and Aeronautics and Astronautics as well. She

was also the deputy science director of the MIT-led NASA Explorer mission TESS (transiting exoplanet survey satellite) from 2016 to 2020, and a lead for Starshade Rendezvous, a feasibility study for a space-based mission to find and characterize Earth-like exoplanets. In her memoir, she shares her personal story of finding herself widowed at 40, a suddenly single mother of two young sons, while she explains the science of her search for other worlds.

This excerpt, drawn from different sections of her

book, chronicles her work to develop ASTERIA. A satellite the size of a small suitcase, ASTERIA was designed to demonstrate the technology needed for a tiny telescope to search for exoplanets by detecting the minuscule dip in a star’s light when an orbiting planet passes in front of it. Seager initiated and developed ASTERIA at MIT, and later served as principal investigator while it was built and operated by the Jet Propulsion Laboratory from November 2017 until December 2019.

**SEARCHING
FOR
SHADOWS
TO
FIND
OTHER WORLDS**

At its essence, astrophysics is the study of light. We know that there are stars other than the sun because we can see them shining. But light doesn't just illuminate. Light pollutes. Light blinds. Little lights—exoplanets—have forever been washed out by the bigger lights of their stars, the way those stars are washed out by our sun. To find another Earth, we'd have to find the smallest lights in the universe.

If, for the moment at least, astronomers couldn't fight the brightness of stars, maybe we could use their power to our advantage. Bodies in transit sometimes align. If we were lucky, a planet might pass between us and its star, creating something like a miniature eclipse. The moon looks giant when it blocks out the sun. The Transit Technique, as it would come to be called, applied the same principle to exoplanets. We would find them not by the light they emitted, but by the light they spoiled. Nothing stands out like a black spot.

In the fall of 1999, while I was a postdoctoral fellow at the Institute for Advanced Study in Princeton, the first transit of a known planet—HD 209458b, a “hot Jupiter”—was announced. It was absolutely fantastic news, in part because the discovery erased the last shred of doubt that exoplanets exist.

**STUDYING
STARLIGHT
FOR
SIGNS
OF
LIFE**

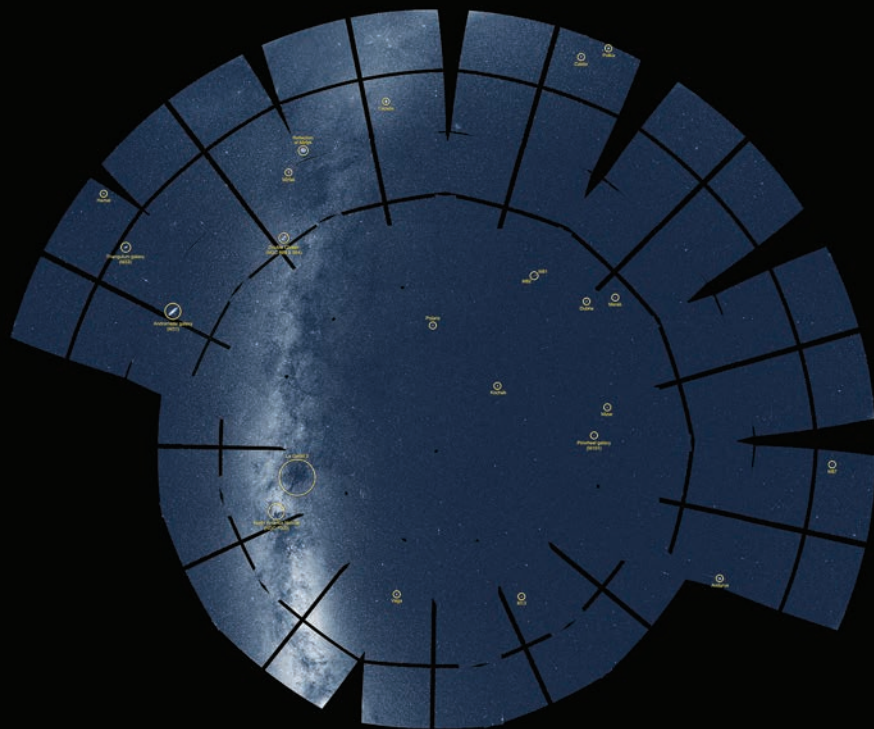
I had been turning over an idea—a genuinely original one—and the successful use of the Transit Technique gave it a greater urgency. A lot of science, especially pioneering science, relies on intuition. I didn't have any evidence that my idea would work. But I was doubtless. I had realized that the technique might help reveal something more than the black silhouette of a planet. Immediately around that tiny partial eclipse, the same starlight that was being blocked by an exoplanet would pass through its atmosphere. The starlight would reach us, but not the way regular starlight reaches us. It would be filtered, like water running through a screen, or a flashlight's beam struggling through a fog. If you look at a rainbow from a distance, its many colors form a perfect union. But if you look at a rainbow more closely, using an instrument called a spectrograph, you can see gaps in the light, minuscule breaks in each wavelength like missing teeth. Gases in the solar atmosphere and Earth's own thin envelope interrupt the transmission of sunlight, the way power lines cause static in a radio signal. Certain gases interfere in telltale ways. One gas might take a bite out of indigo, while another gas might have an appetite for yellow or blue. Why couldn't we use a spectrograph to look at the starlight passing through a transiting exoplanet's atmosphere? That

Why couldn't we use a spectrograph to look at the starlight passing through a transiting exoplanet's atmosphere? That way we could determine what sorts of gases surround that exoplanet.

way we could determine what sorts of gases surround that exoplanet. We already knew that large amounts of certain gases are likely to exist only in the presence of life. We call them biosignature gases. Oxygen is one; methane is another. We could start with hot Jupiters, the planets we already know, and their more easily detectable atmospheres. Like a skunk's spray, their traces of sodium and potassium would stand out amid the company of less potent atoms. I kept my idea to myself, because I knew it was great—I was the first to see the potential of the Transit Technique for studying atmospheres—and I knew, too, that great ideas get stolen. Dimitar Sasselov, my former PhD supervisor, was the only person I told about my theory, and he offered to help me bring it closer to practice. When we had worked out the details, I published a paper extolling what Dimitar and I called “transit transmission spectra”—reading the gaps in rainbows.

My paper received considerable attention. NASA was accepting proposals to use the Hubble Space Telescope; within a few months of publication, one team cited my work and won the rights to study the light that passed through the atmosphere of a transiting hot Jupiter. I was furious not to be included on that team, which chose an older male scientist over me.

Within two years, their work revealed the first exoplanet atmosphere. It didn't surround another Earth, but my premise had worked. We had seen our first alien sky.



This panorama of the northern sky captured by TESS includes an edgewise view of the Milky Way.

SPYING ON STARS WITH TINY SATELLITES

One of the great hurdles in looking for exoplanets is the time it takes to find them. The nearest and brightest sun-like stars are scattered all over the sky, which means that no telescope can take in more than a few at a time. But it's prohibitively expensive, as well as nonsensical, to use something like Hubble or Spitzer to stare at a single star system waiting, hoping, to see the shadows of planets we're not sure exist. Properly mapping a star system might take years.

I had been trying to make a long-term plan to find another Earth when I learned about what the community had taken to calling cubesats—tiny satellites designed to a standard

form, which supposedly made them cheaper and easier to build and deliver into space. What if I made a constellation of cubesats, each assigned to look at only one star? I dreamed of space telescopes the size of a loaf of bread—not one, but an army, fanning out into orbit like so many advance scouts. Each could settle in and monitor its assigned sun-like star for however long I needed it to; each could be dedicated to learning everything possible about one single light. Hubble, Spitzer, Kepler—they each saw hugely. Maybe now we needed dozens or hundreds of narrower gazes, using the Transit Technique as the principal method of discovery. Cubesats wouldn't see what larger space telescopes could see, but they would never need to blink.

I talked to David Miller, a colleague and engineering professor who was in charge of what would become one of

my favorite classes: a design-and-build class for fourth-year undergraduates. It was revolutionary when it started, because it was so project-based; after a few introductory lectures, the students dived into the challenges of making an actual satellite. I asked David whether I could use his class to incubate my cubesat idea.

He was enthusiastic from the start. Maybe the best thing about MIT is that no matter how crazy your idea, nobody says it's not going to work until it's proved unworkable. And squeezing a space telescope inside something as small as a cubesat was a pretty crazy idea. The main challenge would be in making something small that was still stable enough to gather clear data—a tall order because smaller satellites, like smaller anything, get pushed around in space more easily than larger objects. To take precise brightness measurements

of a star, we would need to be able to keep its center of brightness fixed to the same tiny fraction of a pixel, far finer than the width of a human hair. We would have to make something that was a hundred times better than anything that currently existed in the cubesat's mass class. Imagine making a car engine that runs a hundred times better than today's best car engine.

"Let's do it," David said.

STATISTICS AND SPACE HARDWARE

Cubesats are much cheaper than regular satellites, because they're smaller and easier to launch; they take up a lot less room in the hold of a rocket, and it costs \$10,000 to send a pound of anything into space. Unfortunately, their cheap manufacture makes them prone to failure. Many of them never work. We use the same hopeless term for them that doctors use for patients they never got the chance to save: "DOA."

One of our first hurdles, then, was a problem of statistics. (Every problem is a problem of statistics.) To make the cloud of cubesats that would come to be called ASTERIA, we had to figure out how many satellites we would need to give us a reasonable chance of finding another Earth-size planet. Thousands of bright, sun-like stars were worth monitoring, but we wouldn't be able to build and manage thousands of satellites. We also

knew that given the ephemeral nature of transits, the odds of an Earth-size planet transiting a sun-like star were only about 1 in 200. Some of our satellites would also no doubt fail or be lost. If we sent up only a few, we would have to be either very strategic or very lucky to find what we were looking for. There was some optimal number of satellites that, combined with a smart list of target stars, would keep our budget reasonable but still give us a good chance of success.

I was lucky to have a great group of graduate students and postdocs who I leaned on when my husband, Mike, got sick. I set one to work on ASTERIA's optics, another on precision pointing, a third on communications. With their help, I'd made progress toward a prototype for my tiny satellites, inventing and testing precision-pointing hardware and software, and perfecting the design of the onboard telescope and its protective baffle. I worked hard to clear the rest of the path for ASTERIA to become real. After we'd laid the groundwork in the design-and-build class, my students and I were joined in our efforts by Draper Laboratory in Cambridge, where researchers work on things like missile guidance systems and submarine navigation. They also do a lot of work on space hardware. We had meetings every week, trying to solve the problems of small telescopes. We could build small enough components, and we could deploy the satellite and tell it what to do, but we still couldn't figure out how to keep it as stable as we needed it to be. While we tried to solve that issue, I used

my ongoing research on biosignature gases to determine what types of exoplanets deserved our focus. I thought we might be able to explore a hundred star systems or so in my lifetime; they had to be the right ones.

A TEST IN THE DESERT

Night fell, desert-hard and blacker than black as we huddled together on a big patch of concrete at an old missile site in the middle of New Mexico to test out a new component for ASTERIA. I was more and more certain of its value. It wasn't Hubble or Spitzer or Kepler, and it might never be something so magnificent. But not every painting should or could be *Starry Night*. There is room in the universe

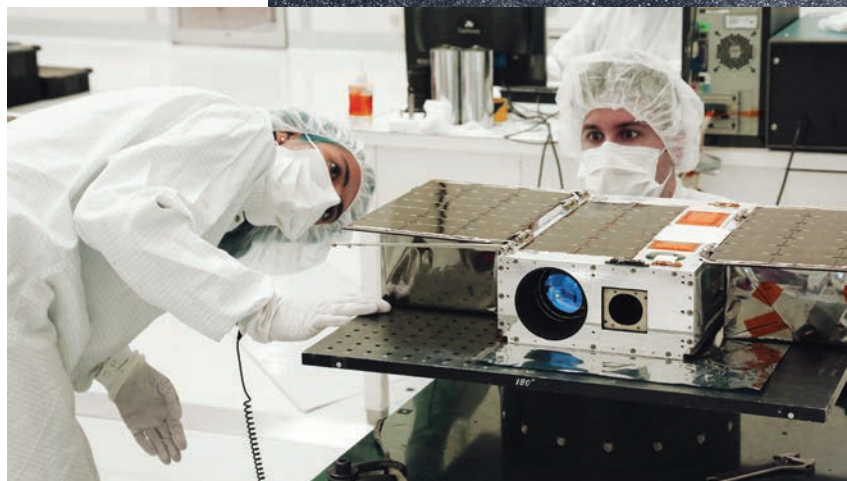
for smaller work, a different kind of art. Kepler might find thousands of new worlds, but it wouldn't reveal enough of any single one of them for us to know whether it was somebody's home. It was sweeping its eye across star fields that were too far away for astronomers to make anything more than assumptions about places like Kepler-22b.

But if I could just make ASTERIA work, and then find a way to send up a fleet of satellites, it would combine the best outcomes of NASA's Kepler space telescope, capable of finding smaller planets around sun-like stars, and the nascent TESS, with its more proximate search and sensitivity to red dwarf stars.

My team built a prototype for a possible camera, one that was promisingly stable and could operate at a warmer temperature than the detectors used in most satellites. (Most

have to be cooled, which taxes the machine.) I just wasn't sure that it would see what we needed it to see. I had a particularly bright and enthusiastic grad student at the time, named Mary Knapp; she had been an undergraduate in the first design-and-build class I taught. She encouraged us to test the camera outside, using it to look at real stars. Mary proposed the deserts of New Mexico as our proving ground. That April, there would be a new moon, casting the already clear desert sky an even pitcher black. That new moon also coincided with school break for my sons, Max and Alex, which meant that I could take them along. As much as I wanted to see the stars, I wanted to see them, too.

I had asked a local club of amateur astronomers where the best place to test our camera might be. That night they invited us to their star-viewing party, a celebration of the new



Engineers test ASTERIA before its 2017 launch.

moon. We arrived at dusk at the old missile site. I looked up at the stars and felt my childlike wonder return. I think the boys felt it too.

We set up the camera. We would have to wait until we were back at MIT to analyze our data, but our new type of detector, one not yet used for astronomy, seemed to do the trick. We knew at least that our experiment wasn't a total failure.

A LONG-AWAITED LAUNCH

In August 2017, after years of work and hope and effort, SpaceX prepared to launch a Falcon 9 rocket into space. The rocket didn't have a crew, but ASTERIA was on board.

It had been a difficult journey. The camera had made its way from my imagination to our design-and-build class, through drawings and prototypes and an old missile site in New Mexico. Then we'd run out of money at MIT, and Draper Laboratory had liked the technology better for other things. The Jet Propulsion Laboratory, which had always been interested in the possibilities of cubesats and ASTERIA in particular, picked up where MIT and Draper left off. Three MIT graduates there would play leading roles on the project; they took their work seriously, having seen firsthand how much it mattered. Their passion and expertise made sure that ASTERIA would become everything it could be, that it was built right and lovingly placed, at last, into the hold of a rocket, groaning on the launchpad on a beautiful late-summer day. The rocket

would slice into the sky and rendezvous with the International Space Station. The astronauts there would set our little satellite free later in the fall. From a whisper in my dreams to space: I couldn't believe that we were nearing the end of such a long reckoning.

I had planned on going to the ASTERIA launch, but it was delayed just long enough for travel and child-care plans to fall through. On the day of the launch, I took the train into Cambridge instead, walked to the Green Building, and took the elevator to my floor. I walked past the travel posters for distant worlds into my office, shut the door, and called up the online video stream. The launch was a big deal; all over the world, eyes were trained on that rocket, still waiting on the pad.

Every now and then I looked up from the cloudless Florida footage on my screen and out my windows, at my crystal-line view of downtown Boston. There were clear skies everywhere I looked. I spent maybe 30 minutes in the quiet, writing thank-you emails to other members of the ASTERIA team. At the last second I decided not to send them. I know that superstition is unscientific. I understand that it doesn't matter to the universe if a baseball player is wearing his lucky underwear—whether he gets a hit is mostly up to the pitcher and to him. But rockets are delicate, ill-tempered machines. Before the Russians launch rockets from the steppes of Kazakhstan into orbit, they summon an Orthodox priest to throw holy water at the boosters, his beard and cloak and the holy water carried sideways by the wind.

The engines ignited with a great big ball of pure fire. The launch tower fell away, and the rocket eased its way off the pad, gained speed, and pushed its shining shoulders toward its future orbit.

I wasn't going that far, but I wasn't going to send a couple of emails until we were safely weightless. I was surprised by how nervous I was, watching the countdown clock tick down to launch.

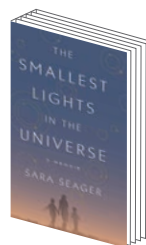
The engines ignited with a great big ball of pure fire. The launch tower fell away, and the rocket eased its way off the pad, gained speed, and pushed its shining shoulders toward its future orbit. The onboard cameras recorded its arching flight as the sky around it went from blue to purple to black. The rocket had broken through into space. The boosters were jettisoned, and the remainder of the rocket continued its climb into the deepest possible night, the Earth blue and alight behind it, an impossible blackness ahead. It would take a little while for it to catch up with the space station, which was racing its own way through orbit at 17,000 miles an hour, about five miles every second. But the rocket, and our satellite, were well on their way.

Everything brave has to start somewhere, I thought.

Do I believe in other life in the universe?

Yes, I believe.

The better question: What does our search for it say about us? It says we're curious. It says we're hopeful. It says we're capable of wonder and of wonderful things. ■



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SERIO-COMIC WAR MAP

FOR THE YEAR 1877.

BY F. W. ROSE.

nördliche Kolosz—RUSSLAND—ist repräsentirt in der Form eines wild ansehenden Octopus, dessen Kopf den nördlichen Theil des europäischen Land's einnimmt, während er mit seinen ausstreckenden Krallen sich wunderbar nach allen Richtungen ausdehnt und bereits verschiedene Länder ergriffen hat.

Die Türkei liegt hingestreckt unter ihm. Der Kopf und die Brust eines Türken umfassen die asiatische Türkei, während sein Unter-Körper in Asien darstellt. Der Bosphorus, das Marmorameer, und die Dardanellen bilden zusammen einen Gürtel an der Figur, während der lüsterne Preis, die goldene Uhr, in der Gestalt eines Krebses die Türkei im Süden.

Eine Kralle des Octopus umringt Bulgarien, die scheint die umliegenden Distrikte zu bedrohen. Eine Andere hat die Krimm umfasst, welche noch eine schlimme Wunde bei Sebastopol hat. Eine dritte Kralle hat den Fuß des Türken umfassen (Armenien); eine Vierte dehnt sich nach unten zu dem lange beneideten Gebirge Land; eine Fünfte umarmt den Schah von Persien und eine Sechste umringt Khiva und die übrigen Eroberungen in Asien. Eine siebente Kralle scheint Polen ganz erwürgt zu haben, weil die Achte, Finnland umfasst, welches bei einem Krieg das Wenige genießt was Russland ihm überlassen.

RUSSLAND ist nur von seiner Schwester, OESTERREICH, davon zurückgehalten seinen Nachbar Russland anzugreifen.

ENGLAND und SCHOTTLAND beobachten aufmerksam die Scene, letzteres bewaffnet mit Dolch und Schwert. IRLAND ist als Mönch abgebildet. Alle Länder aber scheinen ganz entschieden wenigstens die Türken goldene Uhr zu retten.



TRUTH IN

We planned an exhibition to help people interpret the onslaught of data maps and visualizations from the 2020 election season. Little did we know it would turn into a digital exhibition—or that interpreting data maps would become a life-or-death skill.

By Lauren Kennedy, MCP '18

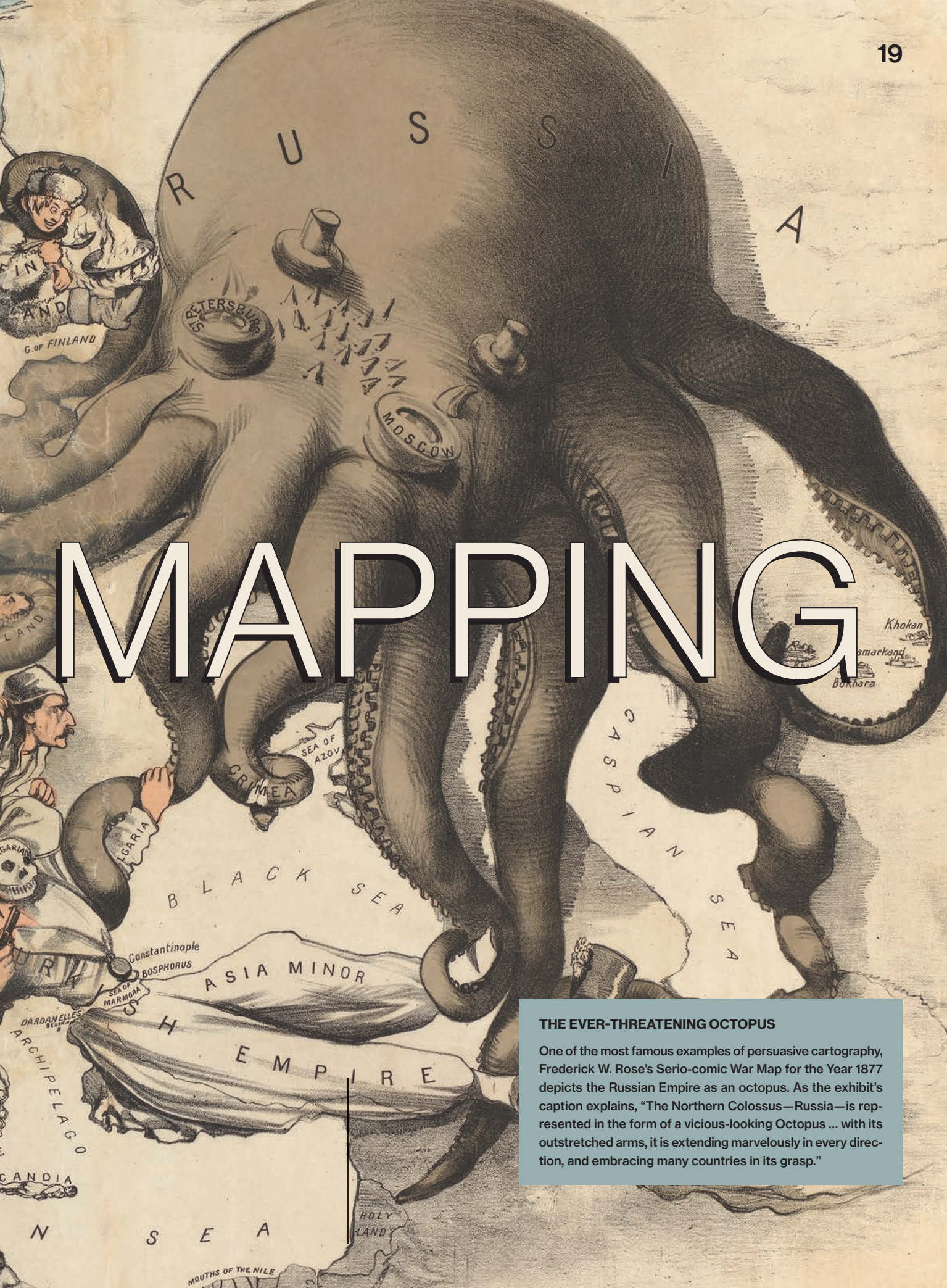
le Russia has only prevented his neighbour Russia through by his sister AUSTRIA. ITALY are eagerly watching the Turkey armed with a dagger and an indication of "Home Rule" on the brain. All three look fully determined to save at least the Turk's watch.

FRANCE is Marshal MacMahon pointing a mitrailleuse towards his neighbour.

GERMANY is represented by her Emperor, indicating her readiness for any emergency which may arise.

SPAIN is young Alfonso sleeping after his recent exertions.

ITALY is a young girl rejoicing in her newly acquired liberty. The Pope's triple crown is seen at ROME. The



THE EVER-THREATENING OCTOPUS

One of the most famous examples of persuasive cartography, Frederick W. Rose's Serio-comic War Map for the Year 1877 depicts the Russian Empire as an octopus. As the exhibit's caption explains, "The Northern Colossus—Russia—is represented in the form of a vicious-looking Octopus ... with its outstretched arms, it is extending marvelously in every direction, and embracing many countries in its grasp."

I

n the fall of 2018, shortly after I joined the exhibition team at the Boston Public Library's Norman B. Leventhal Map & Education

Center Gallery, we started brainstorming ideas for upcoming gallery shows. The team had long been planning an exhibit on persuasive maps to coincide with the 2020 election season. But as the election loomed, we rethought our approach. It appeared obvious that the election would be the top story in 2020, and that political data maps and visualizations would flood the news and social media. Yet the ease of sharing and reposting such content has made it harder to decipher what can be trusted. It seemed like a good time for an exhibition examining why we trust maps and how that trust has been abused by those in power. The exhibition we developed, titled "Bending Lines: Maps and Data from Distortion to Deception," was set to open in May 2020 and run through the beginning of 2021.

Our aim was to give viewers examples of how maps and data have been used to push specific agendas and ideas, in both the past and the present. We wanted to look at why our society implicitly believes maps and how that trust has been exploited. From a young age, children are introduced to maps for geography, topography, history, and everyday uses such as navigation or checking the weather. As a culture, we turn to maps for what feels like an objective viewpoint. It can be disconcerting to realize that all maps are made with a purpose, and that is what we wanted to explore with our exhibition.

Then the coronavirus hit. The staff at the library was sent to work from home in mid-March, eight weeks before "Bending Lines" was slated to open. After spending two more weeks preparing for an in-person gallery opening, we considered pushing the

date back. But it was becoming clear that the ability to think critically about maps, data visualizations, statistics, and their interpretation was now a life-or-death skill. In addition to trying to decipher what statistics Nate Silver was using to predict the 2020 election winner, the public suddenly needed help interpreting and understanding population and geographic units, statistics, data sources, and maps that highlighted the spread of covid-19, the current hot spots, and the threat of exposure. Rather than wait to host a physical show, we decided to release a digital-first exhibition and moved all our work online.

The exhibition begins with examples of maps designed to influence others, from innocuous advertising to persuasive cartography (maps designed to push a particular viewpoint) and outright propaganda. It then explores visualization techniques that have been used, in some cases for centuries, to support specific interpretations of geographic information. A cartographer's choice of colors, icons, and map orientation can lead viewers to see the world in very different ways.

The exhibition's final section explores the themes of power, trust, and belief. We commissioned five cartographers to create maps of Massachusetts using a curated data set provided by the map center. For this section of the show, titled "Same Data, Different Stories," we asked each cartographer to create two maps that would illustrate how the same data could be used to support different headlines.

Here's a sampling of objects from the show, which can be viewed in full at leventhalmap.org/digital-exhibitions/bending-lines/. When the Boston Public Library reopens, the exhibition will be on display at the map center. (Exhibition dates and times will be announced on the Leventhal Map and Education website.)

NUKE ROUTES

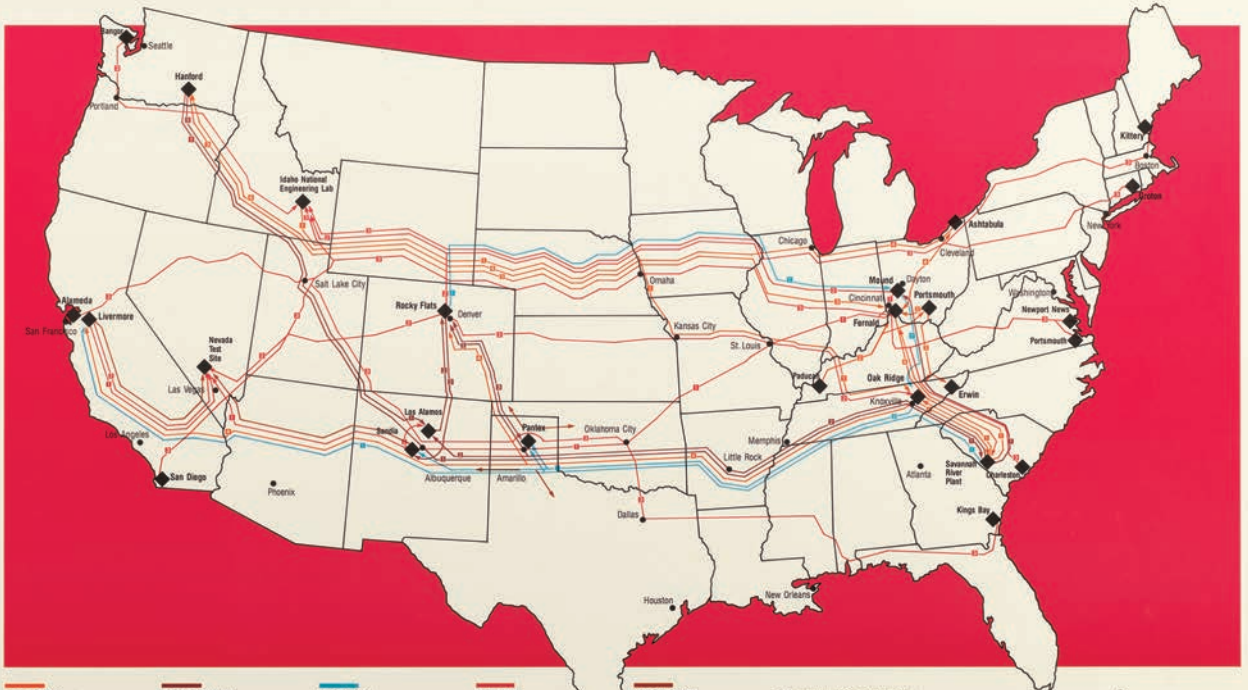
This map is from the "Why Persuade?" section of the show and was produced in 1988 by the Radioactive Waste Campaign with the goal of sounding the alarm about the danger of nuclear weapons. By visualizing the transportation routes of nuclear materials, the map seeks to portray a nationwide threat. The mapmaker borrowed the visual technique of a flow map, using route lines to show the direction of movement and color-coding them according to the type of material being transported. However, spacing out the lines gives viewers the impression that vast swaths of the country are in the path of nuclear weapon components. For example, one single route in South Carolina is outlined by nine different lines and covers more than half the state.

COUNTING UP VOTES

Since the late 19th century, mapmakers have experimented with various graphic techniques for displaying presidential election results. This map is one of the earliest and most complex attempts, published in anticipation of the 1888 election between Republican Benjamin Harrison and Democrat Grover Cleveland.

Each bar in the stacks of bars in each state represents a previous election year and is colored to show which party held the presidential majority (black for Republicans, red for Democrats). Dots convey even more information, including the party affiliations of the state senators, state representatives, and governor, as well as which party holds the majority in each state legislative body.

THE NUCLEAR WEAPONS COMPLEX TRANSPORTATION ROUTES



URANIUM

- Nitrate
Uranium, in liquid form, dissolved in nitric acid.
- Hexafluoride
Uranium, in solid form, under pressure in tanks; in gas form when heated.
- Oxide
Uranium, in solid form.
- Metal

PLUTONIUM

- Oxide
Solid plutonium, dispersible.
- Metal
Solid plutonium, can burn in air.
- Trigger
Hollow sphere of plutonium metal initiates nuclear reaction in warhead when compressed.

TRITIUM

- Tritium
Radioactive gas, heavy form of hydrogen.
- Lithium-Deuteride
Solid, mixture of lithium and deuterium, with external plutonium rod; fusion stage of warhead.

WASTE

- "Low-level" Waste
Wash and solids contaminated with tritium and fission product.
- Transuranic Waste
Wash and solids contaminated with alpha-emitting plutonium and radio-nuclides heavier than uranium.
- Irradiated Fuel Rods
From Naval and experimental reactors.

WEAPONS COMPONENTS

Plutonium trigger, with concentric spheres of beryllium, uranium, and high explosives, lithium-deuterium fusion stage, neutron generator, and arming, fusing and firing devices.

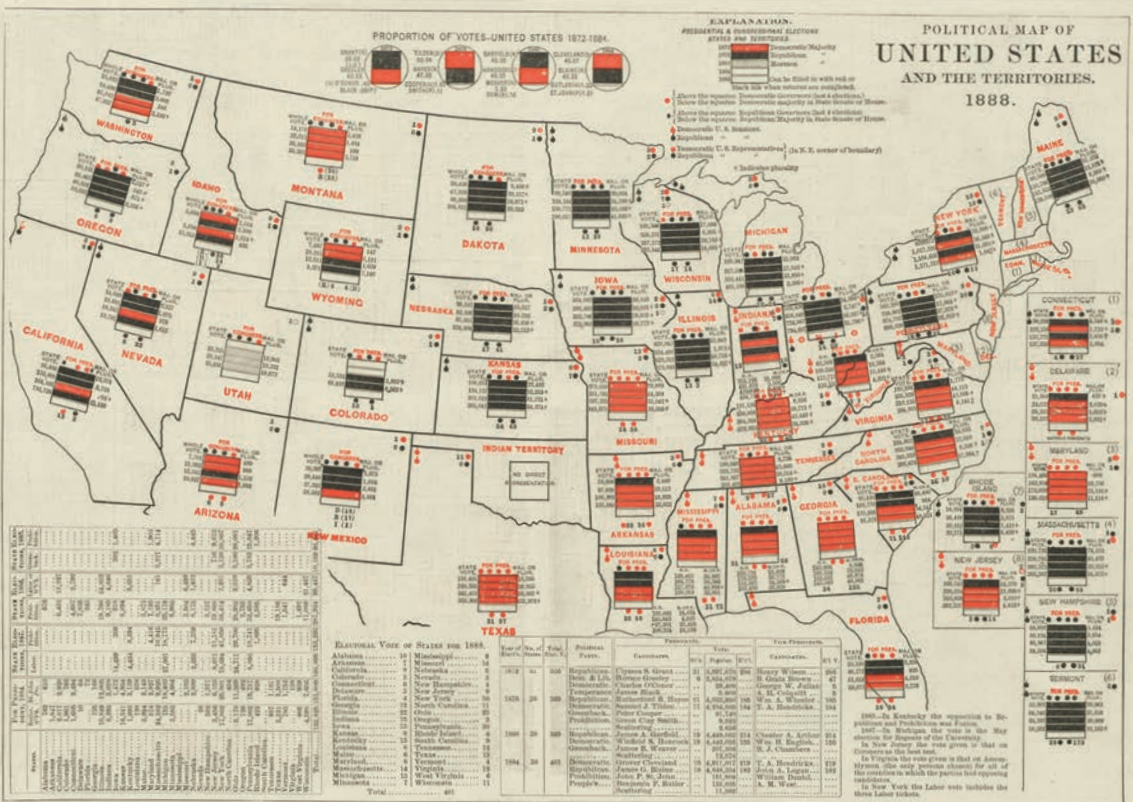
These routes represent track and air transportation of nuclear materials for the primary nuclear weapons production facilities, laboratories, and waste sites. This map does not include routes carrying nuclear weapons from factories to their storage sites, nor routes from uranium mines, mills, and conversion facilities to fuel rods, nor does the map include air and ship routes, nor pipelines to and from commercial nuclear facilities, nor transport of nuclear weapons used for commercial use. The origin and destination of these routes are not shown, however, because of government secrecy. The exact path of these routes is confidential.

© RADIOACTIVE WASTE CAMPAIGN
625 Broadway, 2nd Floor
New York, New York 10012
(212) 473-7390
Research by Marvin Resnikoff
Design by Richard Bickhart
Printed by Faculty Press, Brooklyn, NY 11218
April 1988
Supplement to *Deeds of Deeds*

NUKE ROUTES: MARVIN RESNIKOFF AND RICHARD BICKHART, "THE NUCLEAR WEAPONS COMPLEX TRANSPORTATION ROUTES" (RADIOACTIVE WASTE CAMPAIGN, 1988). COUNTING UP VOTES: THOMAS CAMPBELL-COPELAND, "POLITICAL MAP OF THE UNITED STATES AND TERRITORIES, 1888," IN HARPER'S WEEKLY (OCTOBER 6, 1888).

THE BATTLE-GROUND OF THE PRESIDENTIAL ELECTION.

See Article on Page 724.

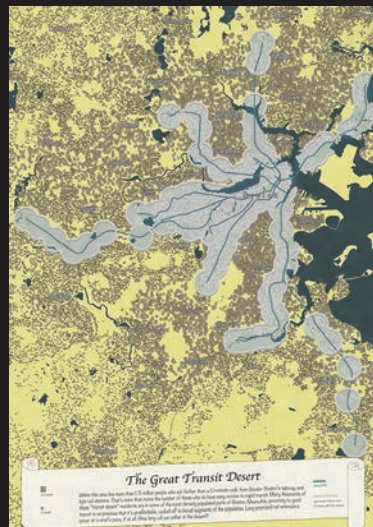
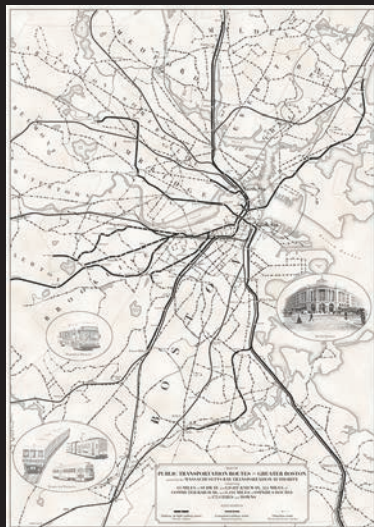




THE ROUND EARTH AS A FLAT-OUT LIE

This map provides an interesting modern tale about the role of institutions in constructing the truth. The cartographer created and patented it in 1892 to support his notion that the earth was not a sphere. Soon after the Leventhal Map & Education Center added this map to its digital repository and referenced it as a flat-earth map, in 2015, it quickly became one of the center's most-accessed online items.

For present-day believers in the flat-earth theory, the fact that this "standard" map exists in the holdings of a prestigious and historic public library is viewed as evidence of its veracity: why else would the library have a map that shows a flat earth "as it is"? Its popularity reflects a confusing combination of trust in maps and respect for institutions with a complete disregard for science and scholarship.



TWO TALES OF TRANSIT

For the "Same Data, Different Stories" section of the exhibit, cartographer Andy Woodruff created two maps of public transportation routes in Greater Boston. The map at left includes subway, light rail, and bus routes, depicting a dense and extensive public transit network in a deliberately crowded map. The other emphasizes areas lacking transit coverage by including only subway lines, adding population data, and employing a dramatic desert motif to highlight the miserable conditions far away from subway stations.

THE QUINOA EVANGELIST

*If Steve Gorad '63
had stayed on
his carefully mapped
career path,
quinoa might have
remained an obscure
grain of the Andes.*

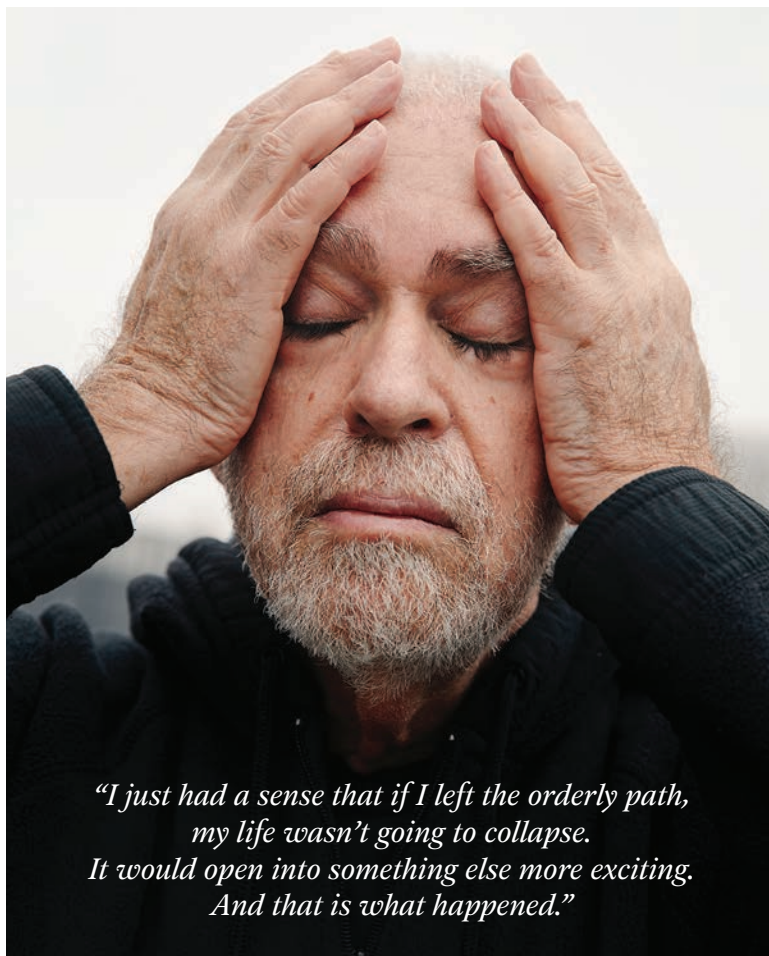
By
AMANDA SCHAFFER

Photographs by
CELESTE SLOMAN



In the early 1970s, Steve Gorad '63 had a successful career as a clinical psychologist. He was in charge of the alcohol unit at Boston State Hospital and had a private practice, but he was restless. "It wasn't enough," he says. "I was a long-haired hippie writing [draft exemption] letters for people who didn't want to go to Vietnam. I had doubts about what we really knew about psychology. I was a seeker." So when Gorad's boss at the hospital refused to give him time off to attend a 40-day spiritual workshop organized by a group called Arica, he quit. He immersed himself in Arica, turned his home in Boston's South End into a commune, and traveled throughout Latin America. "My response to most everything during those years was to say yes," he recalls.

While living in Chile, Gorad visited Bolivia. There he encountered quinoa, a grain considered peasant food in Latin America and relatively unknown elsewhere at the time. He was struck by its taste, and intrigued when told of its nutritional value. He began to study quinoa on frequent trips to the high-altitude region of Bolivia, called the Altiplano, where it's widely grown, and by reading scientific papers. He learned that quinoa plants are often resilient even in the face of drought, flooding, and frost. He learned, too, that quinoa's protein content is unusually high, ranging from 16 to 21% (compared with less than 14% for wheat and roughly 7.5% for rice). He also found that it contains all the "essential" amino acids—those that must come from food because the body can't make them on its own—in proportions close to the nutritionally ideal ratio. "This makes the quality of quinoa protein roughly equivalent to that of milk (casein) or egg (albumin), without any of the disadvantages of coming from an animal source," he has written. (Gorad credits MIT for giving him the tools to evaluate the science behind these nutritional claims. "MIT taught me the scientific method," he says. "I can't just accept claims because I'm told about them. I need to see proof, and that has served me throughout life—and certainly when it came to quinoa.")



*"I just had a sense that if I left the orderly path,
my life wasn't going to collapse.
It would open into something else more exciting.
And that is what happened."*

In the late 1970s, Gorad and two partners explored the possibility of importing quinoa into the United States. James Silver, who was the head of purchasing at Erewhon West, a natural foods company in Los Angeles, recalls hearing their pitch and realizing that quinoa's nutritional properties made it an alluring product. "Quinoa wasn't available in the US when they began this, at least not in any commercial sense. Certainly in the natural foods industry it did not exist," Silver says. When Gorad and his partners founded Quinoa Corporation, in 1983, "they were the first, and for a very long time the only, importers of quinoa in the US."

Gorad and his partners brought passion to their venture. "We were on a mission for quinoa," he says, adding that in the early days they met with shoppers at natural food markets, handed out fliers, and "served little paper cups of cooked quinoa." They sold small amounts of the grain with this approach but faced challenges in scaling up and securing a supply to import. Much of the grain available required extensive cleaning because it was "full of stones, dirt, dust, plant particles, pieces of metal, glass, unidentifiable objects, and even rodent

feces," Gorad recalls. (Eventually, Quinoa Corporation developed a relationship with the tea company Celestial Seasonings and used its industrial-scale machinery, including gravity tables, to clean the product.)

One year into the business, tragedy struck. One of Gorad's partners, David Kusack, took an afternoon off from meeting with potential suppliers to visit an archaeological site in Bolivia; while sitting on a hilltop, he was shot in the back. His death was ruled a probable botched robbery, but theories abounded: it was a case of mistaken identity, business interests were threatened by quinoa farmers banding together, the CIA was behind it, quinoa was cursed. Whatever the cause, Gorad was devastated. "That almost stopped the project," he says.

Quinoa Corporation persisted but continued to face turmoil. For a time, the company worked with the large natural foods distributors Eden Foods and Arrowhead Mills. But then these companies began to repackage the grain under their own names, ultimately finding their own Latin American suppliers and severing ties with Gorad and his partners. Their business struggled financially, even as the grain became more widely

known. “Quinoa Corporation never had the money to do everything we needed to do,” Gorad recalls. “Not once did we place an ad or commercial for quinoa. What we did was make banners and little red buttons that simply said, ‘Quinoa is here.’ That was it.”

In 1986, Australia’s Great Eastern International bought Quinoa Corporation, offering an infusion of capital that allowed the business to expand and distribute the grain in the US. Gorad and his partners purchased equipment to process quinoa, hired more workers, and spent their reserves on a large shipment of the grain. They had overestimated demand, however, and the company once again hit hard times. In early 1988, Gorad resigned “in order to lessen the financial burden on the company,” he says. Even so, he continued to evangelize for quinoa. “I never felt I was taking myself out of the mission, out of the flow of things that needed to happen,” he says.

Over time, he watched quinoa’s popularity increase. Between 2007 and 2013, the amount imported into the US increased tenfold, from 7 million pounds to almost 70 million. Much of it came from Bolivia and Peru, both of which saw a sevenfold increase in quinoa exports between 2005 and 2013. The United Nations declared 2013 the “International Year of Quinoa” to recognize the work of indigenous farmers in the Andes who cultivated the grain. José Graziano de Silva, then director general of the UN’s Food and Agriculture Organization, proclaimed quinoa “an ally in the fight against hunger and food insecurity,” thanks to its nutritional benefits and ability to thrive under sometimes harsh agricultural conditions. It was also hailed as a promising crop in a world facing climate change.

The surge in demand led to drastic changes for indigenous farmers in the Andes. A pound of the grain, which sold for a mere 25 cents in 2000, began to command prices as high as \$4. Anthropologist Emma McDonell has noted that this income allowed many farmers, who had lived at subsistence levels, to “send their children to university, invest in new motorcycles and cars, build new houses, and buy farming technology to increase their harvests.” As

the boom continued, however, small farmers faced mounting competition from larger operations, including global agribusiness concerns. By 2014, the price of quinoa had dropped to 60 cents a pound.

Newspaper accounts from the time also claimed that many farmers no longer ate the grain their families had grown for generations, opting instead for less-nutritious noodles and rice so they could export their quinoa. But Gorad disputes this. “Not all of the quinoa they produced was exportable,” he says; the farmers he knew had enough for their own families while still bringing in additional income. “These people were dirt poor,” he says. “When the price of quinoa was going up, a lot of wealth came to Bolivia, which desperately needed it.”

Still, he acknowledges that the quinoa boom had its casualties. In some cases, farmers’ family members who had been working in the city came back to the farm to help out, he says. When the price dropped, those who had abandoned other work found themselves in trouble. “In individual cases, there are people who got messed up,” he says. “But the original farmers were still better off in the end than they would have been without the increased sales.”

Gorad himself did not reap outside profits from quinoa either. After leaving Quinoa Corporation, he consulted on various international projects, including an effort to bring quinoa to Tibet. As distribution widened and

new varieties were cultivated, he distributed seeds and information to those interested in growing the grain in the US and abroad. “I think I did more work promoting quinoa after I left Quinoa Corporation,” he says. “I was no longer constrained by the need to work for the benefit of the company. I worked for quinoa!” This work was mostly a labor of love—for seven years, Gorad worked as a legal assistant for a friend in Manhattan in order to pay his bills.

Today, Gorad lives in a Midtown skyscraper in New York, in the shadow of the Chrysler Building. He is retired and spends his days meditating and doing tai chi on the roof—a practice established long before covid-19 hit. (In fact, he sees the pandemic as an opportunity for the personal growth that comes with accepting change. Although ordinary life has been disrupted, “the bottom line is that we are still here, no matter what has been lost or changed,” he says.) He is quick to say that 20% of the apartments in his building are rent stabilized, including his, which he shares with a friend. “Quinoa didn’t make me rich,” he says. “I wasn’t a businessman and I am still not.”

Gorad is well aware of how unusual his life’s course has been, considering where he started. “I’m a Jewish kid from the Bronx. I’m a nerd,” he says. “Everything in my early life was programmed and planned. I just had a sense that if I left the orderly path, my life wasn’t going to collapse. It would open into something else more exciting. And that is what happened.”

“I was using business to accomplish a mission,” he adds. “I learned that from Buckminster Fuller, who lectured at MIT: you should do what you do because it’s good for humanity.”

In Gorad’s apartment, the kitchen and front hall closet are crammed with quinoa from all over the world: jars of pearly grains from Bolivia, packets of small white, red, and black grains, samples of a dark and sticky Canadian strain, almost like sticky rice. “I’ve been making cakes and breads with that,” he says, offering up a slice of a dark brown loaf that is dense and sweet. “I still feel that there’s no other food that’s as good to my body as quinoa.” ■



Find recipes from Gorad’s book, *The Quinoa Chronicles*, at www.technologyreview.com/quinoa.

A conversation with new School of Science dean Nergis Mavalvala, PhD '97

By Nicole Estvanik Taylor

Helping scientists succeed

In September, Nergis Mavalvala, PhD '97, became the first woman to serve as dean of MIT's School of Science, succeeding Donner Professor of Mathematics Michael Sipser.

Born and raised in Pakistan, Mavalvala first got to know MIT during her undergraduate years at nearby Wellesley College. After earning her PhD at the Institute in 1997, she joined the faculty in 2002. She is the Curtis and Kathleen Marble Professor of Astrophysics and a leading member of LIGO, the Laser Interferometer Gravitational-Wave Observatory, which made headlines in 2016 by detecting ripples in the fabric of spacetime caused by black holes colliding. The project earned a Nobel Prize for Mavalvala's mentor, Rainer Weiss '55, PhD '62, and Mavalvala won a MacArthur fellowship, among other awards, for her part in the research.

As associate head of the Department of Physics for the past five years, she oversaw academic programming and student well-being, and she cofounded the Physics Values Committee to guide the department on such issues as respect and inclusion. "There's this idea at places like MIT that to be as excellent as we are in science and education, that has to come at the cost of all other aspects of being human. I reject that idea," she told the MIT News Office when her appointment as dean was announced.

The MIT Alumni Association spoke with Mavalvala this fall as she settled into the role.

How did your experiences as an MIT student and faculty member prepare you to be dean?

When I was a graduate student, I had my research group and my fellow squash players. Those were my two worlds; I didn't interact with the rest of MIT much. I think a lot of graduate students experience this isolation after they finish their classes. When I joined the faculty, it was very important to me that students in my group feel connected to the whole MIT community, and as dean, I know part of the job ahead in improving the graduate student experience is creating those opportunities for connection.

Also, as a faculty member, I started to coexist in two different research worlds. The main focus of my career has been the detection of gravitational waves. But as I was thinking about new technologies that could help us develop more sensitive gravitational detectors, I found myself in a growing field called quantum optomechanics. I had to learn how to avoid jargon to get my ideas across between fields that speak quite different languages. This improved my teaching and helped prepare me for being dean.

Is there a place on campus you loved to spend time as a student?

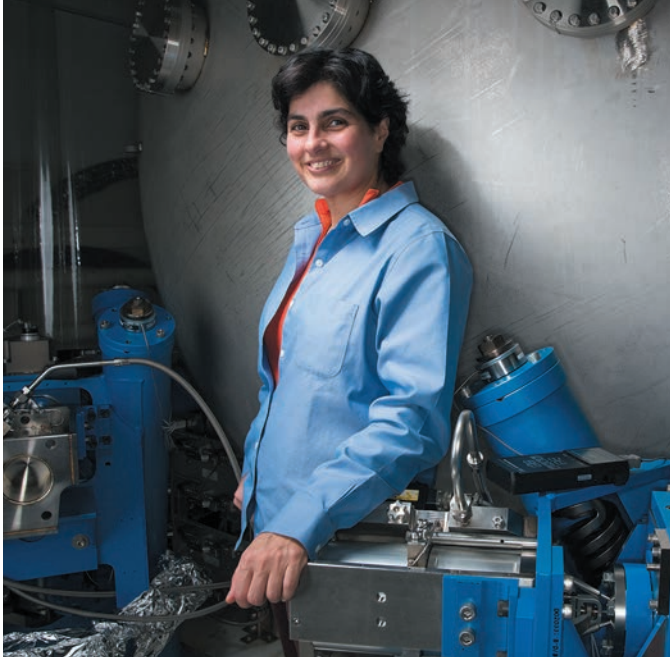
Building 20—which, sadly, doesn't exist anymore. It was built on the site of what is now the Stata Center during the Second World War, when MIT was involved in the invention of radar, and later it housed various programs,

including our lab. It was one of these spaces where you could do anything you wanted and get away with it. We could drill holes in the wall, run wires between different wings of the building. My fondest moments as a student were in that ramshackle but storied building.

Rumor has it that when you first heard about Rai Weiss's plan for LIGO, you thought it was crazy. How do you think now about "crazy" science?

When Rai first told me about gravitational waves, that was not such a big leap. But when he told me about the experiment—that to detect these waves, we have to measure the motion of mirrors that are four kilometers apart with the precision of a thousandth the size of a proton—I thought he was insane. [Laughs.] That was the real leap of faith: trying to pull it off technologically. I have to say, over the years, that has been one of the most rewarding things. The gravitational wave detections came 25 years into my working on them, but along the way, there were all these new technologies. Initially, we didn't know how to measure the angles of mirrors. Now we do. We didn't know how to make a laser that was quiet enough to make this measurement. Then we did it. Those milestones kept us going.

When I joined Rai's group in 1990, a large number of people in the scientific community thought LIGO would never work. I loved being in the gang of mavericks, because it lets you be innovative and creative without the constraints of



This is a time in our society when the role of fundamental science and inquiry has really come to the fore in our response to covid-19.

conformity. You could try things, and you didn't have to worry that people would think you were crazy because they *already* thought you were crazy.

One thing that's special about being dean is being in the position to enable other people's successes on an even larger scale than I was able to do as a faculty member. And I learned from Rai that letting people know you're behind them is a very important part of helping others succeed. He really believed in the science and the people he was working with, so we believed we could do it too.

Could you talk more about what you're hoping to achieve as dean of the School of Science?

I've inherited one of the top schools of science in the world. So a singularly

important priority for me has to be to not screw that up, right?

This is a time in our society when the role of fundamental science and inquiry has really come to the fore in our response to covid-19. I think about the amazing things that are happening all across MIT in responding to the covid crisis, and the interaction between science and engineering in developing not just the fundamental ideas behind solutions but also the logistics of delivering them. I think when this is over, there will be books written on the coordination efforts across MIT that changed the outcome of the pandemic.

We administrators and leaders have also been given a gift: the demand for change on racial and social justice issues, on diversity, equity, and inclusion. Near-term, we

can examine our practices and policies for hiring and making sure that every person we bring into our community can thrive. Long-term, we also have to build pipelines, to make sure that from a young age, opportunity is distributed to everyone who wishes to take it, both by building up the infrastructure of support and by looking outside MIT at the society at large. A tremendous amount of work lies ahead, but I call it a gift because at no other time have I felt so palpably that we must do it and that we will get it done.

Those are the priorities for me: to maintain the highest level of science, and to bring in the most talented and most diverse people we can to do that science.

What do you think the role of alumni should be at MIT and in the School of Science?

One of the important things that I would like to do as dean is to continue to engage alumni. Without our students, we're nothing, and those students become alumni. Part of our job as faculty and deans is to honor that continuum. Even though they've left our campus, alumni are still part of our community. They want it to be the best that it can be. They also have the wisdom that comes from having been away for a while.

When there are difficult decisions to be made, alumni can be a tremendous resource if we ask how things were for them. If a certain policy we're thinking through had been implemented when they were here, what could their experience have been? The alumni also help us by being mentors to our students; it's really important for students to see the different paths alumni took to get where they are. And there are many alumni who are very generous and help us fund our programs. But it also goes the other way, in that the Institute in turn offers them the knowledge and wisdom that's created here, and the connection to MIT can help our alumni find the best people to work with. I think of this as a very symbiotic relationship. ■

Class notes

News and notes from undergraduate alumni

1949 and earlier classes

Elmer Folsom Greenleaf '41 (Course 10), of Silver Spring, MD, died on May 10, 2020, at his home in Riderwood Village, just 41 days before his 101st birthday. Born June 21, 1919, in Milford, MA, Elmer excelled in academics; he was a member of the Newton High School Honor Society and received a scholarship to attend MIT.

He spent WWII working at Edgewood Arsenal on chemical weapon issues, then on the critical development of synthetic rubber. After the war, Elmer worked for the Navy in Washington, DC, to create durable nonskid decks for ships.

While walking to lunch from the Navy Yard, Elmer was hailed by his former MIT chemistry professor, who offered him a position at the newly formed Atomic Energy Commission. Elmer spent the next 30 years at the AEC, primarily on classified work.

In 1981, Elmer retired from federal service to pursue his lifelong hobby of securities investment. His second career as an investment counselor provided some of his happiest years.

Elmer will be remembered for his tireless devotion to his children, particularly their education and swimming careers. He became a swim meet official and ultimately a highly regarded referee and president of the Montgomery County [MD] Swim League. In his free time, Elmer was a Red Cross water safety instructor; he spent many years helping challenged children and adults learn to swim and assisted with swimming at the Special Olympics in Montgomery County.

Preceded in death by his wife of 67 years, Martha Gazella Greenleaf, he leaves behind five children, their spouses, and 12 grandchildren.

Robert A. Gillen '44 (Course 2) died on May 22, 2020. Born in 1923 in Haverhill, MA, Bob was a descendant of William Allen, who settled in Cape Ann,

MA, in 1624, and of William Durkee, the first Irish Catholic (1663) of the Bay Colony. Bob played baseball and football in high school in Swampscott, MA.

After two years in the Navy, he worked for a major international oil company as a construction engineer building oil marketing and refining facilities in South America, the US, Europe, and Asia. While on an assignment in Antwerp, Belgium, in 1953, he met and married Gabrielle Caethoven. After working for RCA Service Company on the Ballistic Missile Early Warning System, Bob moved from New Jersey to Florida in 1962 to work as a facilities engineer with Pan Am World Services on the Eastern Test Range. He retired in 1989.

Bob enjoyed travel, swing music, and genealogy. He assisted seniors with their income tax as a VITA/AARP volunteer and was involved with ASME (Life member), the Scots-American Society, and the Pan Am Retirees Club.

Besides his wife, Gabrielle, he leaves brother Edward, daughter Kim Jason and husband John, and a granddaughter and two great-granddaughters. His younger brother, James Jr., died in 2000.

Of his childhood ambitions, Bob did: 1) work and travel around the world, and 2) marry a wonderful girl and amass sufficient wealth and other assets to live comfortably, but he did not 3) play baseball for the Boston Red Sox. He did, however, live long enough to see them finally win a World Series.

Richard Stout '42 celebrated his 100th birthday with family and friends at an outdoor, socially distanced party on Oct. 9. His birthday was Oct. 2, but the party was postponed due to a heat wave in Los Angeles. Richard's son, two grandsons, and great-grandson were in attendance. More good news: Richard's son was recently married.

William A. Wynot '44 (Course 13) died May 8, 2020, at Alexian Village on Signal Mountain, TN. Bill grew up in Braintree, MA; when he was 10 his father built a family cottage on the ocean. Spending his younger years on

the Massachusetts coast spurred his interest in ocean-going shipping.

Immediately after graduating from MIT Bill joined the Merchant Marines and left for England on a Liberty ship. Assigned to the engine room, he began his career as a lowly wiper, the guy who shines the handrails. One day there was an emergency and Bill assumed the first engineer's watch. He participated in numerous missions in the Atlantic, traveling to Europe and the coast of North Africa. He then shipped to the US West Coast and completed missions in the Pacific. After the war Bill served on ships bringing troops home from Europe and delivering Marshall Plan relief to Europe. During his years of service he obtained a chief engineer's license.

After his military career Bill worked at the Boston Navy Yard, then for the Tennessee Valley Authority (TVA) in Chattanooga, TN. Bill and his new bride, Barbara, purchased a home on Signal Mountain, where he lived for 50 years.

His work for the TVA involved the thermodynamic performance of generating plants and plant equipment. He was an avid gardener, and his love of the ocean and fond memories of New England frequently brought him back to visit family on Cape Cod.

Bill retired after 27 years with TVA and then devoted much time to genealogy, compiling a family history to share with future generations.

After he was widowed, Bill met Claire Hale, and they enjoyed more than 20 years together. They lived in Alexian Village for over 16 years, enjoying many activities and volunteering. They traveled extensively, participating in 25 Elderhostels and visiting their families in Massachusetts and Florida.

Bill and Claire passed away within a few months of each other. Survived by many nieces and nephews, he will be greatly missed.

Waite H. Stephenson '45 died July 10, 2018, just short of his 94th birthday. He was born in Oakland, CA, and graduated from Piedmont High School

in 1942. At MIT he was a varsity crew member.

He received his Navy commission at Columbia, and spent three years in the US Navy submarine service. He received his MS in business management from the University of Santa Clara, San Jose, CA.

He managed US government projects in Heidelberg, Germany, for three years. In California he spent four years at Lockheed Martin working on the Polaris project, and then managed US and foreign projects at Bechtel's San Francisco office for 25 years. Waite maintained homes in Lafayette and Carmel for 62 years. He supported and enjoyed the San Francisco Opera and was a volunteer at museums. Waite was an avid sailor, with memberships at various yacht clubs.

Survivors include wife Mary, three children, and one grandchild.

Donald Klein Walsh Sr. '45 (Course 2) died peacefully in Mt. Dora, FL, on Oct. 17, 2019. He was born on Feb. 19, 1925, in Arlington, NJ, and graduated from Kearny/Arlington High School. He went to Lehigh University in Bethlehem, PA, and joined the Phi Gamma Delta fraternity. After enlisting in the Navy, Don was sent to MIT and joined Phi Gamma Delta there. He lettered in basketball and lacrosse and enjoyed tennis.

After MIT, Don entered Navy service toward the end of WWII and was trained as a belowdecks engine room officer on the USS *Braxton* on the Hudson River, NY. He was sent to the West Coast, where he served on ships bound for both the Pacific and the Atlantic. Upon discharge, he joined Standard Oil of New Jersey for a year and then worked for the US Rubber Company in Bristol, RI. After training in wire and cable he was sent to Tulsa, OK, and worked in oil industry services. There he developed the idea of electrical connectors to replace the taped cables and wires in use at the time on motors, pumps, and other oil platform devices. These connectors increased efficiency and safety. He then founded Marsh and

Marine Manufacturing in Houston, TX, which manufactured cables, connectors, and electromechanical equipment used worldwide in the military, oceanographic, and petroleum industries. After many successful years, Don sold his company to Vector Cable, a division of Schlumberger International.

Don first met wife Faith Harvey in grammar school, but her family then moved. They renewed their acquaintance at a college dance (Don at MIT; Faith at Endicott) and were married two years later. The Walshes enjoyed many family reunions in far-flung places like France, Greece, the Mediterranean, and the Panama Canal, in addition to the Grand Tetons, WY; Branson, MO; and Smithville, TX. Don's hobbies included flying his Beechcraft Bonanza airplane, woodworking, tennis, golf, and volunteer work at his church. He leaves behind Faith, his wife of 72 years; three children, Faith, Kathleen, and Donald Jr.; and six grandchildren and five great-grandchildren.

A new engineering scholarship honoring **Albert S. Richardson Jr.** '47, SM '51 (aeronautical engineering), was awarded by AR Products, the Massachusetts-based company he founded. The first Albert S. Richardson Engineering Scholarship was awarded in June to a Canton, OH, student who will study mechatronics at Kent State University. Each year a \$5,000 annual scholarship, renewable for up to three years, will be given to one student from Al's hometown of Canton who seeks to pursue higher education in engineering.

NASA has published an in-depth article on and interview with **Virginia Norwood** '47 about her role in the creation of NASA's Landsat program as well as her long career as a physicist. She is often referred to as "The Mother of Landsat."

Caroline "Carol" L. Seward '47 (Course 5) died at home on April 15, 2020. Carol was born in Brockton, MA, on Sept. 10, 1926. Raised in Whitman, she graduated from Whitman High School in 1943. After MIT she worked as a food technologist for Ocean Spray for 30 years.

She married her beloved husband of 59 years, Wilson "Bill" Seward, in 1960. Baking, gardening, crafting, and spending time with her grandchildren and great-grandchildren were her favorite pastimes.

Carol was an active member of the First Congregational Church of Whit-

man for more than 70 years. She served as the church clerk, on several boards, and as church historian. She supported numerous fundraising endeavors; her favorite charities were Heifer International, Habitat for Humanity, and Samaritan's Purse's Operation Christmas Child.

An avid genealogist, Carol conducted extensive research into her family history. She was an active member of the Bates Association, which awarded her with a plaque in appreciation of her service.

Carol loved to travel with her family, especially during her retirement. She wintered in Florida, enjoyed several trips to Canada, and toured England, Scotland, Ireland, Switzerland, and Germany.

Carol is survived by her husband, Bill; her sister, Nancy McLaughlin; her daughter, Roberta Spencer; three grandchildren; two great-grandchildren; and many nieces and nephews.

Jean Clay King, wife of the late **Warren Joseph King**, SB '48 (Course 15), died on July 25, 2020, at age 92. Jean attended Skidmore College and practiced as a psychiatric nurse in New York City. She and Warren were married on June 11, 1948. They had three children: Clay, Joanne, and Mary. Jean traveled extensively with Warren, and after his death, in 1996, she continued traveling with friends. Jean volunteered for many organizations and was an avid Cubs fan. She is survived by her children and four grandchildren.

Jean and Warren established a scholarship fund at MIT, which yearly supports a student in need. In lieu of flowers, gifts may be made to MIT in memory of Jean King for the Warren J. and Jean C. King Scholarship Fund (3475800) using the link: <https://giving.mit.edu/jean-king> or by calling Bonny Kellermann at 617-429-9860. Please see a photo of Jean in the online column.

William W. Simpson '48 (Course 2), 94, died on June 16, 2020, at Augusta Health Hospital, VA, two days shy of his 95th birthday. Bill was born in Dormont, PA, on June 18, 1925. He graduated from Mt. Lebanon High School and attended MIT under the Navy V-12 program. After graduation and active duty in the Navy, Bill took a job in private industry and moved to Clarksburg, WV. There, he met and married Lucy Elizabeth Brake Simpson on April 11, 1953.

Bill was an avid golfer and fan of his hometown Pittsburgh Steelers. At age

78, he had the distinction of making his first hole-in-one and shooting his age. He was a lifelong Presbyterian.

He was preceded in death by Lucy Simpson in 1992. In 2010, Bill married Mildred Broughman while both resided at Summit Square in Waynesboro, VA.

Bill is survived by Mildred; sons Paul, David, and Timothy and their wives; and numerous grandchildren, great-grandchildren, and nieces and nephews.

William J. Hart '48 (Course 10) passed away with family by his side at his home on March 23, 2020. Bill was born May 10, 1923, in Brooklyn, NY. After his father died, Bill's family moved to Ellenville, NY. He graduated from Ellenville High School as salutatorian. He was the class president and captain of the golf team. At MIT, his education was interrupted by WWII. He served in the US Army from 1943 to 1946 before returning to MIT.

Bill moved to Glens Falls, NY, in 1948, to work at Imperial Color, Chemical and Paper. He married Marie Therese (Rese) in 1949. He created an arboretum of 50 different kinds of trees on their property. Active in the community, Bill was an award-winning member of the Glens Falls Country Club since 1948, in the choir at Annunciation Church, a Boy Scout counselor, and a mineral collector who donated superb specimens to Adirondack Community College.

At Imperial, his expertise as a pigment specialist grew as he took on increasing managerial responsibilities; the company was acquired by Hercules Imperial and then by Ciba-Geigy. He had many patents related to improving the quality of color for a variety of company products.

His hobby was collecting US postal stamps, which accelerated when he inherited his father's collection. He became a well-known expert in US postal history and an exhibitor with many awards at both the regional and national levels. He was a valued member of the American Philatelic Society Expertizing Service.

Ciba-Geigy ultimately transferred Bill to their Westchester County office. He and Rese lived in Yorktown, NY, where Bill retired and they lived until 2009. When Rese died, he moved into the Glen at Hiland Meadows in Queensbury, NY. He stayed active, playing duplicate bridge, teaching his friends to play billiards, and regularly attending

the Glen happy hour. He continued golfing into his 90s, "golfing his age" twice in his late 80s and besting his children and grandchildren at a mini-golf outing on his 90th birthday.

In addition to his parents, Bill was predeceased by his wife of 70 years, Rese, and his sister, Joan. He is survived by his children, Michael, Bill, Maureen, Patricia, Ed, and Marguerite Le Garrec-Hart; his grandchildren and great-grandchildren; and numerous nephews and nieces, and their children. He will be missed by all who knew him.

Thomas Joseph Schlottenmeier '48 (Course 10) died peacefully on May 3, 2020, in Medford, MA. He was born Dec. 9, 1925, in Trenton, NJ, and graduated from Trenton Central High School in 1943.

Thomas was veteran of WWII with service in the US Navy. After MIT he worked for Honeywell in Philadelphia and Fort Washington, PA, and in Framingham, MA. While at Honeywell he earned an MBA from Babson College.

He was predeceased by his beloved wife, Alice Walsh Schlottenmeier, and infant son Eric. He is survived by his five children, nine grandchildren, and 29 nieces and nephews.

Russell Fay Trimble Jr. '48, PhD '51 (Course 5), died at home on April 28, 2020, of lymphoplasmacytic lymphoma, a non-Hodgkin's lymphoma.

Born in February 1927 in Montclair, NJ, Russell attended grade school in New Jersey and Staten Island, NY, and high school in Brooklyn, NY, and Cambridge, MA. He served in the US Navy at the end of WWII and then came to MIT. He was proud to trace his chemical genealogy to Antoine Lavoisier.

A professor in the Southern Illinois University Carbondale chemistry department from 1954 to 1993, Russell taught the introductory chemistry sequence, upper-level inorganic chemistry courses, and chemical literature. He served on numerous committees and was the faculty advisor to the Beta Psi chapter of Alpha Chi Sigma, the chemistry fraternity, and a 72-year member of the American Chemistry Society, with a particular love for the History of Chemistry division. He also belonged to numerous societies and associations, enjoyed judging science fairs at the local and state level, and translated scientific articles from Russian and German to English.

Russell helped found the Carbondale Unitarian Fellowship when he and wife

Natalie joined in 1954. After his retirement he volunteered at the Carbondale Public Library, stopping only when he could no longer get up from the floor easily at 92. He acted in community theater and play readings and enjoyed woodworking, music, military history, translating poetry, and Esperanto. A family friend remembers him as “gentle, caring, and thoughtful.”

His wife of 63 years, Natalie Jean Benda, preceded him in death in 2013. He is survived by his daughters, Kirsten, Carol, and Margaret, and his cats, Estelle and Apollo.

William H. Brauer '49 (Course 10) died on March 29, 2020. He was beloved husband of Cookie (née Wanda Koch) and loving father of Gayle, Bill, Nancy, Diane, and Bob. He was also cherished by 20 grandchildren and 30 great-grandchildren.

Bill served in the US Navy during WWII before coming to MIT. After five years with Monsanto, he joined his father at Brauer Supply in 1953. Bill was promoted to president in 1968 and played a tremendous role in Brauer Supply's continued growth. He remained with the company as chairman of the board until his death. Bill loved his Lord, his family, Brauer Supply, and his boats.

—Please send news for this column to Class Notes, MIT Technology Review, 1 Main St., Cambridge, MA 02142; email: classnotes@technologyreview.com.

1950

Charles Yardley Chittick Jr. died on July 13, 2020, his 93rd birthday, in Hingham, MA, in the presence of his family. Charles, known as Charlie or Cy, was a lifelong patriot and an active parishioner of the New North Church. His morals, humility, and gentlemanly manner steadied him to navigate nearly a century with poise. In May 1945, Charles enrolled in the Coast Guard Academy, New London, CT, where he sailed on the tall ship *Eagle*. After graduating in 1949, at the outbreak of the Korean War, Charles joined the Navy with little hesitation. A fighter pilot in the Navy's Task Force 77, he served aboard aircraft carrier USS *Lake Champlain*.

In 1952 he married Marian Ellen Sedgwick, a dietician at Massachusetts General Hospital. They moved to Hingham and settled in a beautiful colonial home, which they passionately restored and treasured for 61 years. While in the Navy Reserves, Charles

earned advanced degrees in engineering and business at MIT, which he parlayed into a lifelong career at Arthur D. Little. From 1958 to 1983, he consulted on a variety of aviation engineering projects. His only hiatus was to pursue a project to revive steam energy transportation, evocative of his ambitious and inventive spirit.

In Hingham, Charles and Marian raised two children, and ultimately enjoyed having six grandchildren. An attentive husband, father, and grandfather, Charles invested his time and talent generously in his family. His love and affection were unconditional, as was his delight in an excellent home-cooked meal. He revered Marian's cuisine, which he would richly appoint with wine from their extensive travels in France. After 53 years of marriage, Marian died in 2005.

He found company with his late friend Ann Collins, pleasure in socializing at the Quincy Neighborhood Club, and sport in attempting to bowl strikes at the South Shore Country Club. Among his other interests were basset hounds, antique furniture, woodworking, classical music, humor, the life and works of Winston Churchill, and fishing on Nantucket's shore.

Thomas Francis Kaveney died on July 9, 2020, after a brief illness. He was almost 93. After high school he served in the Army in Germany during the immediate aftermath of WWII. He then earned a degree at MIT and began a long career in the steel industry. During this time, he lived in Albany, Cleveland, Buffalo, Tarrytown, NY, and finally Pittsburgh. While working in the steel industry, Tom traveled the world extensively, particularly enjoying his visits to Japan. After retirement he stayed in Pittsburgh for some years before relocating to Bozeman, MT, to be closer to his family. Tom married Beverly Carothers in 1962. They had one son, Daniel, and divorced some years later.

Tom lived life to the fullest and loved various sports and activities. He was an enthusiastic skier and a devoted volunteer ski patroller with the National Ski Patrol for decades. His zeal for skiing endured as he aged, and he logged 60 days at Bridger Bowl during his final year of skiing, at age 90! He also loved rock climbing, running, bike riding, and hiking, as well as playing the banjo. In Pittsburgh he was a performing member of the Pittsburgh Banjo Club. Later he took up wood carving and knitting—

hobbies he pursued until his death. He especially appreciated the many friends with whom he carved and knit. At Tom's core was an extraordinary kindness and devotion to his family and many friends. He delighted in their activities and accomplishments, particularly those of his granddaughters, Anna and Claire. His most important and lasting legacy is the positive difference he made in so many peoples' lives. Tom is survived by his son Dan, his daughter-in-law Marcia, and his two granddaughters.

Evan Kaye Lawrence, SM '52 (chemical engineering), of Silver Spring, MD, died on Aug. 23, 2020, after a short illness. He was 91. Evan retired after a career at the US Patent Office. Along with classical music, he loved to listen to opera with his wife, Deanye, and patiently strived (unsuccessfully) to convince his family of its virtues. Evan was known as the inventor of “Dadgets,” was handy with woodworking, taught himself and then his sons to ride a unicycle, and volunteered as a counselor at youth groups and crisis centers for more than 30 years. He loved his family and numerous friends with all his heart.

Evan is survived by Deanye, two children and three grandchildren, and two brothers and their families. He was predeceased by sister Vicki Nathanson.

John “Jack” Gerard Senese Jr., 91, formerly of Newtown, CT, passed away peacefully on July 26, 2020, at his home in Kennebunkport, ME. In Boston he met the love of his life, Anne Marie Shea, whom he married in 1951. Jack led a successful career in top engineering firms; in 1976, he made the courageous leap to start his own company, CPI.

After many years of hard work, CPI was regarded as a leader in the industry. Equally important as success to Jack were the lifelong friendships he built along the way.

Upon the sale of CPI and his retirement in 1994, Jack and Anne moved to Kennebunkport. They embraced the adventure of making new friends, renovating two houses well into their 80s, traveling, and living the life they dreamed of together.

Jack, a devout Catholic, credited his profound sense of spirituality and belief in God as a great source of his joy and comfort, saying that prayer was an essential element of his life. He remained living independently in Kennebunkport, where he enjoyed painting, volunteering with hospice, and spending time with family.

Jack was a dedicated and loving husband, a father of four, grandfather of 12, great-grandfather of eight, and great-great-grandfather of one. He was predeceased by his beloved Anne Marie and his daughter Kathryn Pleasants.

Jack will be remembered for his contagious smile and profound zest for living life to the fullest.

We have received word that **John Uretsky** died on Feb. 21, 2017. At the time of his death he was a resident of Brooklyn, NY. We unfortunately have no further information.

—**Thomas R. Keane**, secretary, 332 Spalding Rd., Wilmington, DE 19803; tel: 302-658-2095; email: tomkeane@alum.mit.edu; **David E. Gushee**, assistant secretary, The Mansions at Decatur, Unit 331, 2677 Lawrenceville Hwy., Decatur, GA, 30033; tel: 804-350-4966; email: gushee@alum.mit.edu.

1951 70th Reunion

David Alan Janis was born Dec. 23, 1929, in White Plains, NY. He resided in Palm Desert, CA, and New York, NY, where he passed peacefully in his sleep from natural causes on July 5, 2020.

David was a graduate of White Plains High School and received a BSCE in structural engineering from MIT. He became president of White Plains Iron Works, a company founded by his parents in 1927, and remained in that role until the company closed in 1982. That same year, he was appointed executive director of the Steel & Ornamental Institutes of New York, where he oversaw the Statue of Liberty renovation project. In 1986, he founded Dajan, an architectural metal services company, which he continued to run until his 90th birthday.

David married Priscilla Mary Kaufman in 1959. They soon moved to Briarcliff Manor, NY, to raise their three children. Upon Priscilla's passing in 1991, David was introduced to Carol Herman. They married in 1997 and shared many wonderful years together.

David loved golfing, traveling, and working, and he lived a rich and robust life. He is survived by his loving wife, Carol; his sister, Lenore Janis; his children: Bruce Janis, Dr. Eric Janis, and Lynn Schwarz; and five grandchildren.

—Please send news for this column to Class Notes, MIT Technology Review, 1 Main St., Cambridge, MA 02142; email: classnotes@technologyreview.com.

1952

The ROTC program at MIT, through a survey of alumni via email, asked all its graduates to describe their subsequent military experiences. I'm stealing excerpts of the responses from some classmates.

Paul Seever (Course 18) wrote, "I was in the Signal Corps; never got to Korea though the war was still going on. I was sent to Camp Gordon near Augusta, GA, where we—if I, a lowly lieutenant, may use that term—were training enlisted men, many of whom did go. One of my most memorable experiences from that time was sitting more or less across the aisle from President Ike at church in Augusta one Sunday morning. (He would come to Augusta to play golf.)"

George Mellor (Course 2) wrote, "Lest Paul Seever feel lonely, I too am Class of '52. However, my ROTC experience differs since I had been an enlisted man in Korea from September '46 to March '48. Thus, I was offered the option of accepting a commission or not. I chose not and therefore, after a year in industry, returned to MIT and received an ScD in mechanical engineering. After more time in industry, [I had] a long span as a professor at Princeton University, first in gas turbine/jet engine research and then in physical oceanography (therein lies a tale)—all stuff related to fluid dynamics."

More from **Lloyd Currie** (Course 5) and myself in the next issue.

The family of **Donald Grine** (Course 12) notified us of his death on June 24, 2020, at the age of 89. He stayed on at Tech for a doctorate in geophysics. He and wife Joan lived in student housing, where their two children were born. They moved to Palo Alto, CA, where he worked for Stanford Research Institute in shock physics and acoustics. Then, at Schlumberger in Connecticut, he researched oil prospecting and well-logging methods; he had two patents and many publications to his name. They moved back to Palo Alto and SRI and then to La Jolla and a job at S-Cubed, where he was a manager and then president. After 14 years in Del Mar, Donald retired in 1989 and enjoyed his naturalist interests, becoming a docent at Torrey Pines State Natural Reserve and at San Elijo Lagoon, leading nature walks. He loved bird-watching, scuba diving, and all types of photography, including underwater photography.

He is survived by wife Joan, daughter Katherine Barto, son Lawrence, and grandchildren and great-grandchildren.

Clifford Morse (Course 4A) died some time in 2020. We have no additional information.

After learning of the death of **Herbert Brody** (Course 20) on July 30, 2020, I spoke to his wife, Phyllis. As may well be imagined, she is working her way through the grief of losing Herb. He had been class president and chairman of the '52 Reunion Committee. He studied chemistry and food technology at MIT and earned his PhD in food technology from the University of Massachusetts in 1956. That year he and Phyllis were married. He spent most of his career running the US Customs Laboratory in Boston. He is also survived by three children, Ellen, Nancy, and Benjamin, as well as four grandchildren.

The Asheville Citizen-Times reported the death of **Edward Lipinski** (Course 5) on June 11, 2020. Although he wore glasses from age two, he couldn't read until a Viennese ophthalmologist operated on his eyes when he was nine. Starting with comic books, Ed soon discovered his older brother's discarded chemistry book, launching a lifetime of excitement in learning. Since his days in the Asheville City Schools, he dreamed of attending MIT. At Cushing Academy he was class president and enjoyed success in academics and the debate team. After MIT, he attended Harvard for grad school, where he met and married another Harvard student in 1954. Ed always said Sherry was the better chemist, but he made up for it by becoming an inventor, always trying to solve problems. After a short time at Ohio State Ed took a job at Battelle Memorial Institute, a research and development company. Projects took him as far as South America and Asia. Most memorable was developing fuel from biomass during the 1970s gasoline shortage, using ethanol from sugars found in corn, soybeans, sugar cane, and sweet sorghum. Following retirement from Battelle, he started his own company, Innovative Thinking. He used computer modeling and taught others to use it. Ed moved back to Asheville in 2008, still hoping to find a use for red clay and a cure for Alzheimer's. He enjoyed chess, bridge, poker, and Columbus Symphony Orchestra concerts. He is survived by loving wife of 66 years Sherry, children Edward and Sarah, and grandchildren and great-grandchildren.

The Struve Funeral Chapel reported the death of Robert Naber on July 21, 2020. After graduating from MIT he received an MD from Northwestern's medical school and studied in Freiberg, Germany, on a Fulbright scholarship. He was a physician in internal medicine in Seattle for many years. After a short marriage to Sarah Naber, Bob moved to Prunedale, CA, where he built a home with a distant view of the Pacific. He married Lauren Hughes. Daughter Mary recalls the dollhouses he built to her specifications when he worked as a carpenter at the Carriage Company. In retirement he enjoyed playing the organ for friends at the Prunedale Senior Citizen Center and volunteering as a timer at Mary's childhood swim meets.

In 2002, Bob was the victim of a robbery and assault in Prunedale and suffered a traumatic brain injury that led to dementia. Afterward, Bob moved in with Mary in La Jolla, living in her guest cottage for the last eight years. He enjoyed seeing his grandchildren and was a blessing to them. Mary recalls Bob's awe and appreciation for the beauty of the Pacific coast and countryside. He modeled gratitude for the blessings of everyday life. Bob is remembered for his spirit of tremendous generosity and for his eternal optimism and gratitude. He passed away of natural causes exactly two weeks after celebrating his 90th birthday, shared with grandson Caleb, who turned eight. Bob is survived by his only child, Mary Naber King, and three grandchildren.

—**Ed Margulies**, secretary, 925 Stonegate Dr., Highland Park, IL, 60035-5146; tel: 847-432-3947; email: edmargulies@alum.mit.edu.

1953

Martha and I have lived in Guatemala since 1999. On March 15 the government closed the borders and the airports. When our son became terminally ill, we needed to go to the States. The US Embassy and the Guatemalan government had arranged for repatriation flights. The planes come in completely empty, the crew cannot leave the plane, the passengers board, and the plane leaves. We managed to get one of those flights and arrived in Sacramento just in time to see Terry before he died. We are now spending short stays with family or friends because we cannot return to Guatemala until they open the borders and the airport. I'm sure there are other

stories you would like to share with your classmates, so please write.

The Reverend **Betty Ann Ferguson Lehmann** died Dec. 9, 2019, in Taos, NM.

Maurice Paul Gionfriddo died July 18, 2020, in Shrewsbury, MA. Maurice served as a first lieutenant for the US Air Force during the Korean conflict and was later employed as an aeronautical engineer at the US Army Natick Laboratories. After retirement, he started consulting and founded the aeronautics company Logistic Gliders. Throughout his career Maurice developed innovative products for the aerospace industry. He was an active member of the Parachute Industry Association. Maurice enjoyed traveling to the Caribbean and Europe and watching the Boston Red Sox and New England Patriots. He also had a passion for creating and flying model airplanes. He is survived by two daughters and two grandchildren.

James Henry Howard died July 24, 2020, in Wayland, MA. He was a US Army veteran of the Korean conflict. He is survived by two daughters, five grandchildren, and two great-grandchildren.

John Robert O'Donnell died July 9, 2020, in Hernando, FL. John was a retired engineer and a graduate of MIT and Harvard Business School. He served in the US Air Force from 1954 to 1956 and obtained the rank of first lieutenant. He then worked in the steel industry for many years, from Philadelphia to Providence, RI. He was a sales manager for much of his career and general manager for Milwaukee Cotter Pin Company. John left Washburn Wire in Rumford, RI, to form O'Donnell Steel in East Providence, RI, retiring in 1998. He is survived by two sons, four grandchildren, and one great-grandchild.

Ralph Harold Sievers died Aug. 7, 2020, in Arlington, VA. Ralph's lifelong passion for designing, engineering, building, and fixing started with his childhood Erector set. A military brat, Ralph attended 14 schools across the country and the Panama Canal Zone. At 16 he met the love of his life, Ginni, when his father was briefly assigned to Fort Eustis in Newport News, VA. Ralph was a licensed professional engineer in Virginia, and he took courses from FEMA's Emergency Management Institute. His 24 years of service to the Army included command and staff positions in Korea and Vietnam and research and staff positions in the US

until his retirement in 1977. He then used his experiences and skill set at an employee-owned company, Science Applications International Corporation (SAIC, now Leidos). Ralph spent over 20 years with SAIC as an engineer-physicist. Both careers concentrated on nuclear weapon effects, protective construction design and vulnerability, and design compliance for nuclear power facilities. At home, he was a lifelong DIYer and lived by the motto “If I can’t fix it, I don’t buy it.” He continued to volunteer for the military on active duty and postretirement. He was a 50-year member of the Fort Myer Chapel Choir, served on the parish council in leadership roles including the lay reader program and charity donations, and assumed responsibilities associated with the chapel’s work at the So Others Might Eat dining facility in DC. He regularly spoke to separating and retiring soldiers seeking to join the private workforce. He is survived by six children and 11 grandchildren.

Howard Wing died June 18, 2020, in Woodstock, VT. After 25 years at Raytheon in Bedford, MA, Howard decided to pursue his lifelong passion for woodworking and design, studying under master woodworker Robert March in Worcester, MA. In 1991, Howard and his artist wife, Betsy, moved to Vermont with 20 sheep, a burgeoning collection of Native American pottery and Southwestern paintings, Betsy’s looms, and Howard’s own distinctive furniture. His contemporary furniture, cabinetry, and reproductions of museum furniture have been exhibited in galleries throughout New England and mentioned in *Fine Woodworking* magazine. He is survived by his wife, a son, a daughter, a stepson, and a grandchild.

—**W. James Mast**, secretary, phone: 011-502-78324811; email: wjmast1@gmail.com.

1954

It’s always nice to begin these notes with good news. **Sam Losh** and Judith H. Lovely married on Dec. 28, 2019. Judith accompanied Sam to our class reunion in 2019, so a few of us had the pleasure of meeting her then. At the end of August Sam and Judith were living under “lockdown” at Villa Gardens in Pasadena, CA. Unlike many retirement facilities, Villa Gardens had no covid-19 cases among the residents, but there were some cases among the staff. Sam

says Pasadena was an early hot spot for covid-19 infections but that rates had begun to go down.

Nicholas John Blazensky Jr. (Course 2), of Westerly, RI, passed away on Aug. 6, 2020. He was born in Glastonbury, CT, on May 24, 1932, son of the late N.J. Blazensky Sr. and Anna H. Blazensky. At MIT Nick was a member of the Walker student staff and the Pershing Rifles and Scabbard and Blade honorary societies. He served in the US Army Signal Corps from 1955 to 1957, retiring with the rank of captain in 1960. Nick worked at IBM for 30 years in design, research, and marketing. He also spent 10 years with Travelers. Nick was a talented craftsman in wood and wicker. He made variations of traditional Nantucket baskets and built homes, furniture, and boats. He is survived by wife Sandra Blazensky; daughters Sheryl Kelly, of San Jose, CA, and Lauren Lukas, of Mendon, MA; sons Derek Blazensky, of Paso Robles, CA, and Jay Blazensky, of Los Altos, CA; and eight grandchildren.

Paul William Stern (Course 15) died on April 7, 2020, at his home in Panama City, Panama. He was a member of Sigma Alpha Nu fraternity. He was a US Air Force jet pilot for three years, an experience he described as exhilarating. Paul received an MBA from Harvard in 1959. He thrived in his career in real estate and property development. While working on the Pike property project in Long Beach, CA, he met Sarah Beth Cline, whom he married in 1995. They lived in Brookline, MA, and Weaverville, NC, and in 2011 they settled down in Panama, where they found paradise. Paul passed away from heart failure with loving wife Sarah by his side. Along with Sarah, Paul is survived by his first wife, Marilyn; children Deborah, Adam, and Jennifer; granddaughter Libelula; and many loving friends and family.

Jay Norman Fues (Course 15), of Ashburn, VA, died on May 6, 2019. Born on July 30, 1931, in Chicago, IL, he grew up in Park Ridge, IL; his family later moved to Corpus Christi, TX, where he enjoyed sailing the bay in his beloved *Christi-Belle*. Jay attended Ripon College and then MIT, where he earned degrees in industrial engineering and math. He later earned an MS in industrial engineering from Southern Methodist University and then an MS of accountancy from the University of Texas at Dallas. After two years in the US Air Force, Jay spent 34 years

with Texas Instruments, ultimately as a general manager of strategic planning. Along the way, he earned his CPA from the State of Texas. During his long career with TI, Jay and his family lived in Dallas and Houston and spent some wonderful years in England, Germany, and Brazil. Later, Jay and Louise, his wife of 64 years, lived for many happy years in Gainesville and Ashburn, VA. Jay was devoted to his family and loved to travel. He had an artistic streak and enjoyed photography, woodworking, and creating stained glass. He is survived by Louise; children Lisa, Eric, and Brian; granddaughters Anna, Allie, and Jordan; and sister Gail Dunaway.

—**Barbara Black**, secretary, 16309 19th Ave. SE, Mill Creek, WA 98012; email: bbblack@whidbey.net.

1955

From **Brewster Ames** (Course 6): “I haven’t provided notes in the past because I didn’t think anyone would be interested. But I always read them. After graduation I worked for Raytheon, the company I worked for summers as a draftsman while at MIT, for 40 years in engineering and management positions involving the design and development of communications systems for the US military. Shortly after retiring in 1995 I moved to Franconia, NH, and have enjoyed 25 years of hobbies and community activities. My wife, Elizabeth, and I were married in the MIT Chapel in 1964. We and our three Old English sheepdogs are enjoying life, and the wildlife, on our 82 acres of woodlands. Regards and thanks for all your efforts as class secretary.”

From **Ed Elizondo** (Course 6): “I made an error in my note in the September/October 2020 column. I started MIT at age 15, not 14.”

From **David Kramer** (Course 3): “Until the pandemic, I was tutoring English as a second language and playing music as a disc jockey at our adult day care center here in Thousand Oaks, CA. Now I do more reading, online learning, and computer art. Some of my work can be seen at the Museum of Computer Art. I’m animating some of those works.”

From **Vinay Ambegaokar** (Course 2, SM ’56): “This contribution is thanks to gentle persuasion by our conscientious class secretary. MIT in the 1950s was, alas, the wrong place at the wrong time for me. Course 2 (mechanical engineer-

ing) had been made more ‘scientific,’ tormenting some of my classmates who could fix things but trivial for me, with no such talents. (I forget the name of the genius who reengineered his car in the parking lot so he could shift gears with his left hand. ‘Why?’ I asked. ‘To free up my right hand on dates.’)

“Because I could do the little problems sets and get As, I was treated with undeserved respect. No one told me that there is a difference between imitating and thinking. How did I pass the time? I owe much to John Lair. Fifteen years older than the rest of us, he was an ABD (all but dissertation) from Harvard who had taught at Oberlin. Under his tutelage, I read Proust, Joyce, and Mann in the Hayden Library.

“The VooDoo office in Walker Memorial was a good place to wait for the single typewriter to become available. The best parts of the magazine, in my opinion, were the cartoons and illustrations drawn by architecture undergraduates. There was an inexhaustible supply of beer in the refrigerator. I became editor in my senior year. The juvenile, raunchy jokes made it a best seller outside two-year colleges. We made a lot of money by selling copies for a quarter, and drank it all.

“I stayed for a ninth semester to earn an SM in the honors program. In addition to doing some forgettable research on the creep of metals, I took half a course on quantum mechanics taught by Sidney Drell, thinking that a better acquaintance with nature couldn’t hurt a practicing engineer. It did more. I applied to four graduate schools in physics and asked Drell for advice. He told me about Harvard instructor Walter Kohn, who had gone to Carnegie Tech and was doing interesting research in solid state physics. During the summer of 1956, as I contemplated jobs in which the salary was inversely proportional to the challenge, telegrams arrived offering me fellowships at Harvard and Carnegie. I accepted the latter, causing consternation among my American friends’ mothers.”

A note from your class secretary: the MIT Alumni Association Directory shows that Vinay received a PhD from Carnegie Mellon University and was the Goldwin Smith Professor of Physics at Cornell University.

Sadly, four classmates have passed away. Two obituaries follow. See the expanded Class Notes on the class website, 1955.alumclass.mit.edu, for

unabridged versions. The obituaries of **Jean Ivan Montagu** (Course 2, SM '56) and **Mark L. White** (Course 15, Course 3, SM '56) will be in the next column.

James R. Clinton (Course 13), 87, died peacefully on March 17, 2020. Born in Needham, MA, he later relocated to Boston. After MIT he received an MBA and an MS in engineering management from Northeastern.

He worked as an engineer at the Quincy Shipyard (1958–1964); General Dynamics (1966–1973); Submarine Engineering Associates, Cohasset, MA (1973–1974); Stone & Webster, Boston; and the Massachusetts Department of Revenue. Preceded in death by his first wife, Nina Clinton, Jim leaves three daughters and their spouses and many other family members. He will be remembered for the ways he lived his life to the fullest, reminding us to “enjoy the next five minutes.” He always looked for the best that life could be.

As reported by the Lowell Sun, **Alan Holden Friot** (Course 6B), born in Malden, MA, passed away July 13, 2020, age 88, from an aggressive form of colon cancer. After graduation from Malden High, in 1950, and a year at Chauncy Hall, he came to MIT. He went on to work for the CIA from 1955 to 1959, in technical services.

Alan married his high school sweetheart, Helen Reid, in 1956. They moved to Washington, DC, to both work at the CIA. The birth of son Paul in 1958 brought them back to the Boston area, where they settled in Winchester, MA, and had two more children before moving to Harvard and then Groton, MA.

Alan's career took many turns, including building simulator cockpits for Boeing 747s. A layoff in the early '70s led to his involvement with water treatment; in 1971 he bought a water treatment business, where he worked with his son Paul for over 45 years, retiring in December 2019.

Alan was predeceased by his wife in 2018. He is survived by three children, their spouses, and many other family members.

—**Richard I. Bergman**, secretary, 134 Leabrook Lane, Princeton, NJ 08540; email: ribergman@alum.mit.edu.

1956 65th Reunion

As I write in September it's uncertain if our reunion will be virtual, physical, or a combination of both. The planning committee is trying to be flexible and

will create a program of outstanding lectures, discussions, and tours of Boston and MIT. More important are the opportunities for us to visit and chat with each other. The dates are still the same: May 27–30. Save 'em.

This uncertainty pervades all of our lives. Will we be able to go somewhere? What is the safest of several options? What will we do if ...? It's time to take a deep breath, try to relax, and get help if we need it.

Bernie Haas sent a “status report” from San Francisco: “The virus situation seems to be getting worse, not better ... at least the data being issued says that. In California, restaurants that had opened for interior dining are now closed again. I managed to get a haircut at a barbershop in Daly City before those shops again closed down.

“San Francisco is a shambles ... a mixture of boarded-up shops and restaurants, except some that are open for takeout or outdoor dining. The vast San Francisco public transport system (MUNI) operates on reduced routes and reduced schedules. I haven't been on MUNI for months. Everyone is walking around with a mask, including me, because one can't get into a grocery shop without one.

“I've had to cancel all three of my trips for this year. I really can't plan for anything. [And this was before the fires.] Stay well, Bernie.”

Valerie Stelling, a member of and major contributor to our reunion committee, wrote: “I'm lucky to still be able to enjoy the river and the winds, but the activity on the water is greatly diminished, without any of the colleges running their summer programs or general use of the sailboats. Many more runners and walkers; many come by car from Boston. Hope you all are happy and healthy. What a strange time. I just found some old regulation from January 1943 regarding required rationing accountability. What food do you have on your shelf?”

Nelo Sekler sent a sad note: “With deep sorrow I need to let you know that Benita, wife of **Arthur Sirkin**, passed away. Arthur continues to live in the home of their daughter, Dolly, and their son-in-law in Dallas.

“Of all my classmates, Arthur was my closest friend. He and his wife visited us in Caracas and at our vacation apartment in Margarita, Venezuela, and we often visited them in Florida and New York, and the last time, in Dallas.

“In 1985 I began commuting to NYC one day a week, taking my class in ancient Egyptian art history at NYU's Institute of Fine Arts, which I did regularly for 17 semesters. I am a trained Egyptologist specializing in sculpture. In the late 1990s I began underwriting the MFA Boston's digs in the Sudan, even participating, but stopped one season after 9/11, as conditions were getting a bit dicey.”

—Alan May '57

As you can imagine, this news is very, very sad for us.”

In my search for missing classmates, I received a response from **Dave Solow**: “I've written before about **Art Silver**. He matriculated after he retired. By the time we graduated he was in his mid- to late 60s. This would make him the oldest living person on earth today. He was Canadian, if you want to track down his obit. It is safe to remove his name from the missing. All the best, Dave—surviving in Indiana.”

I also heard from his family that **Elmer Carl Hanks Jr.** died on Aug. 23, 2020, in San Jose, CA. No further information at this time.

Our sincere sympathies go out to the Sirkin, Silver, and Hanks families and friends.

That's it for now, folks. Please continue to be kind to everyone, and stay well and safe.

—**Lloyd Beckett**, secretary, P.O. Box 1082, N. Falmouth, MA 02556; email: papa@alum.mit.edu.

1957

Mal Jones says the highlight of their week is playing bridge online with a couple from Seattle whom they met in Hawaii. **Paul Carr** delivered a talk to the MIT Club of New Hampshire in September titled “Confront Covid-19 and Climate Change Now.” On a personal note, as I write this it's about 50 days until the election, infections from covid-19 do not seem to be decreasing, the West Coast is suffering widespread fires, demonstrations over racial inequality continue, and the economy is not yet showing signs of robust recovery. I assume most of you are in the position I am in, retired and in a stable economic situation and able to avoid the necessity of active social interaction. What a change from when we graduated as members of the silent generation, when our professional opportunities

were bright and the overriding issue was the Cold War.

Alan May contributed to the July/August 2014 issue with a description of his early career, and here he expands further. Alan was class secretary for 25 years, and he included a flattering note about my performance, encouraging you to provide me more support (with which I agree). He only wrote about himself after he was no longer secretary and said, “I apologize for not writing more frequently. Perhaps I am too private. Mea culpa.

“My first job after MIT was investing \$500 million of trustee pension funds at Bankers Trust when all the trustee pension funds in America were only \$12 billion and Bankers Trust had half of it. Returning to the bank after six months' Army duty, I specialized in loans to build chemical plants, pipelines, etc., asking, ‘Will it work if built?’ and ‘Is it a good credit?’ I picked up an NYU MBA at night and married my sweetheart, Marcia, who had graduated BU at 19 and was teaching kindergarten.

“In 1965 we moved to Midland, TX, where I joined one of my banking customers, merged five of their companies, and took them public as Elcor. Our daughter, Alexandra, was born in Midland. In 1970 I joined Steak and Ale Restaurants of America in Dallas as executive vice president and took it public. Five years later we sold it to Pillsbury, at which point I became financially independent. While at Steak and Ale, I found time to volunteer, simultaneously, as chief financial officer of the Dallas Theater Center, the Dallas Symphony Association, the Dallas Civic Opera, and the Dallas Ballet, as well as serving on the acquisitions committee of the Dallas Museum of Art. I established the Alan M. May (1957) Fund at MIT, which purchases original artwork for the student art loan program at the List Visual Arts Center. From 1976 to 1982 I did independent strategic planning

and merger and acquisition consulting. I was class secretary for 25 of the first 30 years after graduation.

"In 1982, together with a partner, I began buying commercial real estate, by 1986 having purchased over 7.5 million square feet of industrial, retail, and office buildings. We even bought property in the Soviet Union (we participated in getting them to adopt their first law permitting the private ownership of real estate even though Lenin forbade it!) and Czechoslovakia. I sold the portfolio by 2003. In 1985 I began commuting to NYC one day a week, taking my class in ancient Egyptian art history at NYU's Institute of Fine Arts, which I did regularly for 8.5 years (17 semesters). I am a trained Egyptologist specializing in sculpture. In the late 1990s I began underwriting the MFA Boston's digs in Sudan, even participating, but stopped one season after 9/11, as conditions were getting a bit dicey.

"After 43 years of marriage, my dear Marcia passed away of liver complications in 2006. I am blessed with two marvelous grandchildren. My grandson, Tucker, just graduated from the University of Oxford, majoring in philosophy and linguistics. He was elected a vice president of the Oxford Student Union and will spend the next year in that capacity, after which he plans graduate study. My granddaughter, Piper, just graduated from Andover and is heading to Barnard. My son-in-law is the president, director, and CEO of the Detroit Institute of Arts. My daughter, after a distinguished consulting career with Deloitte, soon to be an empty nester, is preparing to become a teacher. As a lifelong art collector I've donated art to the Dallas Museum of Art, the MFA Boston, and others. I recently gave a painting to a major museum in memory of Marcia.

"Many of us lead three lives: the first before marriage, the second during marriage, and the third after marriage. We plan for the first two, but the third catches us unprepared. Six years ago, I was fortunate to meet a widow whose family life, including a 50-year marriage to a heart surgeon, somewhat parallels mine. Carol and I adore each other and are currently self-isolating together."

Félix J. Serrallés Jr. (Course 15) died in May 2018. He was the chairman of Don Q rum producer Destilería Serrallés. He was a fifth-generation Serrallés Nevares family member, serving as the company president and CEO

from 1981 until his retirement in 2017. During his tenure the company experienced business growth, solidifying a position for Don Q rum in Puerto Rico, and expanding into the US and international markets.

Juan J. Hermosilla (Course 1) died March 10, 2020.

William C. Brausell (Course 1) died May 26, 2020. He spent his career in telecommunications, working at Lockheed, Tandem, Compaq, and Cisco. Settling in the San Francisco area, he captained his sailboat, *Ariadne*, in races in San Francisco Bay and was a double-black-diamond trail skier in the Sierra Nevada Mountains. Bill spent his retirement in Florida, where he enjoyed spearfishing in Key West. There he sipped coffee, exercised his mind with business and world news, and listened to the waves hit the shore. Bill is survived by his children, Allyson, Christopher, and Sabrina.

–**Don Roelke**, secretary, 4870 Carriagepark Rd., Fairfax, VA 22032; tel: 703-978-7370; email: daroelke@alum.mit.edu; class website address: www.alumweb.mit.edu/classes/1957/.

1958

Some classmates responded to **Toni Schuman's** suggestion for commentary about present circumstances. Others shared thoughts about the Class of '99 offer to be pen pals with our generation of alumni. I'm enjoying my email and Zoom connections with Irene Kim '99, an organ transplant surgeon in Los Angeles. She assured me she knows what a slide rule is but has never used one!

Jorge Alfert and wife Mayra, along with their children and grandchildren, are well and following the lockdown and other safety rules. "We see our family with Zoom; they work from home and the young ones are home-schooled, including one in college. Would you believe that Mayra and I had planned a guided tour of central China, the Middle Kingdom, already booked and partly paid for in May? Of course, we canceled it in January and were refunded. Without sports on TV, which I love, I read a lot more. In fact, I read books I should have read for the freshman humanities classes, some of which I skipped because my English wasn't so good then. I'm 84 and do my exercises at the pool at home. I'll write something for the Class of '99

about MIT some 30 years earlier than they experienced. Good idea to have interclass communications. I miss our class reunions; 2016 (58 + 58) was the last one I attended. I hope everyone is well and happy. Best wishes."

Regarding the Class of '99's familiarity with slide rules, **Richard Glantz** noted, "I still have two circular slide rules; one that's 8.5 inches in diameter and one that fits in my shirt pocket. Hardly anyone has ever seen a straight ruler, much less a circular one. Why do I still have these? One day I'll have to do a Marie Kondo on the nostalgic items in my home." **Mary Ann McLaughlin** reported, "A local museum is displaying the history of the Hanford Nuclear Project. One of the vignettes emphasizes that all the work to start the project occurred before computers. Featured in the display is a slide rule exactly like the one that got me through four years of MIT. It was a bit of a shock to see the trusty old K&E slide rule in a museum! At least current and future generations might be able to know what a slide rule was."

Richard Hardy sent word: "I'm enjoying my memories in old age; I've been extremely lucky in the people and opportunities I've encountered, including you guys.

"I feel fortunate to have few regrets. I made good long-term decisions that produced great benefits to my life and allowed me to feel I've made a contribution to our civilization, with much thanks to the education and opportunities provided by MIT. After 37 satisfying years working on going to the moon, the cruise missile, the F-22, the B-1, and the Airborne Laser, and running the Boeing Military Airplane Division, I retired and started an engineering and manufacturing business, which my children now own and run. I wrote four books, which sell on Amazon.

"I've spent 62 years with a wonderful woman, and we are still in love. Three kids, eight grands, and the second great is in the oven (as of August). We usually split our time between our houses in Seattle and Vegas. Now we're in Seattle and can't go to Vegas. I fiddle with the money and cut up dead trees for firewood. I read history and am amazed at how nonlinear events keep occurring. I have decided that 9/11s, 2008s, viruses, etc., are the norm. We just have to live with them. The key is the future generations and investing in them. Best wishes to all."

We have lost three classmates. Unfortunately, little information is available for **Ralph Schinzel** (Course 6-A), even his actual date of death, or Lt. Col. **Frank J. Bielsik** (Course 6), who died on July 3, 2020. Please send any you may have.

Louis Giordano (Course 15) of Quechee, VT, passed away on July 9, 2020, at age 83 while biking with friends along a scenic, tree-lined trail in Stowe, VT, an activity he loved.

Hailing from Trenton, NJ, Louis was characterized by curiosity, an insatiable thirst for knowledge, a zest for life, and a knack for storytelling that sparked connections with people in every walk of life. He captured attention as soon as he spoke. He maintained lifelong friendships and could befriend complete strangers. Lou enjoyed life, especially planning travel, dancing, watching the Patriots, driving through majestic scenery, being outdoors, listening to music, playing bridge, watching his favorite movies (especially *Mamma Mia*), spending time with family and friends, and sharing his famous lasagna and other recipes. Proud of his heritage, Louis loved learning new things, exploring new territory, and telling of his experiences and adventures. He loved biking and had planned to spend August in Montana helping to build bicycles at Free Cycles, an organization started by his oldest son, Bobby, in 1996 to create sustainable transportation.

Louis always found the positive side of even the most challenging situation, often saying, "Make a silk purse out of a sow's ear." His introspection, laughter, enthusiasm, advice, and epiphanies on life will be greatly missed.

He was predeceased by his wife and best friend, Maywood, and his youngest son, Steven. Lou is survived by his younger sister, Annette Giordano; his children Bobby, Julie Giordano, and Laurie Toolin; four grandchildren; and many extended family and friends. Our sympathies go to all the loved ones of our departed classmates.

–**Gary Fallick**, secretary, 4 Diehl Rd., Lexington, MA 02420; email: gary_fallick@alum.mit.edu. Class website: 1958.alumclass.mit.edu.

1959

I suspect you may be tired of hearing about the fires and smoke here in sunny California, but I'll update you anyway. An enormous lightning storm in August set off the fire season early with

11,000 lightning strikes—5,000-plus strikes in the three counties north of San Francisco, right around where I live. Exciting times! It was very flashy and very noisy and started numerous large fires that continue to burn throughout California and other western states. At writing, more than three million acres have burned in California, plus another million in Oregon. We've had unhealthy air conditions, with smoke so thick the sun can barely peek through, and the sky is uniformly deep orange all day. It is truly unpleasant and dangerous, so we stay inside. It will be at least two months before the rains come to soak everything down. By the time you read this it will be over, and either California survived or it just blew into the sky with the ash and smoke. Keep your fingers crossed for us!

Class president **Ed Talley** holds class officers' meetings via Zoom and reports good things. **Steve Parkoff** has agreed to be webmaster, and **Bob Muh** has volunteered to be the chairman of our 65th reunion. I'll have another report in the next issue.

Major Tom Allen, head of MIT's ROTC program, sent a "test email to see who gets it" to ROTC alumni. Several classmates replied with notes about their experiences during and after their service. Some of the responses follow, lightly edited. Look for more in the next issue.

George Luedeke: "I enjoyed connecting with **Leon Glicksman**, also an ROTC grad. After graduating, I earned my master's degree at the Illinois Institute of Technology (IIT), in Chicago. I was a 'Bauhaus' student at the school of design, focusing on the aesthetics of product design. I interned at the GM Styling Center in Warren, MI, one summer in their preliminary design studio, addressing public transportation issues (bus/rail mass transit). After completing my graduate work at IIT, I worked at the GM Styling Center full-time as a designer until I received my orders to report for military service. I went to the Aberdeen Proving Ground (APG), in Maryland, for Ordnance Corps training in January 1962. When I finished training as a tank/automotive repair officer, I was sent to the US Army Tank Automotive Command, which happened to be in Warren, MI. I had an apartment in Troy, MI, at the time and didn't have to move. The Detroit Arsenal, as it was known, was directly across the street from the GM Styling Center. The only

thing that changed for me was turning right into the Arsenal parking lot instead of left into the GM parking lot. When I was discharged from the Army in 1964 my DD214 MOS [military service job specialty] had been changed to 7500, mechanical engineer."

John Linderman: "Spent three-plus enjoyable years in Germany courtesy of the US Army."

Ed Vrablik: "What a great way to reconnect to the ROTC Class of '59! After graduation I worked at Arthur D. Little (ADL) in the explosive physics group. We spent the summer of '59 instrumenting 600+ blast holes in the open-pit coal mine of eastern Ohio for Hannah Coal. They imported bat guano (ammonium nitrate) by the boatload to mix with fuel oil to make an agent and needed to know the optimal formula. Just the first of many interesting projects! Since we worked for the Department of Defense and NASA, and it was a fairly peaceful time, I was allowed to defer my Reserve obligation except for some remote learning. I did go to Aberdeen Proving Grounds for six months of active duty and training to become a supply officer.

"I returned to ADL and could finally buy Carol (remember, she was the queen of our military ball in '58) an engagement ring! We married in '61 after she graduated from Simmons and worked a year in downtown Boston. I moved to Lincoln Lab in '63 when they started a new group to develop communications satellites for the military, then to Data Technologies (DTI) in '67 with one of my Kappa Sigma fraternity brothers. We were developing computer numerical control (CNC) systems, so I got involved in computer systems developments. One of DTI's big customers bought the company in 1969, so I took three other staffers and started Dimensional Systems (DSI), a startup focused on computer-aided design and drafting (CADD) systems for the utilities industry. When we sold DSI back to our investors in '73, I was recruited to Digital Equipment to develop their internal CADD systems with a focus toward future CADD systems sales. So my career focused on CAD and computer graphics systems development, becoming involved in the reduced instruction set computer (RISC)/complex instruction set computer (CISC) wars in the '80s at Prime Computer's computer-aided design and manufacturing (CAD/CAM) business unit. What a ball it was in those early, wild, woolly times!

"Carol and I moved to Acton, MA, in '64 and started a family of two sons and two miniature schnauzers. The sons married—now an MD and a finance guy in Pennsylvania and Virginia. We have four grandkids ages 15–20. The oldest, our grandson, is in his third year at West Point. They all play musical instruments, and all three girls are gymnasts and dancers.

"Prime's purchase of Computervision in '87 led to a hostile-takeover attempt that bankrupted Prime in '89. I moved to a consulting organization and retired in 2002. Carol did not recover from cancer surgery in 2019, so I've sadly been trying to figure out what to get involved in next. It's been great to reconnect with classmates, and I'll bet some of us will meet again at our 65th in 2024. Till then, be well and have a great life!"

We were notified of the death of **Herman Richard Heideklang** on July 18, 2020. We have no additional information, but we send our condolences to his family.

—**Dixon Browder**, secretary, 5419 Vista Grande Dr., Santa Rosa, CA 95403; tel: (707) 527-8002; email: browder@alum.mit.edu.

1960

It's mid-September as I pen these notes, although you have not given your secretary much to write. Please send some words to tell what you've been doing in these times when most of us are staying close to home and hoping that we'll soon be able to move about more freely. As for me, I'm trying to learn some Spanish with the help of Pimsleur and the Great Courses, the latter also offering a wide range of interesting topics to enlighten and entertain.

Given the success of the Zoom 60th reunion, our newly elected class president, **Bob Gurnitz**, is working with the Alumni Association to improve our email list and facilitate future virtual gatherings.

We received an update on our Endowment for Innovations in Education (EFIE), showing that your generosity has resulted in a fund with a market value of over \$10.6 million, with awards to our faculty fellows of more than \$5 million. EFIE has existed for over 35 years and has supported a host of cutting-edge programs at the Institute.

We heard from **Fillmore McPhereson**, who says, like most of us, that "2020 was probably a lost year." He

misses the trips to visit family, concerts, plays, bars, and indoor restaurants. He's also getting tired of all the Zoom meetings of civic and town activities. Fillmore writes, "We live in a condo of townhouses, so one of the better things was a weekly stoop party—we set up chairs outside the front door, brought our own drinks and snacks, and visited at a distance." He concludes, "We are looking forward to 2021 and a good vaccine." (Aren't we all!)

Lou Tedeschi brings us up to date. After graduating, Lou started a 20-year US Navy career that provided a range of experiences, including a year in Saigon, graduate school, engineering assignments (such as serving as chief reactor operator for the carrier USS *Enterprise*), and engineering projects on ships and installations worldwide. After retiring from the Navy, Lou worked with several contractors supporting the Navy and Coast Guard before joining Electric Boat, where he supported the construction of carriers, submarines, and commercial nuclear power plants. Lou notes, "I have to credit MIT for giving me the confidence to tackle new ventures as challenges that can be overcome through analytical thinking and hard work." Lou became involved with the Society of Logistics Engineers and taught logistics for 10 years at the University of New Haven. Lou has lived in Connecticut since 1980. He has six children, nine grandchildren, and two great-grandchildren living all over the US. Since retiring 10 years ago from Electric Boat, Lou focuses on volunteer work with the Knights of Columbus and various ministerial duties with the Catholic Church. Lou closes, "I enjoy working with people but have not given up on creative efforts, including building a pergola to raise grapes... and perhaps make wine. Who knows what's next?"

Our regular correspondent **Larry Elman** and his wife, Cheryl, continue their hypnosis business, including lectures, classes, and writing and recording content for hypnosis professionals. Larry is very proud of a recent Zoom course with students from five continents. With their first African student, the Elmans have now reached all continents except Antarctica. While the pandemic has stopped their international travel, they continue to keep busy.

Unfortunately, we report the deaths of three classmates and send our deepest sympathy to their families, colleagues, and friends.

Anthony J. Anastation of Sutton, MA, died in August 2020. He is survived by two sons and their families. After graduating with us, Tony continued his education at Northeastern and Columbia. He served in the US Army Chemical Corps and began a 30-year career with Western Electric, retiring in 1991. In retirement Tony enjoyed serving St. Spyridon Greek Orthodox Cathedral with fundraising and giving cathedral tours.

Eldon du Pont Homsey died in May 2020 in Wilmington, DE, and is survived by his wife, Elizabeth, as well as children and grandchildren. He did not graduate with our class. Don was a principal of Victorine and Samuel Homsey Architects, a firm that designed numerous structures in the Wilmington area. He also oversaw construction of 25 buildings for MBNA America Bank and was active in numerous civic affairs in the Wilmington area.

David A. Perry died in April 2020 at his residence in Troy, NY. David is survived by his wife, Susan, and his children and grandchildren. After graduating with our class, David received his MD from the University of Maryland School of Medicine and then pursued psychiatry at Upstate Medical University in Syracuse, NY. David began his psychiatry practice in Syracuse, later moving to Cornwall-on-Hudson, NY, where he practiced group psychotherapy until 2019. David was an avid golfer, a patron of classical music, and a lover of theater and movies.

—**Frank A. Tapparo**, class secretary/agent, 15 S. Montague St., Arlington, VA 22204; email: ftapparo@alum.mit.edu.

1961 60th Reunion

This column was written just before Labor Day for publication in January. Classmates for whom we have current email addresses receive an advance copy four months prior to publication. If you are not receiving an advance copy, send your updated email address to our class secretary. When the advance copy of these Class Notes is emailed, it is accompanied by all correspondence and other materials from which the notes were extracted. A copy of this column, as well as material submitted for this column, is also posted on our class website, www.1961.alumclass.mit.edu.

June 2021 will be the 60th anniversary of our graduation. It's too early to determine whether our reunion will

be held in Cambridge or will be virtual. However, we asked classmates to identify old haunts so that we can prepare a "then and now" slideshow. So far, **Susan Kannenberg** (who also sent a picture of Katharine McCormick, Class of 1904, from a quilt displayed at the New England Quilt Museum), **Peter Ross**, **Kenneth Scott**, **Philip Spiro**, **Gilbert (Ron) Stegen**, and **Roger Whitman** have submitted suggestions, with Phil's list, perhaps, being the most complete.

During July and August, we had two class conversations using Zoom. A total of 17 classmates joined at least one call, most of whom did not remember anyone else on their call but shared many common memories. All participants asked that we continue the practice, which we will do monthly. Notices of calls are being sent to all for whom we have a current email address.

From **Steven Goldstein**: "Spouse and I have resided in a comfortable cottage at Westminster Canterbury of the Blue Ridge (WCBR), in Charlottesville, VA, for six and a half years. WCBR is a continuing-care retirement community. While all too many retirement/nursing facilities are experiencing high covid-19 mortality rates, we are fortunate that all 350 independent-living residents here have tested negative for the virus, with no deaths from it. Nor have there been any deaths in our health-care areas."

David Roberts reported, "After getting my SB in physics, I got an MS in physics at Case Institute of Technology (Cleveland) and spent most of my career as vice president of high-tech startup Cleveland Crystals, which I cofounded in 1974. We grew/fabricated/housed electro-optic and nonlinear single crystals for the laser-optics industry worldwide. The largest crystals were used in the development of inertial confinement fusion at facilities in France, Germany, Australia, Japan, and the US (Lawrence Livermore Laboratories and the Laboratory for Laser Energetics). After retiring to Arizona for 20 years, we returned to Ohio to be near our son and his family (three grandkids for us). Edith and I have been married 56 years and are active in interests including history and music. She was a professional violinist and I was a part-time oboist for many years ... that's how we met!"

Donald Hartill wrote, "I lost my wife, Marian, to an aggressive form of uterine cancer in late February 2018; it was diagnosed in early December 2017. I retired from the physics department at

Cornell in July 2016 after 48 years. Over the years I conducted a lot of oversight work for the National Science Foundation, including three trips to Antarctica, with two trips to the South Pole. I've had the privilege of walking on every continent. In December 2018 I became safety director for our synchrotron storage ring complex, which provides the x-ray beam lines for Cornell High Energy Synchrotron Source. As of July 1, I'm the director of the Cornell Laboratory for Accelerator-based Sciences and Education, with around 200 staff and faculty members. Needless to say, it's an interesting challenge."

Robert Kaplan wrote, "In a fortunate sense, nothing much has changed since [2008]. I'm as healthy and physically active as I was at age 68, and I continue as a Harvard Business School faculty member. I've sustained a productive research/publication program, though I'm teaching less, only in short executive programs that feature ideas and management tools that I helped to develop (activity-based costing, Balanced Scorecard, and management of strategy risks). I serve on the Defense Health Board, advising on how to improve the health of our active duty forces, dependents, and retirees. I also have a research stream on Inclusive Growth, helping global companies identify and implement strategies that are profitable, improve the environment, and alleviate poverty. And the pandemic put my risk management work into high relevance, including a Harvard Business Review article on recognizing and managing unanticipated risks (November/December 2020). An MIT education in electrical engineering proved to be a powerful foundation for a six-decade (and counting) career as a business school professor. Family life, with wife Ellen and our two daughters and two grandkids (10 and 13), has also been wonderful. Earlier this year, we celebrated the Zoom bat mitzvah of our granddaughter on my 80th birthday. Ellen and I moved to our vacation home in Marion, MA, in early May."

Donald Dilworth submitted a lengthy history of his time on the staff of the Apollo project (1961 to 1966) and explained how he became an optics expert without any formal training. It's an interesting read and is available in the raw materials on our class website. Don concludes, "I can't imagine a better start as a professional, and I certainly owe much of my later success to the very smart folks at MIT who thought

they saw some potential in a guy who knew nothing about optics."

A fascinating article about **Seth Goldstein**, "A Retired Engineer's Latest Sculpture Is a Bicycle, Back-Scratcher and Cookie Dispenser—All in One," appeared in the Washington Post and is included in the raw materials for these notes. We also had brief correspondence with **Alan Brennecke**, **Merlin Dorfman**, **Harvey Eysman**, **Burton Golub**, **Edward Grabowski**, **Jerry Halpern**, **William Hecht**, **John O'Connell**, **Kenneth Singer**, **Edward Tucker**, and **Edward Whitman** (who said, "One of these days I should write you an account of my post-MIT career: 40 years as a Navy civilian, including serving as an assistant secretary of the Navy in the Pentagon; later coauthoring a book of naval history, playing for a decade in a Russian balalaika orchestra, and now the proud grandfather of 20, ranging in age from a month to 34 years, including two great-grandsons").

Since our last column, no deaths of classmates have been reported. Reported deaths are immediately listed on the home page of our class website. We try to publish the obituary of every classmate whose death is reported to us. You can find and search them in the Obituary and Remembrance section of our class website and also can post (through our class secretary) your own remembrances in response.

—**Arthur A Katz**, class secretary, 18 Orsini Dr., Larchmont, NY 10538-1642; tel: (914) 834-8393; email: akatz@alum.mit.edu.

1962

Ollie Smoot and **David Bragdon**, our website managers, have implemented a new feature. We recognized, sadly, that not only are our classmates passing away, but their spouses are too. For many of us, our class connections have long included spouses and significant others. The website now has a table of deceased spouses and significant others, and available obituaries have been added in the Extended Obituaries by last name. If you know of partners who should be added, please send an email to osmoot@alum.mit.edu with at least the person's full name, the full name of our classmate, and the date of death. Attach an obituary or a link if possible.

Arnold Louis Prill (Course 3, SM '63) passed away on Feb. 2, 2019. Born on June 27, 1941, in New York City, he

attended Stuyvesant High School; at MIT he was a member of Tau Epsilon Phi and active in Dramashop. Arnold earned a PhD in metallurgy at Lehigh University. His career centered on alloy development, for which he was awarded several patents, followed by many years of developing protective coating for use in gas turbine engines and repairing high-value turbine engine component parts. He held several executive-level positions before retirement and afterward performed volunteer work.

Sheldon Hoffman, 80, of West Hartford, CT, died on July 7, 2020. He graduated from Weaver High School, then earned a degree in mechanical engineering at MIT and an MBA at Columbia University.

Sheldon's terrific mind for numbers evolved into a career in finance. With his engineering degree, he first worked for General Electric. After his MBA, he was a research associate at investment banking firm McTeague and Co. for 13 years. Passionate about stock market investing, he claimed he had only one real loss ever. Sheldon was truly a kind and gentle soul, a devoted son, a nurturing brother, and a loyal friend. He was an avid Brooklyn Dodgers fan, a fine pianist, and later an ardent opera fan. He practiced cantorial singing and occasionally served as a guest cantor in several synagogues. A more complete obituary is available on the class website.

Ollie Smoot wrote: "Sandy and I have moved into The Glen at Scripps Ranch, a continuing-care retirement community. It opened in November 2019 and went on lockdown mid-March, just as we were to move in. We finally moved in June 30. Two months in we can say we are enjoying it, even with the continuing restrictions. The place is half full, which gives a strange, ghost-town feeling sometimes. Fortunately, the management and most residents are serious about staying safe. A major restriction is no visitors except in a designated area, which limits socializing with old friends. At least we can leave the campus, with screening and temperature checks on return."

David Bragdon reported: "Regina and I moved in July to Northampton, MA, although not to the house on Higgins Way that was under construction. The developer left it half finished when the IRS came after him. We bought a similar home on Moser Street, on the same hill above the Mill River. We're still unpacking but have already had a

socially distanced reunion in our backyard with **Walt Colby**, who lives nearby and brought outstanding local brews. Our Moser neighbors (masked, when not Zoomed) are great. We also Zoom-conference with Higgins-area neighbors, where our stalled house sits. Two other couples are in the same situation, and we share a local lawyer to resolve the challenge. One Higgins owner shows movies against her garage door on Friday evenings for all Higgins dwellers. Movie night has a flavor of LSC at MIT, as there are many academic denizens from the area colleges. (At LSC, did we not hiss instead of boo? Is hissing safer than booing during the pandemic?)"

Art Funkhouser wrote: "I'm happy (and grateful) to report that my wife and I are safe and healthy in Bern, Switzerland. Sadly, the number of covid-19 infections is increasing again, so we continue being cautious. I still work as a Jungian therapist and a training analyst and instructor in dreamwork at the C.G. Jung Institute near Zurich. I turn 80 next week and will celebrate with my son's family (wife and two boys); my daughter's family (German husband and two girls); my other daughter (a caregiver); and my wife's son, wife, and daughter. Larger gatherings are inadvisable. Enzo Sinisi asked me to contribute an article about dreamwork for his Therapy Route website, so I did (<https://www.therapyroute.com/article/a-way-to-do-dreamwork-by-a-funkhouser>). I stay fit with weekly table tennis, jogging, fitness training, and my morning workout routine. Wishing all a fine autumn."

Brian Strong sent the following: "Nancy and I (married since graduation) have been hibernating in our Camden, ME, summer home, where we celebrated my 80th with family.

"We'll head back to Connecticut in September and will, for the first time, take our boat up the navigable Charles. We'll see how many brave classmates come aboard for an octogenarian party, on deck of course."

Dave Stare reported: "My wife and I had to evacuate our temporary Dry Creek Valley home for six days during the wildfires. It was too reminiscent of three years ago, when we lost our home to the Tubbs Fire. Our new home is almost finished, and we'll move there mid-September. The winery and our vineyards were not damaged by the fires, and we are in the thick of harvest. So far it looks promising."

Roy Perkinson wrote: "I was pleased to be included in two shows at the Page Waterman Gallery in Wellesley, MA. They included some of my paintings in pastel and oil of locations in Massachusetts and Maine. The art gallery business itself has been slow, but I was delighted to make sales to collectors who found works on my website. Helps pay the cost of frames! My wife, Jean, and I were relieved and grateful for her oncologist's report that she has been cured of the colon cancer diagnosed last fall."

Bruce Cuthbertson sent photos that David Bragdon will post on our Facebook page. Also, a note from **James Draper** follows up on his message in the November/December column, and comments from **Marty Klein** remember a dear friend from his work with the US Navy and NASA.

—**Hank McCarl**, secretary, email: hmccarl@alum.mit.edu; **Herschel Clopper**, assistant secretary, email: HerschC@alum.mit.edu. Keep in touch at <http://alumweb.mit.edu/classes/1962>.

1963

Bob Ratonyi published his book *From Darkness into Light: My Journey Through Nazism, Fascism, and Communism to Freedom*. Bob had a seat, perhaps closer than he wished, to some of the most tumultuous events of the 20th century. He was born in Budapest in 1938. Shortly after, Hungary became an ally of Germany. Bob was four years old in 1942 when his father was conscripted into a Jewish labor battalion; he never saw his father again. His mother was deported to an Austrian concentration camp in 1944. Bob was forced to wear a yellow star and face the terrors of war and ghetto life without his parents. He survived thanks to family members and strangers. His mother survived, and they lived post-WWII under the communist dictatorship. He was a freshman at the Technical University of Budapest when he was caught up in the bloody uprising against the regime in October 1956. After the Russians crushed the uprising, Bob escaped to Austria, emigrated to Canada, and in 1961 arrived at MIT as a junior. After his SB he stayed on to earn an SM in mechanical engineering, to marry wife Eva (also a Holocaust survivor from Hungary), and to become an immigrant to America. Bob says it may be of particular interest to classmates to see the 35 pages he wrote about his

years at MIT (about 10% of the book). He says those were some of the happiest years of his life. As an undergraduate he lived at 34 Fenway in the Sigma Alpha Mu fraternity house. When he got married, in 1963, he and Eva were one of the first couples to move into Westgate, the new married-student building. Bob says that all royalties will be donated to his favorite charitable organizations. The book is available in print and as an e-book; look for it on the internet. Bob is retired but still manages his family's investments. His daughter and son and two grandchildren live in Atlanta, Bob and Eva's home since 1978. As a child survivor of the Holocaust, Bob speaks regularly to school and adult audiences on behalf of the William Breman Jewish Heritage Museum and the Georgia Commission on the Holocaust. Bob is the founding chairman of the MIT Enterprise Forum of Atlanta and an MIT Educational Counselor.

Upon learning of **Andy Campbell's** passing in March 2020, **Allen Meyer** wrote a sweet and sad remembrance of his dear friend of six decades. He first encountered Andy as a freshman over the bridge table at Baker House. Many discussions followed on a wide array of topics, often late into the night. Andy was a gentle soul with a wry sense of humor. His patience was amply demonstrated when they arranged for Allen to pick him up at the dock when Andy's ship arrived from the voyage from his home in France. Allen was driving from Wisconsin and had to carefully coordinate day and time. The ship arrived a few hours earlier than scheduled, and there was Andy, serenely reading a book, fully confident that Allen would arrive as expected. In the mid-'60s, Allen and Andy took a road trip from Madison, WI, to San Francisco. Sharing Allen's VW Beetle were another tall person and a very tall lute case. While it was a tight fit, they experienced the expanse and remarkable sights of the American West: Wall Drug before it got hypercommercialized, Mount Rushmore unsullied by attempts to add another figure, the Badlands, a float in the Great Salt Lake, and a glorious vision of SF in the afternoon light from the Golden Gate Bridge. Andy and Allen spent most of that summer in Berkeley, a fascinating place of rock music, drugs (not them), and politics, a harbinger of things to come. In recent years, Andy and Allen discussed the parlous state of our republic.

Bob Ratonyi '63 published his book *From Darkness into Light: My Journey Through Nazism, Fascism, and Communism to Freedom*. Bob was forced to wear a yellow star and face the terrors of war and ghetto life without his parents. He survived thanks to family members and strangers.

Allen sent personal news too. In November 2019 he suffered a bad fall requiring a long and difficult rehab. After months in a brace, he is “free of that carapace” and functioning mostly normally. Allen and his wife, Nancy Felipe Russo, celebrated their 45th anniversary last summer. Instead of traveling in 2020, they are instead fostering American democracy and its vital institutions. Recent events strongly justified that decision. Allen and Nancy hope that our essential institutions, especially the FDA and CDC, don't lose public credibility and trust. They feel we will need public confidence in them to overcome the pandemic and to reassure us over any new vaccine. With the pandemic, Allen writes, they're practically hermetically sealed at home, usually only venturing out for therapy and groceries. Allen lives in Oregon, and his preparations for the potential Cascadia Fault earthquake have served him well. He sends his wish that classmates and all members of the MIT community are healthy and safe during this period of crisis.

In September **Mike Bertin** gave a Zoom talk called “Palomar Observatory in the Popular Culture” as part of the observatory's public outreach program. A shameless self-promoter, Mike invited a few hundred of his closest friends. Classmates who logged in included **Marvin Singer, Uri Bernstein, John Graham, Larry Krakauer, Dan Ross, Frank Model, and Steve Evans**. Mike's PhD thesis advisor tuned in from New Jersey. Former coworkers joined from Panama and Vienna. Mike has to get his attention any way he can.

Last year I had some correspondence with **Alan Marty**. I wrote about his adventures in the November/December Class Notes. I was shocked to learn that Alan died in July in Chicago. He is survived by his wife of 47 years, Marie-Paule; his two daughters, Victoria Anne Marty and Emilie Olivia Roche; and two grandchildren and other family members. **Roger Wallace** died in Bedford, MA, in June. After completing his SB and SM at MIT, Roger

worked in high-tech companies in the Boston area, principally Raytheon and Sanders in Nashua, NH. Sanders was acquired and divested several times during Roger's tenure, by Lockheed, Lockheed-Martin, and BAE Systems. Roger commented that he worked for four different companies but kept the same office and phone number. Roger studied the reliability and failure of gallium-arsenide, indium-phosphide, and gallium-nitride semiconductors in a variety of applications. At Raytheon, he met the love of his life, Mary Baughman, a technical editor who found his writing so good it didn't need editing, and who noticed he always had two cartons of milk on his cafeteria lunch tray. Roger had a pilot's license and was part owner of a single-engine Cessna, flights on which were an important factor in his courtship of Mary. They shared 40 years of happy marriage. Our condolences to the families and loved ones of our classmates.

Send me an email and let me know what you are doing. Your classmates will enjoy hearing your stories. Regards to all.

—**Mike Bertin**, 22 Gillman St., Irvine, CA 92612; email: MikeBertin01@gmail.com. If you want to schmooze, call 949-786-9450.

1964

I regret to announce the loss of three classmates:

James E. Allen Jr., the former executive vice president of the Henry B. Gilpin Company, at one time a leader in the wholesale drug industry, died April 24, 2020.

James began his career with Corning Glass in Massachusetts. He later moved to California to work for Memorex before relocating to Maryland. He was known for his ability to network and his support of local restaurants and small businesses. He was the owner and president of the Washington Bridge Club and hosted many regional tournaments. He loved planning and hosting events for family and friends where all enjoyed

his culinary skills. As a connoisseur of fine wines and single malt scotch, he frequently held tasting parties.

James was an avid horseman and a liaison with the Montgomery County Fire & Rescue Service for his condominium association. He also loved music and was an accomplished piano player, with a piano bar in his home.

In 1961 he married Dona Copithorne Allen, who survives him. Their travels took them around the world. He is also survived by children Elizabeth Garagusi, James Allen III, and Jennifer Bowden.

Theodore W. Hilgeman died in his home in Centerport, NY, on Aug. 8, 2020. He earned his doctorate in astrophysics from the California Institute of Technology. After school he returned to Long Island, where he had grown up, and had a long and illustrious career with Northrup Grumman.

Theodore always aimed to leave things better than he found them. He loved spending time with family, either traveling or at big family gatherings. He also enjoyed working on his home and being outdoors, whether improving his yard or finally summiting Mt. Katahdin on his fifth attempt. Ted was a lifelong learner, most recently re-exploring research in quantum mechanics and relativity.

Theodore is survived by his wife, Joyce Hilgeman (née Popkin), and daughters Chana Glazer, Erica Moon, and Alexandra Hilgeman.

Lawrence Kaldeck died at his home in Natick, MA, on May 14, 2020. His wife, Linda, whom he married in 1975, died the day before.

Lawrence worked for companies including Lincoln Labs and Northrup Grumman. During his career he was involved with projects such as high-altitude target identification, underwater submarine detection systems, and missile guidance systems.

In retirement he enjoyed travel, including cruises with his family. Lawrence read computer trade journals, keeping family and friends up to date on viruses and scams. He frequently shared articles about world issues he deemed important.

Lawrence and Linda are survived by their son, Steven.

Warren Winscombe is alive and well at 77, an age he never expected to reach. He has enjoyed retirement since 2013 more than he expected to, despite severing ties with NASA (something few colleagues have done).

Warren had a five-year plan for retirement involving teaching about paleoclimate, exoplanets, and global warming, first at the Weizmann Institute of Science in Israel, and then at four Osher Lifelong Learning venues in the San Francisco area. He has no new five-year plan but remains fascinated by science, and by the decline in respect for it. He believes science is really a thin overlay on a country that was not known for science before WWII, and that few realize its fragility when the US tolerates and even panders to rampant disbelief in truths like evolution, the efficacy of vaccination, the harmlessness of radio waves, and anthropogenic global warming. Nevertheless, Warren remains eternally grateful to MIT for the outstanding education he received—“May you forever maintain your astronomically high standards.”

Epaminondas Embiricos and Angela left London and now share their time between Greece and Monaco, visiting London occasionally to see their children, grandchildren, and Angela's 97-year-old mother. Epaminondas still works in the shipping sector.

Epaminondas's son George has three children, while son Nicholas has yet to take the plunge. They both also work in shipping.

Anthony England has entered a 60% appointment retirement year. This comes after 14 years as a scientist astronaut and mission specialist with NASA, seven years as an exploration geophysicist with the US Geological Survey, 24 years as a professor and administrator with the University of Michigan in Ann Arbor, and eight years as dean of engineering and computer science at UM-Dearborn.

Selected in 1967, Tony was among a group of astronauts who served as backups during the Apollo and Skylab programs. He flew during the space shuttle program, serving as a mission specialist on STS-51-F in 1985 [the eighth flight of *Challenger*]. He has logged more than 4,000 hours of flying time and 188 hours in space. He says “it was a great ride, enabled by eight years at MIT.”

Tony and Susan will pursue personal joy with family and small projects at their retirement home on Lake Michigan near Charlevoix.

—**Bill Ribich**, 18 Revere St., Lexington, MA 02420; email: WCRibich@comcast.net.

1965

George Kossuth: “Since the reunion, I’ve gotten married (one is never too old to get married again), had open heart surgery to replace a valve, and nurtured my new wife through a total knee replacement surgery. Taking a cruise allows us to travel without too much walking.”

Ron Mandle and wife Linda celebrated their 51st anniversary. They’ve been socially distancing at their house in Connecticut while Ron teaches finance virtually at Baruch College, which will likely continue in the coming semester. They’ve seen their daughter, son-in-law, and grandchildren in NYC on occasion. They haven’t seen their son, daughter-in-law, and grandchildren in Barcelona in a year, with possibly another year looming. FaceTime makes up for some physical separation but is hardly the same. Their granddaughter in Spain (13) was recognized by the Jane Goodall Institute’s Roots & Shoots program as a mini-heroine: she helped organize projects to clean up the Mediterranean Sea. Their NYC granddaughter (10) writes a weekly newspaper on current topics. Ron and Linda take hope that the younger generation will indeed make the world a better place.

David Manalan: “Running our 55th reunion as a virtual event was challenging, unique, and truly MIT. My thanks to our Alumni Association’s Nancy Mims and class officers **Peter Heine-mann** and **Cliff Weinstein**, as well as **Sharon Ross** and Bronze Beaver winner **John Golden**. Find videos of our class reunion activities, with links, at our website. As your acting webmaster (someone please volunteer for this), I’m learning about the new Encompass website for our class. A survey this fall will gauge interest in holding an abbreviated in-person reunion in May, assuming conditions allow.”

George McKinney: “Marie and I enjoy our over-55 community, Oakmont, in the Sonoma Valley of Northern California. It’s a great place to live during these ‘shelter in place’ days, with wide streets, great places to walk, and disciplined neighbors (masks and distancing). We’ve been in the center of the fires and outages here, but our community has not been impacted other than smoke. We organize, teach, run, and attend Zoom events. I run a YouTube channel for locally produced

events. We stay in touch with our children and grandchildren, although we haven’t seen the ones on the East Coast. I enjoy reading the Senior House blog.”

George McQuilken: “Classmates, I know you haven’t seen me for at least seven years, including our 50th reunion. I’ve spent those years in six hospitals and at least eight rehab and care facilities. The high point: a couple years ago, a doctor at Mass General asked, ‘How many lives do you have, anyway?’ Fortunately, at least one remained, despite stage IV cancer and an antibiotic-resistant spine infection. Thanks to my family, and dedicated CNAs, OTs, and PTs, I live (with assistance) in a house we purchased in Bolton, MA. Physically no longer bed-ridden, I can stand up by myself and transfer to a wheelchair. I’ve resumed my group leader position in the eCoast Angels, an early-stage investment group I cofounded 20 years ago. I’m anxious to resume cultural and political activities, but I need to develop more stamina and mobility. I read a great deal. My physical training schedule reminds me of our freshman year, when I joined both the crew and basketball teams and I had to run, not walk, from activity to activity. Today I neither run nor walk, but I do train hard.”

William Mogensen: “The Mar-ion Yamba Medical Center has been upgraded to a Level 3 Health Center. It began as a one-building clinic and has grown into a medical center. The Ugandan health-care system recognizes several types of facilities: VHT (village health team), Clinic, Health Center (Levels 1, 2, 3 & 4), Hospital, and the National Referral Hospital. This is a major accomplishment for Yamba Uganda (the charity) and should improve health-care access for the people around Zirobwe, Uganda. Staffing is complete, and eight medical professionals are ready to move in. A new building is planned for 2021, an expanded maternity facility. For more information, contact me at mogie@alum.mit.edu.”

Priscilla Newberger: “It rained last night (Sept. 17) and the air in our part of the Willamette Valley of Oregon is only moderately bad today. We were shut up in the house for 10 days with hazardous smoke from wildfires. The big fires are only 10% to 20% contained [at writing], and the damage has already been terrible. Several small towns have been essentially wiped out. Plus, the small town on the Florida panhandle where I went to high school is badly flooded

from Hurricane Sally. There are still more storms forming. It must be getting hard for even dedicated deniers to ignore the results of climate change.”

Ron Newbower: “As was the case for many of you, our planned travel adventures and get-togethers with friends were dashed in the spring; Donna and I mainly hunker down. I’m grateful we had a large gathering of my longtime friends and colleagues from my Massachusetts General Hospital career in September, before covid-19. About 100 came together in Boston, many traveling from around the country, to celebrate the inauguration of an endowed chair in biomedical technology innovation, created by MGH and named in my honor. With the inexorable aging of folks, it’s unlikely that such a complete reunion will be possible again. Donna and I were so pleased that our sons were there, David from the Boston area and Daniel from Santa Clarita, CA. The pandemic gave me time to personally thank those who spoke at the event; I also sent them commemorative books of photos and transcripts. We have seen the Boston-area grandkids, ages eight and 10; David and his wife have added more joy with a one-year-old. For the West Coast grandkids, also eight and 10, we are limited to FaceTime.”

Gene Barry Chase died on Sept. 14, 2020. He was professor emeritus of mathematics and computer science at Messiah College in Mechanicsburg, PA. He received his SB in mathematics from MIT and his PhD from Cornell. He was accomplished in mathematics, computer science, and linguistics and recognized for outstanding teaching, mentoring, and coaching of students. He was a frequent contributor to Class Notes. He leaves his wife, Emily Vera Parke; three married children, Tim Chase, Priscilla De Rosa, and John Chase; and eight grandchildren. Obituary at <https://www.pennlive.com/life/2020/09/remembering-gene-chase-curious-kind-brilliant-open-minded-interesting-and-interested.html>.

–**Cliff Weinstein**, secretary, 26 Sherburne Rd., Lexington, MA 02421; email: cjw@ll.mit.edu; fax: 781-981-0186; tel: 781-862-2751 (home), 781-981-7521 (work).

1966 55th Reunion

From **Kenneth Caneva:** “My book, *Helmholtz and the Conservation of*

Energy: Contexts of Creation and Reception, will be published by MIT Press early in 2021.”

From **Carl Jones:** “My wife, Lenore (née Haas, ’69), and I are still here. Mid-July our son and his family drove here from Colorado to visit for a month. Going from a house of two to a house of six was a challenge, but having family/grandkids around was wonderful. Activities included lots of bicycle and scooter rides, walks to the local kid-height basketball hoops, trips to the beach, dinners at a table for six, and reading bedtime stories. They left four days after our weekend of lightning strikes and just before the smoke started filling the skies. I signed up to be a census enumerator but decided I was not comfortable doing interviews at houses and apartment complexes. That was a big disappointment.”

From **Brian Schumacher:** “Not much news; pretty quiet at our house. We are well and hope the same for you.”

From **John Dawson:** “July 1 commenced my 15th year of retirement from Penn State, with no regrets. I’ve enjoyed traveling, continued my research on the history of mathematics, tackled a huge backlog of reading, and pursued my serious amateur interest in mycology. Last fall I was especially pleased to learn that a mushroom I collected eight years ago (*Amanita pinchotensis*) had been found to be new to science. On August 5 my wife, Cheryl (née Klitzke ’67), and I quietly celebrated our golden wedding anniversary. Due to covid-19 we couldn’t do so in Banff, Alberta, as we had planned, but we are profoundly grateful that, apart from some orthopedic issues, we are so far both in good health. We hope that by spring the pandemic will have abated and we will be able to wear our red jackets on campus with our 55th reunion classmates in the events of the Cardinal and Gray Society. For now, let’s do all we can to stay well and help America become a truly democratic society that values science and respects the rights of all who live here.”

From **Bob Poole:** “Lou and I are hanging in here in South Florida, dismayed that our big European trip planned months ago has been, of course, canceled. I work full-time as director of transportation policy at the Reason Foundation, the think tank I founded in 1978. It’s been a busy year, with Zoom workshops and meetings replacing the usual transportation conferences

“Last fall I was especially pleased to learn that a mushroom I collected eight years ago (*Amanita pinchotensis*) had been found to be new to science.” —John Dawson ’66

and speaking appearances. With the travel time saved, I’ve accomplished my full FY 2020 work plan while finally achieving my goal of the past three years: cutting back to 40 hours a week (from 50). That gave me more time to work on two of the last four sections of my O-scale model railroad, begun in summer 2004 in the 30-by-50-foot train room. My 2018 book, *Rethinking America’s Highways* (University of Chicago Press), has done well enough that they are issuing a paperback edition in January.”

From **Harold Dershowitz**: “I regret to report the passing of my wife, **Ann Kazanow Dershowitz**, on June 1, 2020. Ann was one of only 19 coeds in our entering class and got her SB in Course 7. When she began MIT, McCormick Hall had not been completed and the coeds were housed on the Boston side of the Charles River. She was in the Social Action Committee and tutored Cambridge elementary school students. She was active in Hillel all four of our undergraduate years. Ann was born in Chicago and then moved to Skokie, IL. In high school she was involved in statewide science fair competitions and the Civil Air Patrol. She received an MS from the University of Pennsylvania in molecular biology. We had three daughters and moved to West Hartford, CT, and Ann taught a chemistry class at night at the University of Hartford. Then we moved to Atlanta, and Ann was a lab researcher at Georgia Tech and subsequently Emory University. Our last residence in the US was in West Orange, NJ, where for 26 years Ann studied and produced many papers on gene replication in yeast at the University of Medicine and Dentistry of New Jersey. She was always active in her synagogue and other communal organizations. We moved to Israel three years ago, and she was enjoying her new life and trying to master a new language.”

From **George Works**: “On the island of Sint Eustatius, we’ve had no community transmission of the coronavirus due to a strict prohibition of travelers from high-risk countries and two-week quarantine for others. Life here is nearly normal, with schools, bars, restaurants,

etc. open. The Dutch have been unusually generous in providing support for employers and employees in the tourist industry. We have universal health care, and our small hospital has its own PCR equipment, providing test results in about 90 minutes.”

From **Paula M. Jacobs**: “Bored but healthy. I spend most of my time hunkered down in West Virginia with my spouse and cat, working full-time from my dining room table! My work for the National Cancer Institute can be done remotely and with Webex/Zoom meetings. All scientific/medical conferences have become virtual, with both good and bad aspects. I travel to my apartment in Maryland a few times a month for medical appointments and (finally!) a haircut. I cook a lot. We bike on local trails several times a week unless it’s over 85 degrees. In the fall, we will probably bike more. A few years ago I bought a tadpole-style German three-wheeler—way more comfortable to pedal, sitting in a nice chair—and later added an optional battery assist. So far, neither we nor our widely dispersed children and grandchildren have contracted the virus, but I expect it’s only a matter of time.”

—**Jeff Kenton**, secretary, email: jeffrey.kenton@comcast.net.

1967

Our 55th reunion is scheduled for May 26–29, 2022, so please mark your calendar. By popular demand, and continuing a tradition that started three reunions ago, we will have a post-reunion in Newport, RI. If you would like to join our reunion committee and participate in our cheerful Zoom meetings, please email 1967@mit.edu. There’s plenty of room, especially if you would like to do outreach to classmates.

As I write these notes on the anniversary of 9/11, countless wildfires rage across the American West, with California, Oregon, and Washington especially hard hit. Here in the Seattle area, our neighborhood streets are oddly empty because of the heavy smoke, giving the impression that everyone has been beamed up. Our indoor lights are

on during the day to dispel the gloom. According to the World Air Quality Index from IQAir, Seattle today had the worst air quality of all major cities in the world (but was soon surpassed by Portland, OR). At the same time, we are in the throes of an unprecedented worldwide pandemic, which at this writing has taken the lives of more than 195,000 in the US and 925,000 worldwide.

Lee Seldon of Melbourne, Australia, who has relatives in California and Tacoma, WA, knows something about historic wildfires. During the catastrophic 2019–’20 Australian bushfire season, also known as the Black Summer, “Australia had the worst bushfires on record, followed by the worst viral pandemic in 100 years,” he writes. “You guys on the West Coast are doing it backward. Regarding the fires, I’m afraid the same will happen to you as did to us—the firefighters had no hope, and we had to pray for and wait for rain. In November and December our firefighters were trying to fight the fires; by early January they were just trying to save houses; and by mid-January they were only trying to save people, including themselves. One of our fires had a 200-mile front—where do you even start to fight it? The TV images from your side look terribly like the ones from ours, either awesome or terrifying. In Melbourne, we are about to become the only city/state in the world to beat a second wave of covid-19. We went into Stage 3 lockdown in July, which had no effect. We have been in Stage 4 lockdown since early August. Basically, you do not leave home except to buy food (within five kilometers of home) or if you are an essential worker; all retail shops, restaurants, and churches are closed; there is a curfew from 8 p.m. to 5 p.m.; you always wear a face mask outside of home. There is much grumbling, but infections have come down from 700/day to about 40/day. Two more weeks of Stage 4, and then we can start to open up slowly. Wish us luck, and we wish you the same.”

Stephen Kent Holford, known to his family and friends for his dry wit, love of music and cooking, and fondness for the newest gadget, passed away Aug. 16, 2014, at the McCarthy Care Center in Sandwich, MA, in the company of his wife and children. He was 68 and had fought melanoma for 10 years. Born and raised on the Great Plains in Hutchinson, KS, Steve lived at Bexley

Hall and Burton at MIT and graduated with SB, SM, and ScD degrees in electrical engineering. He is survived by wife Meredith, of Mansfield, MA; daughter Amy of Indiana; sons Matthew and Casey of Brooklyn; and granddaughter Sigrid Taekyung Holford-Lee, the apple of his eye. Steve’s obituary appeared in the Journal-News Independent. Steve worked at Oki Electric Industry, GenRad, and several high-tech startups. Most recently he worked at the Woods Hole Oceanographic Institute helping to equip and launch huge buoys in the deep sea that send computerized signals back to the US indicating changes in weather, wind, temperature, and currents. Steve invented a medical device on his kitchen table in the ’70s that helped diagnose blood clots, and later he helped perfect a computer system at Faulkner Hospital that graphed and differentiated the sounds typical to several kinds of lung diseases. This proved to be a critical technical addition in the diagnosis of asbestosis, lung cancer, and chronic conditions that take millions of lives every year. Even when his disease prevented him from working, Steve kept busy and developed a love of cooking, stocking his house with equipment and ingredients worthy of a restaurant. He enjoyed *America’s Test Kitchen* and was a frequent home tester of host Chris Kimball’s recipes. He loved nature, especially his big red goldendoodle, and he was on the board of directors of Mansfield’s Natural Resources Trust. His children remember him for drawing diagrams to illustrate everything from high finance to plumbing, for his ready supply of hilarious puns and practical jokes, and for his complicated lists of nicknames for them and their pets.

Ted Trueblood of Anchorage, AK, is active in the local Rotary Club, which covers Alaska and Yukon Canada. He was Rotary district governor for the club (District 5010) in 2011–’12, when it also included Siberia and the Russian Far East. He has traveled throughout that chilly stretch of the world, but in winter months he prefers warmer lands, such as Egypt, which he visited last February.

Classmates who relish fresh perspectives anchored in the diversity of our Class of 1967 will enjoy **George Sacerdote**’s book, *Memories of Memories: Essays on the Bicultural Education of a Second-Generation Member of America’s Italian Hebrew Diaspora*. George grew up in New Jersey and Italy’s Piedmont region in the 1950s and ’60s. After the

Italian Fascist racial laws of 1938 were enacted, his parents and brothers went into exile from their comfortable upper-middle-class life in Italy. They settled first in France and later in the US, where George was born in 1945. He grew up speaking Italian, English, and French in a multicultural household that divided its time between the US and postwar Italy. After earning his SB in mathematics from MIT and a PhD in mathematics from the University of Illinois, George had several international careers as an academic mathematician, management consultant, and entrepreneur, working in America and Europe. This remarkable range of experience gave him a unique perspective on the many social issues and cultural changes on both sides of the Atlantic in the second half of the 20th century. In his series of essays in *Memories of Memories*, George reflects on his personal life experiences and his family's history to distill the fundamental values that shaped his life. His story is told from the unique perspective of one who was native on both sides of the Atlantic and thus could view national cultures and events as both a local participant and an outside observer.

—**Jim Swanson**, secretary, 15302 29th Dr. SE, Mill Creek, WA 98012; email: jswanson@alum.mit.edu.

1968

Greetings from the banks of the Potomac amid the covid-19 pandemic. We hope everyone is keeping safe. Sadly, we report three deaths.

Terry Dee Prince (Course 21B) died on Oct. 25, 2019, in Charlotte, NC. He was born in Tulsa, OK, but his family later moved to San Antonio and then Dallas.

After graduation Terry completed the coursework toward a master's degree in theology while still in Boston. He also met and married Pamela Jane Grant, from Presque Isle, ME, and they had two children before moving to Poland, ME, where he worked for the Catholic Diocese for 12 years. During that time, he and Pamela divorced.

Terry later moved to New York, where he taught German at NYU and Jersey City State College. He pursued a PhD in German literature from NYU. He met Brian Dennis Gallagher in NYC, and they moved to Detroit, where Brian worked at the Detroit Institute of Arts. In 2007, when Brian became curator of decorative arts at the Mint Museum,

they relocated to Charlotte, NC. They were married in 2015.

Over the years, Terry explored his deep religious values, fascination with languages, devotion to genealogy, and love for animals. He became a religious scholar, writing extensive liturgical works, including a comprehensive Liturgy of the Hours for Animals, and teaching adult formation classes at St. Peter's Episcopal Church.

He is survived by his husband, Brian; his two sons and their wives; and three grandchildren.

David Ogyrdziak passed away in Davis, CA, on May 6, 2020, with his wife of 50 years, Maria (Kivisild '69), at his side. David attended MMI Preparatory School (PA) on an academic scholarship, then earned an SB in life sciences from MIT, where he was in Theta Delta Chi and a high jumper on the MIT track team.

David spent the summer of 1968 in Davis training for the Peace Corps, but he chose love over the corps, returning to MIT and Maria that fall. He began a PhD in food science at MIT and married in 1969.

During his Peace Corps training, David discovered the city of Davis. Raised in rugged coal country, he dreamed of his children growing up in a green, safe, friendly, small college town; Davis was a perfect fit.

After David finished his doctorate, in 1975, the family drove to California. In 1977 he accepted a tenure-track position in the Department of Food Science and Technology at UC Davis. He was chair of the Food Science Graduate Group and led the creation of the food science PhD at UC Davis. He retired in 2009.

As a scientist, David developed a microbiological research program to probe basic biological mechanisms, understanding that this knowledge could be applied to real-world problems.

David's great loves were family, sports and fitness, travel, dogs, discussions and dinners with his book club, art, and food. He also coached AYSO soccer, basketball, and Little League Baseball. He encouraged his three children to develop their own interests and follow their passions.

Razel (Wittels) Kallberg (Course 12, SM '69) died in Rochester, NH, on July 31, 2020, with family at her side. She was born in New York City and grew up in Hopewell Junction, NY.

She was one of about 45 women in our class of nearly 950 students.

After earning her SM, Razel worked briefly as a geologist, but her real love was teaching. She taught high school science, math, and physics in Kittery, ME; Durham, NH; and at the Berwick Academy in South Berwick, ME, where she spent 22 years of her career, retiring in 2002.

Razel was talented and creative. She loved music and theater. She played the piano and produced student theater productions at Berwick Academy. She also loved sewing and needlepoint, and she was an avid ballroom dancer.

Razel met **Keith Kallberg** in 1966; they married in 1969. She was a Navy wife during his 30-year naval career and an office manager for his consulting business until 2018. Razel is survived by Keith, their two children, one granddaughter, and sisters Jill Wittels '70, PhD '75, and Nedda Wittels. Razel and Keith were among several couples where both spouses were class members.

Our sincere condolences to the family and friends of the deceased.

Dick Turner and his wife, Helen, are recovering from a severe traffic accident in March. They feel fortunate to have survived. Helen is struggling to transition from a wheelchair to a walker, and to moving independently. Dick is in touch with **Michael Rabinowitz**; he and Helen met Michael and his wife Diane on a boat trip down the East Coast. They hope to visit in the future.

About 35 years ago, **David Peterson** and wife Laura (Miller '69) started Ventana Systems, which makes simulation software for dynamic modeling (ODEs) and builds models of human systems (biological, organizational, etc.). Colleague Tom Fiddaman (PhD '97), developed a detailed dynamic stochastic model of the epidemiology of covid-19 in the 50 states. Because the model includes the effects of contagion by asymptomatic victims, transmission among states, and other important behaviors that aren't directly measured, it is useful for indirectly measuring the prevalence of covid-19.

Karla Karash and **Rick** have been okay throughout the pandemic: "Life in New Hampshire got much better once summer came with outdoor activities where we could be somewhat social. Rick and I enjoy golf, walking with friends, and kayaking and paddleboarding on the lake." Their daughter and family (with granddaughter Harper, 10) have visited a few times. Karla is a commissioner of their water district,

contending with drought as well as an increased population due to covid-19. She is also a court-appointed special advocate for abused and neglected children. Rick is on the board of their community association and serves as treasurer.

Robert (Bob) Brooks, PhD '75, wishes well to all his '68 and '75 classmates. He gave a detailed account of his life since MIT, including his fascinating career in research in the energy industry. Look for it in our online Class Notes.

Denis Coleman sent a summary of his career, which has ranged from teaching to consulting to founding software companies to angel investing. He is riding out the pandemic at his home north of Toronto and would love to hear from classmates. Read more in our online Class Notes.

Bob Roach retired from teaching math at Rowan College at Burlington County (NJ) in May, after 10 years—his "sunset" job. His wife, Holly, retired from Talbots, where she was an associate. Just before his retirement, Bob's school abruptly switched to remote classes, and his last eight weeks were a struggle. Afterward, their daughter and her husband, both chefs in Washington, DC, had a baby, so Bob and Holly had grandparent duty three days (and nights) a week. Bob lives north of Philadelphia, so they met halfway. He was scheduled to do four Irish gigs for St. Patrick's week (he's the fiddler), and his orchestra was planning Beethoven's Ninth Symphony in June, but everything was canceled.

—**Gail** and **Michael Marcus**, 8026 Cypress Grove Ln., Cabin John, MD 20818; emails: ghmarcus@alum.mit.edu, mjmarcus@alum.mit.edu.

1969

And now for something completely different. Where have I heard that before? This past summer **S.M. Kozubek** reached out to **Jerry Raines** about creating a musical for our 55th reunion. Your scribe suggested they include **Carol Scott-Conner**, which they did. At this point it looks like a *Star Trek* parody is in the works. If you want to participate, get in touch with the above via Infinite Connection or regular email addresses, which I have. Experience in writing music, directing, choreography, acting, dancing, singing, stage managing, set design and making props, lighting, etc., is a plus.



Barbara (Padgett) Yawn '69

Rural physician turned researcher

When Barbara (Padgett) Yawn '69 arrived in the small Minnesota community of Worthington in 1976, she was the only female physician practicing in a 150-mile radius. She quickly learned that rural populations weren't as well served by the health-care system as city dwellers. Her patients, she discovered, were by and large "competent, intelligent people but with much less access to medical information and many needs that were not being met."

Yawn spent 15 years there, delivering more than 2,000 babies and developing an inpatient mental-health unit so that patients didn't need to travel more than 100 miles for care. She then received a Bush Medical Fellowship and departed for the University of Michigan to study statistics and clinical research design. In 1991, she founded a private research group at Olmsted Medical Center in Rochester, Minnesota.

At that time, "research was done almost exclusively in academic medical centers, and the patients involved in that research were suburban and urban patients," she recalls. "There was a tremendous lack of any evidence and research data that pertained to the kind of patients I saw in rural practice. To me, that was a very exciting niche that I could help build."

Drawing on her memories of rushing to the hospital during blizzards to help deliver babies who all too often were premature, Yawn did her first study on preventing preterm birth. Her findings landed in the *Journal of the American Medical Association*. Later, she was among the first researchers to publish evidence to support screening for postpartum depression—now a common practice.

Before her retirement from Olmsted in 2016, Yawn and her team—which included her physician

husband, Roy Yawn '69, whom she met at MIT—published more than 300 peer-reviewed papers. Their research covered a broad range of topics, including immunization, sickle-cell disease, myopia, scoliosis, asthma, and chronic obstructive pulmonary disease (COPD). She continues to support COPD research as chief science officer of the COPD Foundation.

"My patients and colleagues taught me a lot about the need for primary-care, patient-centered, rural-based evidence," says Yawn, who shared what she learned through teaching, serving on national guideline panels, and hosting a nationally syndicated radio show about health care, which was broadcast from 1986 to 1996 to 500 rural stations. "I took the opportunity to explore several areas during my research career, and I felt I needed to give all that evidence back." —**Julie Fox**

From **Herb Lison**: "My wife and I volunteer during this difficult period to help shut-ins in our community with grocery shopping, household chores, etc. My wife also does remote ESL tutoring for refugees. I do free tax preparation for seniors and active-service military people.

"I'm trying to organize a Festschrift for Professor Jerrold Zacharias, whom some of you may remember. He led the effort to create a new physics curriculum for high schools, the Physical Sciences Study Curriculum (PSSC). If you have any recollections to share, please send them to me at lisonh@alum.mit.edu."

Bob McGregor wrote, "The McGregors have served as a host family for international undergraduate students at MIT for many years. Several stayed to work in the US after graduation. At our 50th reunion, not only did I march with '69, but one of our host students, a young woman from Lebanon graduating in chemical engineering, processed with the Class of 2019. A big day for all; we celebrated with her family at our home in Sharon, MA, where they could see

some of our beautiful countryside! She obtained a job with a local biopharma company but lost it in March with the economic downturn related to covid-19. Amazingly, she had job offers from two other local companies in the bioscience industry within a few weeks. The major challenge, of course, is that these companies must be willing to secure a work permit for her to stay in the country. Coincidentally, I'm a volunteer in MIT's mechanical engineering department, counseling students on their job searches; the difficulty recently has been the limited number of work permits available to noncitizens and the time required to process them."

Doug Flower passed away on July 28, 2020. **Mark Braunstein** writes, "My classmate, longtime friend, and former business partner died after a long illness with a mysterious neuromuscular disorder.

"After graduating from MIT, Doug moved to Canada, where he worked for a pioneering APL-based software firm. There he was involved in a number of impressive projects, including an

industrial automation system for a major producer of float glass. After returning to Boston, he worked for many years as a software consultant before he and I formed Wine Technologies in the mid-1990s to create software and eventually a website for noted wine critic Robert Parker. We were partners until Parker sold the business to a group in Singapore in December 2012."

Per his *Boston Globe* obituary, "Remembered for his peerless intelligence, entrepreneurial spirit, and his hard-to-ignore but entirely unintentional gruff exterior, Doug was a loving father and a kind man. Bestowed with a preternatural ability for his neutral expression to be misread as an icy glare, he was never quite able to answer the question, 'Why are all my son's friends scared to come over to play?' He is survived by his favorite and only son, Nick, of Tokyo, Japan; former wife Nolly; and siblings Carol Coddington, of Alexandria, PA; Gary Flower, of Clemmons, NC; and Judy Reins, of Winston-Salem, NC."

—**Carl Everett**, email: ceverett@alum.mit.edu.

1970

We write in September, pre-election and prevaccine.

Ron Stauffer worked with the Virginia Democratic party's Voter Protection Team to ensure that all eligible voters, regardless of party, had access to polls and had their votes counted. In August, Ron wrote, "This year, which promises to be especially divisive and chaotic, [I am] a liaison with local electoral officials struggling with the anticipated surge in early/absentee voting by mail. With early planning, increased resources (from the CARES Act), and preprocessing of absentee ballots, we hope to avoid an extended postelection period of uncertainty, but I am not optimistic. The prospect of a physical confrontation over transfer of political authority in this country is not something I had ever contemplated and hope not to witness.

"I graduated from law school in 1973 and practiced in Washington, DC, until retiring in 2005. Since then, I've rekin-

dled interests from MIT days, including physics, cosmology, quantum computing and cryptography, and game theory. During the pandemic I've resurrected my computer coding skills and explored machine learning and other facets of artificial intelligence. I am hopeful we will have a belated in-person reunion."

From **Tony Picardi**: "I write on the 178th day of our lockdown, which began on March 16 because one of my friends had the first infection on the eastern shore of Virginia. My wife, Shirley '72 (PhD '76, SM '81), and I have begun to visit people under the trees by the creek, where there is usually a breeze in hot weather. No one has been in our house since March 16 except repairmen. Groceries are delivered to our trunk in the store parking lot; we have been inside a hardware store twice. UPS and FedEx trucks stop here daily. We get out to walk, row, bike, or kayak. We consider ourselves luckier than many people who are not retired and living on a farm in the middle of nowhere. We celebrated 50 years together in 2019, but on our actual 50th wedding anniversary, Sept. 4, 2020, we were in the depths of covid-19. Today, however, I found a bottle of Château d'Yquem '16 in the cellar that we'd shipped back from Bordeaux last year. Tonight, on the anniversary of 9/11, we both celebrate and mourn. I wanted to write a cheery note about sheltering in place on the farm, with birds and butterflies in my garden. Yet we are in a profound state of grief and mourning for the covid deaths, the western wildfires, the climate disaster, and the politics of it all. I have read the entire Class of '70 reunion book. What a great and talented bunch of folks. I enjoyed our virtual reunion in May and continue to enjoy our class website, created and maintained by **Jesse Heines**."

From **Don Hines Edward**: "I write from our refuge in Verona, WI, where we fled on March 9 as the pandemic became real for America. Our daughter convinced us to get out of Georgia—a good call. Our little condo is a few blocks from our daughter, son-in-law, and granddaughter; we and the other grandparents babysit six days a week while the parents work from home. We have lots of time with our granddaughter, and everyone is happy. The Military Ridge Trail is 30 feet from our back door; we bike two miles one way to see bald eagles, great blue herons, cormorants, and sandhill cranes on a small lake and the other way to see the prairie covered

in wildflowers. The 25-mile trail runs from downtown Madison to Mount Horeb, and a mini solar system runs along it. We're halfway between Uranus and Neptune; our ambition is to bike the full distance and celebrate with a beer at the Grumpy Troll in Mount Horeb. Thanks to delivery, we haven't been in a store since we arrived and have rarely been healthier, missing all the little colds and bigger flus one picks up through casual contacts. We've been lucky; we're keenly aware that many people have suffered tremendously. We hope we can all begin to recover in January. I've enjoyed getting to know several classmates and have closer contact with old friends through the Class of '70 Environment Panel. We intended to hold the panel during reunion, but Zoom is not so bad. We had three environment talks this summer, and I look forward to more."

Willie Vicens and **Jesse Heines** ran a Class of '70 Baker House reunion on Sept. 12 over Zoom. **Howard Bluestein**, **Steve Cohen**, **David Covert**, **Bob Dennis**, **David Dobkin**, **Chuck Friedman**, **John Kessinger**, **Alan Marks**, **Barry Mitnick**, **Howard Morris**, **David Njus**, **Bart Noyes**, **Steve Pincus**, **Irwin Plitt**, **Robert Potash**, **Bob Scanlan**, **Ron Stoltz**, **Rod Walker**, and **Jay Zager** signed on. "Everyone gave a synopsis of their lives after graduation," Jesse said. "Those snippets generated so much discussion and related stories that we just kept going. I was exhausted from laughing by the end."

Sadly, we have two deaths to report. **Ken Larsen** (Course 6) died on April 13 at his home in Chapel Hill, NC. Ken grew up in New Bedford, MA, where he ran a space club when he was 10. At MIT, he lived at Baker House and played varsity golf. He briefly attended graduate school at the University of Pennsylvania before accepting a programming job with IBM, where he was a project manager until his retirement in 2002. He enjoyed golf, jogging, biking, swing dancing, and backgammon, participating in and winning many tournaments. He ran IBM's employee golf tournament for 13 years, building participation to more than 300 employees. He also directed tennis tournaments for a local sports club and the Durham-Chapel Hill Backgammon Club for nine years. He helped lead a successful battle against a light rail system in the Chapel Hill area that would serve only a tiny portion of the two counties

it was meant to serve. The humor section on his personal website included an account of the 1968 Baker House snow-making hoax.

Frank Earl Woltz died on May 18 at his home in Waverly, OH. He earned bachelor's, master's, and doctoral degrees from MIT in Course 10 and MBAs from both the University of Delaware and Harvard. While at MIT, he lived at Baker House and then off campus, and he rowed crew. He worked as a chemical engineer at MIT, the Merix Corporation, and DuPont. Earl traveled extensively and enjoyed meeting people, playing sports, and playing bridge and other games.

Stay safe and send us your news.

—**Karen** and **Greg Arenson**, secretaries, email: karenson@alum.mit.edu; gregory@alum.mit.edu.

1971 50th Reunion

Since the pandemic is still on, we need additional reading material. This month's class survey question: "What is the best book you have read during the pandemic, and why?"

R. Hal Moorman: "I was honored to be selected as Lawyer of the Year, Trusts & Estates, Houston area by Best Lawyers, awarded to one lawyer each year. The most interesting book I read was *Seeking Allah, Finding Jesus: A Devout Muslim Encounters Christianity*, by Nabeel Qureshi."

Jeff Murray: "*Owls of the Eastern Ice*, by J. Slaght—terrific nonfiction about a grad student's effort to survey this endangered species in Eastern Russia. Great nature writing, unusual and amazing people he meets along the way, and the intersection of the wild with the needs of people. *Station Eleven*, by Emily St. John Mandel, is awesome fiction and pandemic-related. Best book read to grandkids, via Zoom, was *Where Are You Going, Baby Lincoln*, by Kate DiCamillo."

Charles E. Blair III: "Some suggestions: *My System*, a chess book. The author's anecdotes and analogies and his bombastic style are amusing. *Quantum Computing Since Democritus*: an MIT professor combines technical content with a chatty, sometimes polemic, style. *Quantum Computer Science*, a not-too-much-nonsense textbook on the same subject. *Why Quark Rhymes with Pork*: not-too-technical essays on various physics subjects. *Finite-Dimensional Vector Spaces*: I got a deserved C in

linear algebra, and this classic does a good job of explaining what I failed to learn back then."

Daniel Blodgett: "*The Improbability of Love*, by Hannah Rothschild. She is a very good writer, and the story is compelling."

Oljan Repic: "Jared Diamond's *Collapse: How Societies Choose to Fail or Succeed*. The stupidity or greed of leaders causes ecological catastrophes because they refuse to acknowledge the approaching disaster. His examples are small island societies, whose populations could move and start over after they ran out of resources. But where will earthlings escape to?"

Tom Sico: "As a Course 21 major, it makes sense that I'm reading classic pandemic literature: *The Plague*, by Albert Camus, and *The Decameron*, by Giovanni Boccaccio. *The Plague* immerses you in the absurdity of life and death from an unknown virus. *The Decameron*, set during the Black Death in 1348 Florence, is really a fun series of tales told by 10 people who flee to the countryside to escape the plague. Amazing how stories of deceit and licentiousness from 650 years ago still seem fresh and interesting today."

Avi Ornstein: "*The Name of the Wind* and *The Wise Man's Fear*, both by Patrick Rothfuss. The detail was fantastic, and they got my full attention. I'm waiting for his third book, not yet out."

Florence Sheehan: "*Destiny Disrupted*, by Tamim Ansary, is a history of the world through Islamic eyes and how the Western and Islamic civilizations grew up oblivious to each other. I raced through it as if I were reading a detective story. Then I read *The Silk Roads*, by Peter Frankopan, and now I'm reading the daily news with a more informed perspective. *The Silk Roads* is a history book too, but so well written that I read nothing else until I finished it. Amazing, because I *hated* history throughout school."

Lloyd Marks: "*Just Mercy*, by Bryan Stevenson. It chronicles his life as a lawyer for the Equal Justice Initiative, which exposes the truly unbelievable injustices in our 'justice' system."

Kate Baker: "I live where nobody thinks to wear a mask or practice social distancing. My covid stories about a population committed to promoting the rights of the individual over the common good would just infuriate. Best book read during the pandemic: Sidney Dekker's *Drift into Failure*—thought-

provoking. Those who have spent their lives in hazardous industries may discover insights as they argue or agree with the experiences and conclusions of the author.”

Mark Fishman: “John Bolton’s *The Room Where It Happened*. A careful chronology of key events in the Trump White House leading up to and during Bolton’s tenure as national security advisor. He demonstrates that Trump is incapable of grasping the nature of the presidency, unable to hold a thought for more than one conversation, and unwilling to listen while anyone else speaks. For something less political, *Nine Essential Things I’ve Learned About Life*, by Harold S. Kushner, or *Not in God’s Name*, by Rabbi Jonathan Sacks.”

Tim Finin: “I read Yuval Harari’s *Sapiens: A Brief History of Humankind*, which gave me an optimistic outlook on our future. Almost finished *The Pursuit of the Millennium: Revolutionary Millenarians and Mystical Anarchists of the Middle Ages*, which deflated my optimism a bit, since it documents that humans seem vulnerable to dark ideas, which I see emerging today.”

Zane Swanson: “*The Enigma Cube* is the best book I’ve read during the pandemic. It was easy to read on my Kindle, and the story had science fiction suspense.”

Fr. Donald Raila, OSB: “*Leonie Martin: A Difficult Life*, by Marie Baudouin-Croix. This biography of one of the sisters of St. Therese of Lisieux shows how a person with many natural deficiencies can learn to cope and even overcome some of them. Excellent for anyone who experiences chronic or occasional failure.”

J. Andreas (Andy) Howell: “*Countdown 1945*. The story of the building of the atomic bomb, the multifaceted technology that went into it, the people who made it happen, and the political agonizing that went into the decision to use it.”

Frank Heile: “During the pandemic, I lost almost 20 pounds and am at my goal weight! I’ve made progress on my book, *Consciousness and Spirituality Explained*—that is consistent with currently known laws of physics—no supernatural ‘God’ or ‘soul’ required. For a preview, see the videos on my website homepage: www.SpiritualityExplained.com. My wife and I enjoy frequent visits from our 28-year-old daughter, who lives 10 minutes away from us in Santa Clara, CA.”

Gim P. Hom: “After 30 years at Digital Equipment Corporation, which was bought by Compaq and then by Hewlett-Packard, I took advantage of an early-retirement program. After travel and house renovation, I volunteered helping in a course by Professors Hal Abelson and Gerald Sussman. I enjoyed the work and accepted an offer to return full-time as an instructor. Then I was asked to take charge of the course. After teaching for some years, last year I was promoted to senior lecturer. Now, after 15 years teaching at MIT, I’ve retired. I’ve enjoyed teaching and using my engineering experience. I will finish advising my last group and will resume knocking items off my bucket list in a year or two.”

G. Thomas Gibson: “During lockdown I had my knee replaced; it had been distorted since birth. (This is why I was never good at sports.) My other knee gets done whenever the next lockdown occurs. Renewed some old friendships. Sent out periodic updates on the covid-19 virus from a different perspective. Worked on my 25-year hobby of 3D virtual-reality paintings.”

—**George W. Gawrys**, email: ggawrys@alum.mit.edu.

1972

Mark your calendar now for our 50th reunion on May 26–29, 2022 (including Memorial Day weekend, since the graduation schedule was changed). See you there! As always, there’s more than fits to print! For full text with links, Google “MIT 72 homepage.”

In a classic example of burying the lede, **Len Sigal** waited until his third paragraph to tell us that he was elected a master of the American College of Rheumatology. He and Barbara are doing well, but the lack of tourists is seriously hurting the Berkshires economy. Most of his patient care is face to face. He notes that telemedicine can be effective, but sometimes, physical examination and visual connection in person is needed. Most of his travel plans were canceled. The good news, he says, is that they will be home all spring and summer, where a fecund peach tree promises lots of baking and canning. Children Caroline and Merissa are doing well: “Merissa gave us the most beautiful grandchildren in the world (I am entirely unbiased in this assessment) and, as the saying goes, had I known how much fun they are, I would have had them first.”

Steve Chessin gave another example of pandemic complications, writing from Leominster, MA, where he was waiting out a covid-19 test for his daughter, Sylvia, so that she could start a postgraduate year at Cushing Academy. Traveling from California to Massachusetts included stringent restrictions, he said, but they appeared to be enforced on the honor system. After five days, Sylvia’s test proved negative, so Steve could go home. He still works for Oracle but plans to retire in 2021, “unless I’m having too much fun.” He found a younger board member to join him as co-president of Californians for Electoral Reform: “I get to do the parts of the position I like, and he does the rest.” He’s looking forward to the 50th reunion. Perhaps he and Laurel can bring Sylvia, as they did to our 35th!

Josh Goldman also involved his daughter in MIT ceremonies. She attended our graduation at age two months, and now she has published her first novel: *The Likely World*, by Melanie Conroy-Goldman. “It’s a great book (I’m entirely objective)” with lots of local Boston color, says Josh. More details in the online version.

Allan Kirkpatrick has been organizing the Northern Colorado MIT Alumni Happy Hours for the past few years. When the virus shut down activities in mid-March, he started virtual happy hours, which attracted alumni from all around Colorado. “We had the most interesting conversations each month from March to August,” he says. “We are now back to an in-person monthly event, outside, socially distanced and masked, and we are glad to actually be with each other again.”

Mark Aquino says that grandparenting and online bridge keep him busy during the pandemic. Skype and Zoom keep him in touch with daughter Lauren ’98 and three-year-old granddaughter Audrey. He and Sue also enjoy their son’s children, James (3) and Chiara (1). Mark is on the US Bridge Federation’s board of directors—he teaches and plays bridge, and to date, he’s given 22 weekly Zoom sessions of “Shark’s Pointers Online.”

He reports a nasty fall last winter that gave him a shiner and resulted in a CT scan. The scan showed an anomaly on his thyroid, which turned out to be cancerous, and he had a thyroidectomy in February 2020. He notes, “I don’t know what, if anything, our classmates can do to ensure early detection. I certainly

wouldn’t recommend falling on the ice!”

Dave deBronkart says hello from Labor Day, “when we didn’t know how (or even if) the election would turn out. The whole West Coast is in flames. Sure would like to see more science put to use in running this planet!”

He went on to say, “Being 20 in ’70 was a hell of a lot more fun than being 70 in ’20,” in part because he had another medical adventure: cataract surgery gone awry. The first eye was spectacularly successful, but on the second, a common accident happened (one case in 90!): capsular rupture (Google it), with a bonus rare complication in which chips from the pulverized old lens fell through the rupture, into the eyeball. This created a mess. The remedy is vitrectomy: a specialist removes your vitreous humor by vacuuming out your eyeball and replaces it with saline. Dave says this was not a good way to spend two anxious summer weeks, but it’s over: the affected eye is almost as good as the first, he only needs glasses for reading, and overall, his night vision is infinitely better.

Did you know that when prescribed multiple eye drops, you’re supposed to wait five minutes to let each soak in before flooding with the next? First doc never told him; specialist did.

Dave Evans shared his thoughts on racial justice at some length. You can read his full essay in the online version. He noted, “Ironically, the safest places to live are those that were recently dubbed ‘dangerous’ but have had black and white hands to heal those neighborhoods; it only takes a handful of years. And ironically, or really tragically, then only a handful of years for perceptive young people to realize the health and beauty of those communities, and who is to slow down their rush to share in that? Sadly, bringing in their money and, usually, pushing out the very people at the core. Those of you (including, graciously, myself) who have lived in Cambridge’s Area IV, and perhaps before that, Riverside, understand.”

His message is one of hope: it is never too late. “And for us, I know for sure, I know beyond hoping, it is not too late. But it sure seems like, from our little window looking sleepily over the garden, we better get to weeding. Soon. Darn soon.”

Bill Roberts retired from Battelle Memorial Institute at the end of September. He plans to research and write

(and rebuild his model railroad) until the pandemic subsides and he and Peg can catch up on postponed travel.

–**Wendy Elaine Erb**, 1819 Meadow Ridge Rd, #G, Vail, CO 81657; email: wee@alum.mit.edu; **Bill Roberts**, 305 E. North St., Worthington, OH 43085; email: whroberts@alum.mit.edu.

1973

Pretty thin “pile” of updates this time around, but since we’re mostly confined to quarters these days, I can understand that news is hard to come by. That’s my way of saying that we got all of two notes from classmates for this issue, but that we understand.

Martin Strasmore shared: “It’s amazing to read the stories that people have sent you about their lives, and I’m thinking about sending a short note myself. When will it be published, and is it going to be online, as well?”

I left this part in because not everyone is aware, so here’s the answer: anything sent by the deadline for a particular Class Notes issue will be in the print and online version about four to five months thereafter. I do often remember, though, to send an email version to the class about the same time I submit it to Technology Review, so you would not have to wait.

Of course, Martin did offer some news as well. “Compared to the accomplishments of the people who sent in the stories,” he said, “I feel on a different planet. It might be because I graduated from the Sloan School in 1973, and I’m not a scientist.

“During the pandemic, I’ve been focusing on poetry and photography. My wife and I created an uplifting and sometimes humorous podcast called Poetry for Now. Our podcasts are short, originally about 10 minutes and now only six or seven; they include gongs, and they’re very topical about what’s happening at the time. I write the poetry spontaneously, and my wife plays the gongs. Check it out on any podcast app or poetryformnow.buzzsprout.com.”

Tom Lydon writes, “We’re beginning to get out a little bit more—for example, to restaurants couple of times a month. We’ve been trying to close on a home in Bermuda for two years, and we’re getting closer (hopefully in a month or two), but government bureaucracy there has been daunting. Bermuda is beginning to reopen and has done very well handling covid-19, with few cases

and deaths, so we’re looking forward to getting back there soon. Our 11th and youngest granddaughter, Claire, just turned nine months old, and there’s no sign of any more grandchildren at this time.”

Ruth and I are *still* mixing golf, reading, and pool time—same as last report. The consulting is at the level I’d like to keep it for the time being, and it may even turn into a long-term assignment at a low burn rate that would make a perfect transition to retirement.

Stay safe, everyone. Write soon!

–**Robert M. O. Sutton Sr.**, 3025 Beachcomber Dr., St. James, NC 28461; email: bsutton@alum.mit.edu.

1974

In response to covid-19, **Paul Pangaro** is reviving the Macy meetings from the founding of cybernetics in the mid-20th century. The first in a series of transdisciplinary, transglobal, and transgenerational meetings was held late last summer. See tinyurl.com/nmmone.

Alice and **Jack Rich** have been hanging out at home more than usual. Their son, Garrett, took a new job at Cruise (electric autonomous vehicles) and moved from San Francisco to Vancouver, WA. Garrett made them grandparents last fall. Now they must figure out how to get to the opposite coast.

Frank Morgan sold his house when he retired from Williams College four years ago. Last summer, he bought a little condo on the boardwalk in Ocean City, NJ.

Alan Ritter drove to one of his favorite state parks to hike its 10-mile trail last Labor Day. He finished a couple of his climbing trip reports, for the 50/50 trip to Montana (not) and Wyoming (success!) in 2016, and for Montana (success on the second try) in 2018. Read his reports under the “State Highpointing” pull-down on www.mtritter.org. Covid continues to mess with other aspects of his life. Scout events are virtual or extremely limited. Church is still online only and no choir, which is annoying for singers. Alan’s MIT-length hair finally got too shaggy, and he got a haircut at the end of summer. He was the only customer in the shop, and all the staff were masked, so minimal risk.

Michael Ray Butts died last spring. Michael spent his entire career in computer innovation and architecture. Over the years he was issued 36 US patents and was recognized internationally as

a teacher and speaker. He loved music, books, and film. He was brilliant, kind, funny, and uncommonly generous with his enthusiasms.

–**Barry N. Nelson**, secretary, email: BarryNelson@alum.mit.edu.

1975

Kyaw Tha writes, “While cleaning out some old boxes, I found the wedding invitation for **Keith Hersh**; unfortunately, he passed away a few years ago. I also found some course reports from the first year (’71–’72) where I assessed my own progress; the professors also wrote their assessments, including Course 12 professor Richard Naylor (then at MIT), who passed away last year. Being the proud father, I wanted to mention that my youngest daughter, who worked on UV sensor research while at the UC Berkeley Space Sciences Lab as a physics major, has her sensors on an EMUS instrument on the recently launched *Hope* Mars UAE probe. We’re keeping our fingers crossed that it makes it to Mars! The self-centered boast is I’ve been elected an American Meteorological Society fellow (they must be lowering their standards!), and in March, I was awarded the UC Davis Prize: ‘The UC Davis Prize, given annually, recognizes a faculty member who has demonstrated extraordinary dedication and achievement in undergraduate teaching and in research/creative activity. The UC Davis Foundation sponsors the prize, which is currently \$50,000.’ In a video about the prize, I mentioned being inspired by Professor Naylor’s teaching.”

Ned Forrester writes, “My last update was in 2008, but life continues. I officially retired from Woods Hole Oceanographic Institution in 2015, but that only means that I’m not working full time. Finally, I’m reducing my involvement in autonomous underwater vehicle design: finishing revisions and four layers of firmware/software for a 3000-component circuit board that I started before retirement, and slowly backing out of two decades of design, certification, and support for large-format lithium-ion battery systems. As a final gesture, I’ve begun to clean out my office after 35 years to make room for the next generation. Sorry to say, that shelf of MIT course ‘notes’ will not find a space in my next life. Our son graduated with SB and

SM degrees from MIT, 6.2, and has spent the following years as a software engineer at SpaceX in the Los Angeles area. Our daughter has completed both undergraduate study and law school at the University of Chicago. She and her husband, each at different law firms, will continue to live in Chicago, where Janice and I plan to join them in a couple of years.”

That’s all.

–**Peter Dinhofer**, secretary, 1620 Ditmas Ave., Brooklyn, NY 11226; tel: 718-219-9576; email: pdinhofer@alum.mit.edu. Skype, Google, WhatsApp: pdinhofer.

1976 45th Reunion

Dave Agans: “I’ve completed the Urban Legion trilogy, book two to be released in November. *Bikini Cowgirls of the Urban Legion* follows the further adventures of the Urban Legionnaires in their underground war with the pervasive Corporation, envisioning hilarious conspiracies behind the news, entertainment media, and not-so-legendary urban legends. If any classmates want a heads-up, sign up for the Legionnaire email list on TheUrbanLegion.com, or like my Facebook author page, authorDaveAgans.”

Bonnie Biafore: “Sitting in my living room overlooking the Rockies. Yesterday, 80 degrees and smoky from wildfires. Today, 27 degrees and snowing. Just another day. Social distancing means not being able to work on improv comedy, so I started writing sketch comedy. Yesterday, recorded first sketch for YouTube. Miss restaurants. Working through a huge number of recipes from cookbooks and magazines. Favorite is crunchy kale salad with fresh herbs, candied peanuts, and fish sauce. On work front, working on courses for LinkedIn Learning, and my Project Management Foundations course came in at #10 after hitting #2 in 2018 in their top-20 most popular courses to help people reskill during the pandemic.”

Gene Chang: “In June, after 48 years in Boston, I decided to return to Honolulu. The pandemic, quarantine, and stay-at-home orders made it challenging to shop for a home and make plans. All my possessions were reduced to one pallet of boxes from Massachusetts to be moved the last weekend of September. Networking to meet local MIT alums and other like-minded tech folks is also tricky. More news once settled. Aloha!”

Jerry Dausman: “I moved back to Boston. University teaching job was winding down when my wife got a great offer from a Boston biotech company. First stop was lunch with **David Abrams**. Second stop was rifle league championships, first March weekend. As an undergrad, I spent more time on the rifle range than in class. I volunteered as an unpaid assistant coach, but covid-19 canceled MIT sports through year end. Attending virtual alumni meetings in June was fun. My fraternity’s alumni board was lacking a treasurer, so I volunteered. MIT would experience overcrowding without independent living groups. MIT, through FSILG, is planning on reimbursing some of the operating costs this fall for these groups keeping the space available, which means I’ve got forms to fill out! I live in North Quincy, MA (a block from Wollaston Beach), walk the dog every morning, and spend my wife’s money—it’s a tough life!”

Todd Harland-White: “I retired January 2019 after 40 years of naval architecture at Northrop Grumman in Annapolis, MD, and moved to a lake near Charlotte, NC. I’ve put only 30 miles on my pontoon boat but well over 250 on my rowing scull to overcome the ravages of decades of sloth. Still no new sailboat. With a brief respite from tinnitus, I was able to sing again for the first time in a decade, but only in time for all choral and other group activities to be deemed dangerous. Zoomable things fill my days; I volunteer small business consulting with the MIT Venture Mentoring Service, mentor for the MIT Terrascope freshman program, and interview for MIT admissions. I take online classes and play guitar when the carpal tunnel and tendonitis allow. I participate in multiple book clubs and make audiobooks for Librivox.org—close to 500 by now.”

Jeff Tirey: “Living the dream! In mid-July 2019, departed on a sailing adventure I’d been thinking about for five years. I purchased a 40-foot sailboat in 2015 and made improvements to it, left Lake Champlain, headed south towards the Hudson River and New York City. Spent the summer sailing up the New England coast. I sometimes had crew, friends, or family, and sometimes single-handed the boat. Late September, I headed down New Jersey coast with a couple of sailing friends, enjoying a spectacular transit through NYC at night. Over the next

month, made my way up the Delaware River, down through the Chesapeake Bay and the Intracoastal Waterway, single-handing from Annapolis to St. Augustine. My wife and I spent about six weeks while some boat repairs were completed, then south to Ft. Lauderdale and Miami. From Miami, made the jump to the Bahamas in mid-February before the coronavirus hit the US. Spent the next three months in the Exuma Bahamas island chain. Found the island life to be great, very relaxing. The water is unbelievably clear! Did get ‘stuck’ in a marina for five weeks during March and April. We were fortunate to have free laundry, Wi-Fi, groceries delivered to the marina, showers, and private beach where could swim and snorkel. Day sailing was permitted from the marina. We waited as long as possible before heading back to the US, arriving early May in Florida. Made our way up the east coast, visited my wife’s sister on Chesapeake Bay, and made it to Catskill, NY, on the Hudson River on June 20, 2020. We had to leave the boat until repairs on the Champlain Canal were completed August 7; when it reopened, we made it into the lake to finally reach our home port in North Hero, VT, on Lake Champlain on August 14. Wow! More than a year, with a few periods on land, but mostly on the water. Way too many stories to share, some a little harrowing, most really sublime or very funny. Met great people, several now close friends. The experience gave me great confidence in my skills as a mariner and exceeded expectations. Just experienced the dread and fear that parents can feel with respect to their children, when the Creek forest fire exploded in California, where our youngest son is a wilderness ranger for the USFS in the Sierra National Forest. He was out on patrol when the fire started and grew exponentially over a couple of days. Fortunately, he was not in imminent danger based on his location and got out to safety. Very anxiety-ridden 24 hours for his parents! He’s now getting ready to redeploy into charred forest zones to start the resource inventory process following the devastation left by the fire. Waiting to plan next adventure.”

Mike Paluszek: “Princeton Fusion Systems awarded \$1.1 million from the Department of Energy’s Advanced Research Projects Agency—Energy to develop advanced power electronics for heating and control of fusion plasmas.

First contract to support the nuclear fusion industry as a whole. Teaming with Princeton University, the National Renewable Energy Laboratory. Also won NASA contracts for space optical navigation and superconducting electric motors. We are hiring! Teaching an MIT aero-astro IAP course in 2021 on spacecraft attitude control systems, possibly Zoom or in person. Been taking a lot of Zoom ballet classes. Though studios are reopening, Zoom is really convenient! Cool to meet people from all over the world, including fellow dancers I haven’t seen in years. My son, Eric, works for my company on machine learning for lunar lander terrain relative navigation and for Princeton Neurosciences, where he is applying deep learning to their research. Marilyn is using her break from work to do all the things in the house she’s been wanting to do for years!”

—**Reynold H. Lewke**, secretary, 100 Pecora Way, Portola Valley, CA 94028; tel: +1-650-444-8038; email: lewke@alum.mit.edu.

1977

Deborah Stutman-Brickey had a run of repair folks and doctor visits this summer (I can absolutely relate): “Replacement roof, replacement water heater, hidden leak in shower causing mold damage to furniture and replacement floor and wall sections, multiple basement flooding and leaks, wild animal pests in the garden (four raccoons, one opossum, three or four groundhogs), dental surgery for one child, adult son to arrange his dental surgery, spouse having minor vascular surgery on legs, and my first cataract surgery. The second eye will be done in a few weeks. It is amazing how yellow the lenses are/were. If I look through alternating eyes, I can see a big color difference between the new lens and the remaining OEM lens. And this remaining lens is my ‘good’ eye. Still recuperating, still a bit blurry.” Her twins had moved into separate Ohio State campus-area apartments with new roommates, but Deborah and family (in Columbus and Philly) had stayed blessedly covid-free.

Jo Ivester and husband **Jon Ivester** sheltered for nine weeks at a remote beach in South Texas before returning to Austin, expanding their bubble to include their four kids and five grandkids: “Much of our time went into helping out with babies and toddlers, as daycares were closed and our kids

were working. Again, we are lucky, finding an opportunity in a horrible situation to grow even closer to our kids and grandkids.

“The hardest part for me personally was having my book published in the early days of the pandemic. No book tour. No in-person talks. Five years of pouring myself into writing *Once a Girl, Always a Boy*, only to experience its release as a drizzle rather than a splash. Zoom and social media have been terrific for continuing my advocacy work, and I’ve very much appreciated the opportunities, but it’s not the same.”

Jo revealed that several alumni from the MIT Shakespeare Ensemble have gathered weekly on Zoom to read scenes and plays out loud, casually at first, then deciding to work toward a more formal performance of *Twelfth Night*: “It has a lot of good roles and also sentimental value as the first play that the Ensemble tackled in the Sala de Puerto Rico back in 1975.”

Two obits to report: We send condolences to the family of **James Bell**, who died June 19 in his hometown, Houlton, ME, from complications of liver disease. He was 65. After receiving an architecture degree, he worked 23 years for John Hancock in Boston, becoming the head of Hancock Property Management, responsible for over four million square feet of holdings. While there, he met and became domestic partners with Mark Horvath, an astronomer, also of Boston. Jim managed corporate campuses of Fidelity and Aetna, as well as Microsoft’s 10-million-square-foot Redmond campus. In 2010, he and Mark moved to Manhattan, where Jim joined Grubb & Ellis, and then Newmark Knight Frank (both real estate). Jim retired in 2015, and he and Mark moved back to Houlton and opened the Wired Houlton internet cafe. Jim was elected to the town council in 2019 and served on the board of directors for Houlton’s chamber of commerce. He’s survived by Mark, two brothers, and a sister; he hoped to have some of his cremated remains put into Earth orbit via Celestis Memorial Spaceflights.

We also send condolences to the family of **Bahman Daryanian**, who died Aug. 11 after complications from a heart attack. He was 65. He received MIT SB, SM, and PhD degrees in mechanical engineering, and added a master’s in technology policy. He served as an energy consultant for more than 30 years with R.W. Beck (now Leidos),

PA Consulting, PHB Hagler Bailly, and Tabors Caramanis Rudkevich before joining GE Energy Consulting in 2010. In the mid-1990s, he was a resident US Agency for International Development advisor in Moscow and Ukraine (on electricity wholesale markets). At GE, he served as a technical director, focusing on power economics (electricity market modeling, asset valuation, and renewable integration studies) and smart power (smart grid, microgrids, and demand response). He is survived by his wife of 27 years, Dr. Gissou Azabdaftari; they attended our most recent reunion in 2017.

An update from our prolific author **Stephen Wilk**: his book *Lost Wonderland* was to be published in October 2020 from the University of Massachusetts Press. "It's the definitive history of Revere's own proto-Disneyland, which operated from 1906 to 1910 with state-of-the-art rides and attractions, and which gave the Blue Line stop its name. WCVB's *Chronicle* has interviewed me about it."

Stephen's book *Sandbows and Blacklights* is coming out in February 2021 from Oxford University Press. It's a follow-up to 2013's *How the Ray Gun Got Its Zap* and is a collection of essays on weird optics: "Why, for example, does the monocle even exist? Who needs only one eye's vision corrected?" His story "The Game of Hare and Hounds" is included in the recently published anthology *20,000 Leagues Remembered*, a collection in honor of the 150th anniversary of the publication of Jules Verne's *20,000 Leagues Under the Sea*. It's available on Amazon.

Otherwise, his daughter, Carolyn, got her accounting degree from UMass Boston; she's been working from home since March and soon will share an apartment with friends. Stephen's wife, Jill, is a substitute teacher, "but there hasn't been much call for that lately." He was furloughed temporarily, but his company, Xenon, has been declared essential, "because we manufacture xenon flashlamps and systems, and the UV light kills germs and viruses." He adds, "I've been working on new applications and devices for doing just that."

We've had a stunning run of repair folks for the house (dishwasher, washing machine both toast; many plumbing leaks and clogs) and for us (doctors and dentists), but I'm staying comfortably safe as I type this in September. It's less than 18 months to our next reunion,

and hopefully we'll all get to congregate again. Until then, keep me posted.

—**Glenn Brownstein**, secretary; 1819 Emerald Ct., Clarksville, IN 47129; email: scoopcat@alum.mit.edu.

1978

This month, some classmates sent their first-ever submissions to Class Notes!

Peter Cheimets: "We're selling our house of 28 years and moving to a nice house about a half mile away. We're coming on 10 months of renovating it, but we are getting near. Karen's company turned out to be developing something for refrigerators that kills covid-19 in the air (just as a side issue), and that has become the main issue. So her company is now doing well. Last year, I flew on an aircraft through the 2019 solar eclipse over the Pacific. That was fun, and the added dividend was that I got to spend the next day on Easter Island. Aside from that, we are all well, sheltering when need be." Peter hails from Winchester, MA.

Barry Linder brings us up to date from Danville, CA: "Interesting times ... I blinked, and it's now 42 years later! My wife and I just celebrated our 30th wedding anniversary! Still enjoying the entrepreneurial world of medical devices, while spending as much time as possible exploring and hiking. In the new reality of covid, that tends to be much closer to home. The bright side is we've discovered numerous, beautiful trails nearby that we did not know existed! I hope to cross paths again with many long-lost friends."

Charles Mobbs sends us his first submission: "My research program (<http://labs.neuroscience.mssm.edu/project/mobbs-lab/>) has focused on the link between life span and age-related diseases, an interest I developed when I came across a book at the Coop my junior year (<https://www.technologyreview.com/2008/10/20/268512/what-alumni-do/>). My strategy has been to elucidate how dietary restriction increases life span in all species and delays all age-related diseases, then translate to a pill to delay or eliminate all age-related diseases (increased life span expected, but not the goal per se). We have now largely accomplished these basic research goals and have subsequently discovered compounds with extremely promising properties to delay age-related, particularly neurological, diseases. Amazingly, these

same compounds also block SARS-CoV-2 (the virus that causes covid-19) replication, as well as block the cytokine storm that probably accounts for the exponential age-related increase associated with covid-19 (the compounds are also generally neuroprotective). Thus, these compounds plausibly constitute the most promising to treat covid-19. We are currently in the process of developing clinical trials to use these compounds to treat covid-19, stroke, Alzheimer's, Parkinson's, and glaucoma. I welcome all inquiries regarding these developments (mobbsc@alum.mit.edu)." Charles is a professor at Icahn School of Medicine at Mount Sinai in New York City.

As I write this in mid-September, there is much unsettling going on with Mother Nature in what is growing to be an annual cycle: slow-moving and rain-filled hurricanes in the Southeast, wildfires in the West, and other changes upsetting our regular patterns of settlement and behavior. I recall early climate models from over 20 years ago projecting these phenomena. A Facebook meme hits home: "Every disaster movie starts with the government ignoring a scientist." What are you doing to apply MIT's problem-solving way of thinking to this national problem?

You've never sent in your news to Class Notes? Let us know what you have been doing for the last 42 years!

—**Jim Bidigare**, secretary, 9095 North St. NW, Newark, OH 43055; tel.: 740-587-2000; email: bidigare@alum.mit.edu.

1979

Greetings, class; as the end of summer approaches and schools head back into session, things are quieting down on the news front. The good news is I didn't have to edit anything down this time around.

Bill Wehl writes: "After six years leading sustainability at Facebook, I left the company in February 2018 to focus on climate action. In February 2020, I and a crew of volunteers started ClimateVoice (www.climatevoice.org). We engage and mobilize the workforce to convince companies to speak up in favor of climate policy—to provide a business voice to counter the fossil fuel lobby, which too often fights useful climate policy. My wife and I still live in San Francisco, where right now (August 2020) we are sheltering

in place and coping with horrible air from the hundreds of wildfires raging around California. We're both lucky to do our work from home. Like everyone else, we'll be happy when the pandemic eases and we can resume some semblance of normal life!

"I was delighted to speak about climate action (virtually) in front of the MIT Clubs of Rochester and Western New York, invited by my old friend **Rob Stall**. (He and I have fond memories of making many pounds of coleslaw and grilled steaks for the Course 6 Steak Fry!) And even more delighted to share the 'stage' with Tom Toles from the Washington Post."

Steve Bauer writes: "Inspired by Oliver Wendell Douglas on *Green Acres*, after living on the Red Line for 44 years and being a big law litigator the last 35 of them, I took advantage of my firm's covid office closure to move from the seaport to a seven-acre Christmas tree farm in Eliot, ME, on the Piscataqua River (just 65 miles from Boston). We then got a covid puppy, River (a Siberian husky), to 'guard' our 200 Xmas trees from the Maine 'wildlife.' (And yes, the predator instinct in huskies is strong. She's eaten frogs and snakes as if they were chocolate-covered desserts; her effort to make friends with a porcupine didn't go so well.) Finally, to fill the time when I'm not working the landscape, I've become a neutral mediator/arbitrator, specializing in resolving national and international life sciences and technology disputes for JAMS, the largest such US organization. I'm looking forward to being the diplomat trying to solve problems, rather than the in-the-trenches lawyer trying to win them. If all goes according to plan, my wife, Sarah, and I will fly our Cessna 182 to Southern California for a couple of months out of the Maine winter."

As for your secretary, I continue to shelter in place and look forward to a time when things start to improve. Similar to **Bill Wehl**, we have dealt with smoke from the fires. I've included a picture I took from the air. (You can see it in the online notes). We were at 10,000 feet, and the cloud was growing as we flew by. An amazing sight. As I write this, things are much better now.

I celebrated 20 years married to my wonderful wife, Michelle. Our son, Edward, enters the eighth grade and turns 13. Next stop, high school. All in all, life has been good to us.

On the theater front, I just finished working on my first socially distanced show. The actors were all spaced six feet apart, and I wore a mask the entire time. I wonder if this will be the new normal in the performing arts. Only time will tell.

Till next time, then.

—**Edward Hunter**, email: edh@alum.mit.edu.

1980

Please send news for this column to **Cynthia Bedell**; email: cmbedell@alum.mit.edu..

1981 40th Reunion

Please send news for this column to **Dean Samos**, Los Altos, CA; email: deansamos@alum.mit.edu.

1982

Happy New Year 2021! Let's hope it's a better year than 2020. The pandemic continues, and Dr. Fauci thinks it will last through most of 2021. Too bad!

Ali Ghaznavi writes for the first time ever—yay! “I developed an intense interest in meditation, non-duality, Sufism, Zen while I was still at MIT. Finally, a couple of months ago, I put some thoughts down in a book, *Spiritual Coffee for the Awakening Soul* (at Amazon). A month later, I added some mystical and other poems in another book, *I Speak in Magical Metaphor*. Both are under the pen name M. Ali Ashrafi. I have also started giving (free) talks on spirituality every week. Very odd for me, because I always liked to remain ‘private.’ Some here may know a lot more than me—that is, experienced spirit with greater intensity, gone a lot deeper into non-being, whether from the Christian, Hindu, Buddhist, or Islamic (Sufi) perspective—and it would be wonderful to hear from them or find out about any of their books. Anyway, thanks, everyone. It's great to have this MIT connection still.” Ali seems to have found a much better pandemic activity than watching too much Netflix!

Edoardo Biagioni spent most of July sailing from Honolulu to San Diego on a 44-foot catamaran with five others. It sounds wonderful, so maybe we can persuade him to invite some of his wonderful classmates next time!

Charles Barry reports: “Like so many others, my wife and I have tran-

sitioned to home/virtual businesses. Vicki is a physical trainer and has transformed our yard into a covid-safe ‘backyard bootcamp,’ mask and face shield required. I even step away from the laptop to get in some reps from time to time. I'm running my fifth tech startup in Silicon Valley, this one using artificial intelligence and machine learning applied to cybersecurity. I'm collaborating with some big tech companies—Stanford, Politecnico di Torino—and have posted openings for MIT data science interns. I should have retired by now, but I have many more ideas than time to make them real. I still remember my MIT classmates like it was femtoseconds ago. Perhaps time makes one wistful for the good old days, but I continue to admire them and wish them well in all their various adventures.”

Philip Greenspun writes, “The only thing dumber than having young children at our age is having young children in the middle of a society that is shut down. After six months of various closures and strict mask orders, Maskachusetts remains stubbornly plagued, and the schools are mostly closed. On the plus side, the License Raj decided that flight schools could reopen, and a lot of people are learning to fly. They can't say they don't have enough money or time, since there is nothing else to buy and nowhere else to go.” As an essential critical infrastructure worker, Philip remains hopeful that a neighbor will put out a “Thank You, Flight Instructors” sign. He used to wonder why anyone would buy a 6,000-square-foot McMansion. Now that he's crammed into a 2,300-square-foot house with the kids, he knows!

Alison Ross lives in Northern California and sent a photo, taken from her home, of an apocalyptic view of orange mid-day skies during the September brush fires. According to Alison, this should remove much doubt about the serious and current impact of climate change. She adds, “Seems like just yesterday we were at MIT, voting in our first presidential election. Now my daughter is readying for her first one (can you imagine knowing nothing but this?!) and working on the election integrity project with the Stanford Internet Observatory (<https://www.eipartnership.net/news/platform-policies>) to help ensure that voting-related information is free of online mis- or disinformation.” Alison hopes that everyone is finding creative ways to stay safe and sane.

Miguel Mitchell painted a portrait honoring the late, great actor Chadwick Boseman in his role as Black Panther. The painting was displayed in the Montgomery County Art Association's October exhibit.

Audrey Hartman, **Crystal Schaaf** (née Barker), **JoAnne Hubbard** (née Bos), and **Sue Zimmermann** routinely go out sometime between April and July for a communal celebratory birthday dinner at a relatively swank restaurant, as one of each of their birthdays occurs during those months. This year, they had Zoom calls on their actual birthdays. It wasn't the same, but something special, nonetheless.

Happy holidays, take care, and be well. And send me some news for Class Notes.

—**Eve Ahlers**, secretary, email: eve.ahlers@gmail.com.

1983

Eric Lipson writes: “I enjoy reading Class Notes, especially the many interesting experiences that people report. This is my first time writing in. I'm a pulmonologist practicing in Lakeland, FL, for 25 years and have treated many covid patients. For most pulmonologists, covid has made this a busy and challenging year. My wife, Ana, and I have been married 25 years. We live on a lake, with our two children, our cat, and our dog. I've been interviewing for the MIT Educational Council since 1991.”

Nicholas Schoewe writes: “About three years ago, after becoming an empty nester, I retired from my career in public markets and moved to Denver with my wife, Robbin. Apparently, I'm as bad at sending updates as finishing problem sets. Professionally, I've been working with OCA Ventures, an early stage venture capital firm, on a half-time basis. Since March, we've been hibernating (and running SchoeWeWorks for our three remote working daughters) in Steamboat Springs, CO, where it's easy to fill in for social distance with some biking and hiking. For the last 10 years, I've regularly seen a few 80s-era MITers on an annual ski trip, and this summer, I got to see a good bit of the Gannon/Douglas family ('84, '85, '16, and '18), who also spent some covid time at their home here. If anyone is passing through and wants to say hello, happy to take you on a ride or buy you a beer.”

Michael O'Malley writes: “I've been transitioning the focus of my business,

Curved Papers, online. Glad I came up with a good way: the Four Pack. On my September 9 birthday, I received Notice of Allowance on my second patent protecting the easy-to-roll curved edge. In August, my daughter, Grace '15, got married in LA via Zoom. It was lovely. We've suffered some casualties in my family due to the virus, but we're holding up, and ready to stay strong as these hard times continue to persist.”

Jim Shearer: “I retired from Boeing this month after 37 years as a software engineer on a plethora of commercial, space, and military projects (I rarely stayed on the same project more than five years; too boring!). I'm still married to Lori Bechtold '84 (also retired from Boeing). Our two adult children are off doing their own things, and we have one grandchild. Wow! Free time! What a concept!”

Eric Johnson writes: “With working from home extending into the foreseeable future, and a few canceled vacation trips so far, the news from me is that I'm appreciating birds more than any other time in my life. I did not know how much bird life existed in my yard until spending countless hours in my home office. Hope everyone is well and staying healthy.”

Jay Allen writes: “My campaign for congress (representing Maine's first congressional district) has moved one step closer. I was unopposed in the Republican primary, so I'm the official nominee for my party. I will be facing a six-term incumbent in the general election.”

Michael Wellman writes: “I've taken on the duties as division chair for computer science and engineering at the University of Michigan. Like (almost) everyone else, I've been scrambling all summer to prepare to provide the best and safest possible on-campus educational experience for our students. With all its other effects, the pandemic is teaching us a lot about how to deliver courses and conduct research when we cannot gather in person in the usual ways.”

Debbie Gleason (wife of **Gerry Gleason**) writes: “On Twitter, I refer to Gerry as Mr. MIT. It's my way of saying I believe he is brilliant. But then again, I know a lot of his classmates are, because he talks about them often. Gerry and I have been married since Oct. 10, 1993. We met through an ad I placed in the Chicago Reader which started out, ‘Hey, Rocky, watch me pull a romance

out of this ad.' Gerry responded on the very last day they were leaving my box open. So you can say that Bullwinkle and Rocky brought us together. Or perhaps the fairy godmother. I wrote a poem about that for our wedding invitation. (Link to the poem in the online notes.)

"I have an MA in English. I went to University of Iowa and then Northern Illinois University. I was a part-time instructor at several community colleges before moving on to being a legal proofreader.

"I'm @MissShuganah on Twitter, and Gerry is @GatWhale. There's a reason behind that, as well. I told him many years ago that truth is a great white whale. Gerry's avatar is a beaver, to hint at MIT, of course."

Ken Krugler writes: "As a sign of the times, one of the highlights of our summer was an RV trip to the coast with **Mike Santullo** and his wife, Amy—though I also snuck away for two backpacking trips with my daughter Jenna and **Chris 'Schmed' Schneider**. We'll be hosting a socially distant dinner this weekend on our new patio for **Randy Schweickart** and his wife Michelle, plus **Chris Schneider** and his wife Cindy."

Finally, I (**Jono**) am sad to report that my Course 10 advisor and Course 20 graduate thesis advisor, Institute Professor Daniel I.C. Wang, passed away after a long illness. Danny represented all that is great about MIT. He created the industry for scaling up the production of biotechnology products, and his graduate students went on to fill many of the key production positions in the pharma and life sciences industry. Danny was a very engaged and thoughtful advisor, whether it was about life (he introduced me to venture capital) or just how to get going on experiments.

In 2008, for our 25th reunion, Kaia and I went to Danny and asked for his guidance with an MIT gift. We asked him what problems were not being addressed at MIT and wanted him to direct the gift, no strings attached. Danny was very concerned about work/family balance and particularly about the divorce rate for young faculty and grad students. He targeted the gift to making resources available to the community to address the issue.

Danny had an extraordinary academic and industry pedigree, but first and foremost, he cared about people and the next generation. He was an incredible role model, mentor, professor, board member, and family person.

Bernard Loyd '83, SM '85, PhD '89, SM '90

A community renaissance on Chicago's South Side

Bronzeville, on the South Side of Chicago, has a storied past. An end point for many African-Americans moving north during the Great Migration, the neighborhood became known in the mid-20th century as Chicago's Harlem. Nat "King" Cole, Sam Cooke, and Dinah Washington got their starts in its Regal and Savoy theaters. At nearby Provident Hospital, Dr. Daniel Hale Williams performed the first successful open-heart surgery. Athletes and writers including Jesse Owens, Ralph Metcalfe, Joe Louis, Richard Wright, Lorraine Hansberry, and Gwendolyn Brooks all called Bronzeville home.

"I appreciated the history of the neighborhood," says Bronzeville resident Bernard Loyd '83, SM '85, PhD '89, SM '90, "and I loved the beautiful brownstones. In the home I bought, there was this abundance of natural light. Of course," he adds, "all the light was due in part to the fact that, after being vacant and vandalized for years, an entire back wall of the property was missing."

As Loyd restored his own home, he decided to work to reinvigorate his community as well. "I've always been interested in community development," he says. "Solving complex problems is what I was trained to do in my decade-long tenure as an MIT student. In a neighborhood which has been subjected to redlining and racism, disregard by political leaders, and decades of neglect and disinvestment of capital, community revitalization is as complex a problem as you'll ever find."

After earning undergraduate and graduate degrees from MIT in aeronautics and astronautics, Loyd stayed on for a master's degree from the MIT Sloan School of Management and then spent more than a dozen years as a consultant at McKinsey. Now, having "decided to focus on the challenges in my own backyard," he is founder and president of Urban Juncture, a social enterprise he started in 2003 to revitalize disinvested communities in Chicago. With its Build Bronzeville project, the organization is building on local culture and community and encouraging the development of small businesses.

One facet of the project, Bronzeville Cookin', celebrates the cuisines and cultures of the African diaspora, with one restaurant, an incubator space, and a rooftop farm and



The Forum in Bronzeville hosted poet and author Haki Madhubuti (back row, center) for a panel discussion.



community garden in operation so far. "Good food is the heart of any community, and from a business point of view, restaurants are labor intensive. That translates to local jobs," says Loyd.

Another aspect of Build Bronzeville is a neighborhood marketplace called Boxville, consisting

of colorful, repurposed shipping containers where small businesses can ply their wares. A popular outdoor gathering place since 2017, it continues to bring locals together during the covid-19 pandemic with socially distanced community resource fairs and weekly fitness classes. Boxville's "anchor store" is Bike Box, a bicycle repair shop that opened in 2014, supporting an efficient and climate-friendly mode of transportation. "A bike repair shop doesn't need a lot of space or capital," Loyd says, "and yet it satisfies a vital need in this community."

Urban Juncture's most ambitious project to date is the Forum. Built in 1897, the onetime dance hall and meeting space closed its doors in 1970, sank into disrepair, and was earmarked for demolition. But in 2019, the building was added to the National Register of Historical Places, which makes it eligible for more investment sources and tax credits. Loyd is leading an effort to raise \$15 million to return the space to its glory as a flexible performance venue.

"I'm working just as hard here in Bronzeville as I did at McKinsey and at MIT," Loyd says, "but it feels different. Because I am able to see the results of my work in the look of my neighborhood and the improved lives of my neighbors, it makes running Urban Juncture not much like work at all." —**Angie Chatman, SM '88**

For me, he epitomized that which makes MIT such a special place. We will miss him and are so grateful to have known him. More about Danny here: <https://news.mit.edu/2020/daniel-wang-professor-dies-0902>.

Please keep those emails coming.

—**Jono Goldstein**, secretary, email: jg@ta.com.

1984

We hope you and your families are doing well during these unusual times. We heard from several of you about your experiences and reflections during the pandemic, and we hope to hear from more of you in the future.

Nick Strauss retired from Boeing Rotorcraft in 2015. He “raised a family of three girls, who were super kids, and are doing fine things as 20-somethings,” he writes. “I’m five years into my second career as an internet support engineer working entirely virtually, and I just passed my Linux Foundation Certified System Administrator exam, so I’m officially a CSA. I’m also writing songs for the guitar, which I’m recording on YouTube; they are available at my website, nick-strauss.com. If you want to reconnect, send me an email.”

Preston Kemp writes that he is “still a reliability principal engineer at GE Power, working from home full-time since March 17, with no plans to ever go back to the office except on rare occasions.” Preston is “full-time caregiver for my wife of 19 years, four years after her diagnosis with Alzheimer’s disease. Lots of birthday milestones coming up: my mom turns 100, and my granddaughter turns 18, in September; my older stepdaughter turns 50 in October (!).”

Beverly Williams writes, “I had to transition two lab science classes online, which was challenging and fun. I combined my two Mission to Mars teams into one online team, and the Air Force Research Labs did a great job transitioning the mission online. All of this forced me to use Zoom better and learn Kahoot, which all of my students loved.

“Additionally, I spent time finishing my Distinguished Toastmaster award. This was a great opportunity for me to improve my public speaking and leadership skills, but more important, to lead and serve in a volunteer organization to help others. If anyone thinks they want to improve speaking and leadership skills, all Toastmasters clubs are

meeting online. You can join anywhere, even internationally!

“My classes this semester are canceled due to under-registration. That inspired me to spearhead a new business of education options consulting, conducting workshops for companies and helping people deal with their children at home during this bizarre time. Check it out at <https://brainiacbaron-esstutoring.com/>.

“We have one son still in college for undergrad. He was sent home to finish last semester but is back at school now, with mega-restrictions. We have another son doing a performance PhD in cello in Los Angeles. In frustration over having inadequate online performance classes, he has taken a leave of absence, but is still in LA. Our daughter in Florida became unemployed in February 2020. By God’s grace, she went back to work remotely in August. Our eldest and his wife have been consistently employed at Northrup Grumman in Maryland, with our eldest considered essential with his CS/EE masters and defense work.

“We sold our Boston house, traveling from Albuquerque to Boston twice to get all our belongings dealt with. We traveled like Darth Vader on the airplane and had to quarantine every time. Not pleasant, but doable. My father lives in Albuquerque with me, along with cousins and now brother and sis-in-law and their child. We visit them weekly. Sadly, my aged uncle and aunt succumbed to the covid-19 attack on their nursing home. All my other Albuquerque friends are Zoom-averse, so other than family, there are few connections other than phone calls.

“We have a weekly family game night on the Discord server. It’s been wonderful to connect with all our children. We generally chat for an hour and then play silly Jackbox games. I highly recommend this, and we will continue after the restrictions lift, because it has been great to see and talk to our far-flung children.”

Natalie Lorenz Anderson taught herself how to make kombucha; she has made 14 gallons so far and enjoys it immensely. She created an 80-square-foot raised bed garden (as well as many container pots on the deck). She’s enjoyed many different crops following a Square Foot Gardener method.

Natalie writes: “My college freshman ended up at home March to August. He headed back to Illinois, because he

and roommates had committed to an apartment. Luckily, each has his own room, and the campus does aggressive saliva-based testing that may serve as a model, or at least an important information source, for community-based testing models.”

Natalie’s family has chosen to stay home except for an immediate-household-member trip to Cape Cod for 11 days in July and a weekend at the Antietam battlefield area in September. She connects with friends and family through “Zoom calls and socially distanced meet-ups with our kids in our backyard, starting on Mother’s Day, about once a month.”

Sean Tavares writes: “First, I’m pleased to report that at the end of June, the Board of Trustees of the University of New Hampshire granted final approval to award me tenure and promotion to associate professor. I joined UNH just before the fall semester of 2014, after spending most of my previous career in industry. I’m very happy with my decision to make the transition to academia.

“As I was teaching my last lecture before spring recess 2020, I received word that due to covid-19, we would be holding classes online for at least a portion of the remainder of spring semester. It was soon decided that remote instruction would continue. I made a quick transition to teaching via Zoom from home, using the spring recess week to work out the details. The Zoom technology worked more reliably than expected. ‘Zoom Fatigue’ made me glad that only about six weeks remained between spring break and finals.

“Fall semester at UNH has been under way for a week now. I teach face-to-face for students who wish to come to campus but also stream so students who prefer to be remote for classes may participate. Per the UNH academic calendar, all instruction is scheduled to pivot online after November 20, but I’ve planned my courses to allow for the possibility that this could happen earlier.

“Since the pandemic, I’ve spent more time working on hobby projects (model airplanes, aviation history, model trains), rediscovering books on my shelf, etc. Early on, there were virtual cocktail parties and such, but these have gotten fewer and far between. Outdoor serving arrangements in NH have allowed me to socialize some at the local restaurants, pubs, and coffee shops that I frequented pre-pandemic.

The somewhat reduced pace of life and reduction in distractions have caused me to reflect somewhat on the things I value the most. I expect others have been doing some of the same.”

Best regards, and stay safe.

—**Pam Gannon**, email: pmgannon@alum.mit.edu; **Jean Tom**, email: jeantom@alum.mit.edu.

1985

We hope you and your families are staying safe and taking care during these unusual times. **Alan Williams** reports a lot of changes over the past seven months: “My daughter finished up her freshman year at home instead of UCLA, and I think she missed her spring rugby season the most. I help with a Scout troop, and all our meetings went virtual, but we were able to salvage the week-long summer 50-mile backpack trip (Tahoe—Granite Chief) with everyone getting tested for covid-19 and then sheltering in place. I had to rethink our neighborhood July 4th fun run into an event that people ran at any time over the weekend and then sent me their times. Like many others, I’ve been perfecting my sourdough bread and exercising more; working at home lets me get an early bike ride in almost every day (except for now, with the air quality in San Jose). Other things: I got to foster a couple of kittens and take part in a virtual beer festival (they sent me a couple dozen different beers to taste). Throughout, I’m thankful for my family, friends, home, and work during these times. Hope things are more normal next time I’m asked to submit an update!”

John Wolfe updates: “The covid-19 lockdown has been challenging with two daughters, ages 13 and eight. They’ve been a lot better than I would have as a child, maybe because of all the online activities available these days? We struggle to find a good balance of on- and offline time for them. I still find myself doing computer programming consulting, lately for Bose. It is a little bittersweet, because I loved having Amir Bose as a professor in the ’80s. He will be sorely missed! I’m working on hearing aid devices and becoming something of an expert on software as a medical device within the US. I’m working from home, and we’re just starting to adjust to part-in-person, part-remote grade and middle school. I’ve been married for 16 years

now, still living in the same house near Tufts in Somerville. And, yes, I need to get out more!”

Ondy Wasem still teaches at the Waldorf School of Princeton in New Jersey. She writes, “After a spring of teaching online, we’re back on campus, teaching under tents and wearing masks. In family news, Peter and I have divorced, and my son Elliot has graduated from Stevens Institute of Technology with a bachelor’s in computer science. He works at WisEngineering and is engaged to be married. My daughter Emily is taking a gap in her education this year (partway through a psychology degree at University of Vermont) to teach Forest School at ReTribute in Vermont.”

Robert Watkins continues to hunker down with his family in New York City while working on his adventure books. “One silver lining to the pandemic,” he notes, “is that we’ve probably conversed with our neighbors (from a distance, of course) on the surrounding streets more this summer than in the past five years combined.”

Wayne Townsend has been back working at Epsilon Data Management for nearly seven years, leading its marketing technology portion. He writes, “We were acquired last year by Publicis Groupe, an agency holding company based in Paris, and we’re still learning our way around this very large, very global company. Our SigEp pledge class had a Zoom call in lieu of a reunion earlier in the summer. We seem to have a reason every couple of years to get together (the last such event being Rear Admiral **Paul Sohl**’s retirement from the US Navy) and were sad to miss the reunion this year. The cocktail hour call included **Justin Ryan, Paul Sohl, Shawn Seale, Mark Beder, Alex Praszker, Bob Robinson, John Marti, Stephen Kuehne, Dan Curran, Anu Sood, George Allen, Gary Willson**, and me, plus Joe Megna ’86. It was great to catch up with everyone. We still reside south of Boston, though my wife Liz and I have become empty nesters recently, as our third has graduated from college and successfully entered the workforce. We’re looking forward to the changes that will bring!”

Vince Young attended our 35th virtual reunion in May. He writes, “While it would have been nice to be back in Cambridge, it was nice to reconnect with old friends and make some new connections. Covid-19 made things

interesting at the University of Michigan, where I’m still on the faculty in the division of infectious diseases. While my colleagues carried most of the clinical load, I spent most of my time trying to keep my research group together. During the pandemic, I’ve spent lots of time outdoors in Ann Arbor. Much of this was in and on the Huron River, kayaking and fly fishing—activities where it is easier to maintain the required ‘social distance.’ Hope that everyone is staying healthy and safe during these strange times.”

—**Lisa Steffens**, cosecretary, email: lmsteffens@gmail.com; **Diane Hess Brush**, cosecretary; email: dmhess@alum.mit.edu.

1986 35th Reunion

Happy New Year, classmates! I’m hopeful that 2021 cannot possibly be worse than 2020. I’m writing this in September as large parts of the western US are ablaze. In my state, California, over 3.2 million acres have burned so far—more than 10 times the acreage for all of 2019. The air quality has been unsafe, and my family has remained indoors for weeks. On the bright side, my kids are back at school; masked and physically distanced, but at school, nonetheless. I still work from home and see no compelling reason not to. Hopefully, this year we’ll feel comfortable getting on a plane again and take a much-needed long vacation (our sights are set on Hawaii).

Ramon San Pedro sent a photograph of his Texas license plate, which reads “MIT 86.” You can see the photo in the online version of Class Notes (<https://alum.mit.edu/communities/class-notes-and-sites/search?class=1986>). He writes, “Reactions have ranged from curious and confused looks and pointing to someone asking me, ‘So, who’s Mit?’ Me: ‘It’s M-I-T.’ Them: blank look. Me: ‘The Massachusetts Institute of Technology.’ Them: another blank look. Me: ‘The university?’ Them: silence. Me: ‘Okay, have a nice day!’”

At the Alumni Leadership Conference in September, **Scott Morrison** was honored with a Harold E. Lobdell ’17 distinguished service award, and **Grace Tan-Wang** received a George B. Morgan ’20 award for sustained excellence in Educational Council activity. **Sharon Israel** has agreed to chair our 35th reunion committee. **Robert Bieri** started a new job as an RF/Radar engineer at Northrop Grumman.

Lisa Maiocco writes, “I majored in Course 3, then received my master’s degree from the Thayer School of Engineering at Dartmouth College. While in Hanover, I fell in love with the lush forests and with hiking in New Hampshire and Vermont. After getting my master’s in materials engineering, I worked at Dartmouth for another year plus, and then moved to Maine, the Netherlands, Pennsylvania, and then back to Massachusetts for some very interesting materials engineering positions at three great companies: Philips, Cabot Performance Materials, and Saint-Gobain. After working for a few more amazing companies in MA, I finally quit my full-time job last year. I currently volunteer my engineering time helping people with industrial respiratory injuries and volunteering for www.endcoronavirus.org. I am blessed to have stayed in touch and/or reunited with many MIT friends when my husband and I moved back to Massachusetts nine years ago. I would love to hear from anyone I’ve lost touch with. I can be reached at lmaiocco@alum.mit.edu.”

Debbie Montano is a senior solutions architect with Verizon, a happy resident of Colorado for the past 32 years, and has been happily married for the past 28. “Not doing too much, not traveling anywhere, staying at home, working from home. We just had the hottest August on record for Colorado, followed by snow the day after Labor Day! Fits in with the weird world this year. I hope others are faring well, or as well as can be expected. I support Black Lives Matter and whatever thoughtful measures will keep people safe from covid-19 and help people weather this storm!”

Noel Zamot writes, “Almost 18 months ago, I stepped down from what was supposed to be the best job of my life: a congressionally mandated role rebuilding the economy of Puerto Rico (my birthplace). When I was two months into the job, Hurricane Maria hit; almost two years after that, I had to escape the island, pursued by a political class upset that I had exposed corruption in government procurement. The story of those two years, and the following 18 months, will be the subject of a book someday. For now, I’ve been focused on privately funded investment projects, looking to rebuild the island’s tech sector; mentoring high schoolers through the CyberPatriot program; installing a federal monitor for the

island; and getting better at jumping my mountain bike. I’ve found success on the first three. If any classmates are interested in developing sustainable, resilient, covid-safe investment projects in the Caribbean, let me know.”

Kathleen Kelly writes, “The good news is that my husband and I still have four parents. The flip side is that they are keeping us busy! In the course of consolidating their four homes into assisted-living-size spaces, we’ve been plowing through their 80 years of possessions. It is a truly humbling experience to sort through the minutiae of their lives. They did so much—it must have been the way of life before television and computer took over the world. I look at youthful photos of my father and see my younger brother. Whoever does this with my stuff is only going to find dog fur. It’s good to be reminded that they all were young, vibrant, and hopeful once. Wishing we all could remain young, vibrant, and hopeful—or at least contented.”

Rich Herrmann writes, “Saw **Dickie Fleischer** for the final Cracker Campout at Pioneertown, CA, in the summer of 2019, back when people could gather and listen to live music. Been hanging with Dr. Mark Radlauer ’85 here in our ‘hood—was just with him at a local mountain bike race a couple of weeks ago. I spent part of 2020 dealing with twin daughter and son graduating from high school and starting freshman years in the zombie apocalypse. Daughter is attending Colorado State University and so far is on campus with one class in person. Son is going to Cal Poly San Luis Obispo and attending in his bedroom across the hall from his parents. Absurd.”

Right on cue after Rich emailed about his son starting at Cal Poly, **Pete Schwartz** wrote in, “As a professor at Cal Poly, I’m leaning into the virtual learning model, convinced that it doesn’t just ‘suck’ as many colleagues assert, but that we’ve had four months’ practice with it as opposed to several hundred years of face-to-face experience. We are still very steep on the learning curve. My central priority is to foster community and build relationships. With my appropriate technology class (<https://canvas.calpoly.edu/courses/33015>), we increase accountability for project groups using Zoom breakout rooms, Canvas discussions, and Microsoft Teams. We seem to be off to a good start (first day of class was yesterday).

“Our Insulated Solar Electric Cooking (<http://sharedcurriculum.pete-schwartz.net/solar-electric-cooking/>) received funding to stimulate local production in Africa and India. We provide local enterprises with technical assistance and subsidies as a distributed dissemination alternative to patent-protected industrialized manufacturing at large scales. We hope local production of open online technology with connection to a global learning community will increase innovation and stimulate the local economies of poor communities. Anyone interested in either of these activities should feel free to contact me!”

—**Robert Lenoil**, secretary, email: leuil@alum.mit.edu.

1987

Greetings and welcome to the Quarantine Edition of Class Notes, where events and trips that many of us canceled or postponed would have certainly been more interesting than what we’ve actually been doing for the past six months.

Rossana and David Lin embarked on what they refer to as their portfolio life, where their time is split 1/3 working at a technology startup; 1/3 in a nonprofit sector focused on life coaching, speaking, and writing; and 1/3 in leisure, reading, and travel. During the second half of 2019, they moved out of their Seattle-area home and spent almost 16 weeks in their RV, traveling through the western US and Canada. 2020 started with a 10-day, seven-city book tour to China before returning to the US west coast, where they thought they’d resume their RV-based work and travels. That was, of course, altered as covid-19 hit; Rossana and then David both came down with the virus (despite precautions), but they’ve both recovered. Complete details of their journeys are contained in their blog posts (<https://www.simplifiedelight.life>).

Barbara Ex has a completely different perspective on the first half of 2020, primarily due to her location. “I’ve been living in Shanghai for over a decade now, so my experience of the pandemic started early. I’m the founder and CEO of WhiteSpace, a new platform providing on-demand meeting space. We’re based in Shanghai but will expand to all of Asia. On January 23, when the Chinese government announced they were locking down travel from Wuhan

a few days before the official start of Spring Festival, I realized I was facing a crisis of monumental proportions. We’d put our first round of investment into scaling up, anticipating the rush of business that comes after Chinese New Year. Instead, I was looking into the face of a tsunami: I had an offline business, directly predicated on people meeting face-to-face, in groups, and a pandemic was heading our way. From a business perspective, we batted down the hatches and waited it out. In February and March, everything was closed, and we had no business. Thanks to the effectiveness of the controls in China, by April, we were seeing customers again. We disinfected, handed out masks, washed our hands raw, and held meetings in big rooms, spaced farther apart and with the windows wide open in the raw of late Shanghai winter. The human need to meet in person to create can’t be repressed. By June, we were back on track, and my business is growing so fast from our new opportunities, I’m already ramping up for the next investment round.

“In Shanghai, we’ve had no cases of local infection for several months. On the street this weekend, people were happily going about normal life—riding bikes and scooters in the pleasant period that follows the humid Shanghai summer, eating in restaurants, shopping. I’m very glad to be here, although missing the opportunity for international travel. I have a brand-new granddaughter in Northampton, MA, whom I’ve only seen via WhatsApp, and family on every continent that I connect with via Zoom. But here in China, the worst is over, and there will be a next normal. Wishing the same for everyone.”

Coleen Smith’s pandemic tale involves a cross-country move: “A year ago, as soon-to-be empty-nesters (youngest at Cornell), we decided to contract out the next bathroom remodel. We had done enough DIY bathrooms over the last 30+ years; we deserved a break! We envisioned trips to the Texas wine country and participating in more MIT Club of South Texas events. Realizing that we could achieve some small economies of scale and chaos, we decided to have two bathrooms done at the same time. The dust had barely settled on the dual demolition when Doug (’86, MCEP ’87) was offered a promotion that included a move to a new state.

While we would need to get the bathrooms done before putting the house on the market, for the first time in decades, we were not worried about timing. We got this. Ha! Things don’t always go as planned. A tropical storm during construction, a parent’s decision to downsize, and the pandemic created challenges. Although the Texas house remained unsold, we decided by April that it was time for all of us to be under one roof in Pennsylvania. Doug meticulously plotted a route that would steer us around hot spots and state closures. Hotels, restaurants, and rest stops were closed, and gas stations opened only for fueling. Armed with an essential-employee letter and nonperishable meals, we headed off on our 1,500-mile journey. We are grateful for Love’s Travel Stops, which were clean, friendly, and often equipped with dog runs to accommodate Barkley, our 65-pound standard poodle. Listening to Steinbeck’s *Travels with Charley*, we watched as spring seemed to roll back the farther north we drove. By April, Texas was already getting hot and sticky. Pennsylvania greeted us with newly flowered dogwoods and pleasantly cool temperatures. In the months that followed, like many, we hunkered down. Trips beyond the neighborhood were minimized, provisions were delivered, and we greeted neighbors from across the street. We carved spaces among the boxes for work-from-home offices and classrooms. Our Texas house finally received an offer—just as a derecho knocked out power for 18 hours. The solar-cell phone charger paid for itself that day! A hailstorm knocked a few shingles loose, and the rains of storm Isaias showed us where to look for them. Overall, we are grateful to have a job that can survive WFH, for the time we enjoy as a family, and a community with a strong commitment to public health. We have been amazed by Cornell’s comprehensive test-and-trace program that tests ALL students at least twice per week and the student body’s commitment to wear masks and maintain physical distancing. This has allowed our daughter to return to school to be with friends and enjoy Earth and Atmospheric Science lab and field classes with professors who are creating meaningful content while embracing the new normal. It’s a fragile equilibrium, so all the more important to be grateful.”

Ojas Rege writes: “My only update is that my context-switching skills are being exercised to their fullest as I juggle online school for my boys, product management work for One Concern, and keeping the entire family calm during post-apocalyptic orange skies in the Bay Area (due to the fires). Whew! Every week brings something new!”

Finally, **Grace Ueng** writes: **Rich Chleboski** (ATO, Course 6) and I reconnected at our 30th reunion, and he’s joined Savvy Growth, the management consulting and leadership coaching firm I started back in 2003. I welcome his expertise in the solar and clean tech space, having founded Evergreen Solar out of MIT. Our clients include emerging growth companies in the energy efficiency building technology space, energy storage, and batteries. We also enjoy coaching in the healthcare arena, an essential service during this time of covid-19. It’s a treat working with a classmate to serve Savvy’s clients!”

Stay safe, everyone!

—**Jack Leifer**, 3 Chatsworth Way, San Antonio, TX 78209; leifer@alum.mit.edu.

1988

Please send news for this column to **Paul Laporte**, email: plaporte@alum.mit.edu.

1989

Zak Aslamy writes, “I still live in Arizona, now in the Chandler area. I’ve been a hospitalist with a group I helped form in 2000, and we continue to practice hospitalist medicine at the largest hospital in Arizona. Needless to say, covid-19 has profoundly impacted my life, since my field is one of the medical specialties directly involved in hospital care of these patients. Arizona had its first wave peaking in June, and we are just starting to return to normal, holding our breaths for the next assault later this winter.

“I’ve been divorced for eight years and am now in a very happy relationship for the past four. I have three wonderful sons (20, 17, and 12). The oldest is at Arizona State University and has no idea what he wants to be; the middle is a high school senior and wishes to pursue veterinary or human medicine; the youngest is in middle school and perfecting his Fortnite skills.

“I love travel, alternative music, and cooking. The former two hobbies have

taken a serious hit, though, thanks to covid. Dying to go to another concert someday soon. I occasionally run across **Memo** and **Christina Romero**, but less so recently. I haven't seen any other MIT alumni in quite a while. I'm hoping everyone is remaining safe and masking."

Barry Margulies writes and is very modest about some exciting professional news. Effective August 2020, he is officially a full professor of biology, and director at Towson University Herpes Virus Lab, in the department of biological sciences at Towson University in Maryland. Congratulations, Barry!

In the notes that Barry shared, though, he focuses on his kids and his wife. "First, our older son graduated cum laude in spring 2020 with a BS in math and just got a job in Northern Virginia. That means my wife and I successfully launched one fledgling into the world to make his real mark.

"Our younger son will be attending BU in spring 2021 in a special program where he spends his second semester in the UK; then he's back to regular fall-spring academic years. Moving him to Boston will leave us with a truly empty nest.

"In our news, my wife is doing really well after a bad medical scare in 2016. She had a subarachnoid hemorrhage that required surgery to repair two aneurysms. She is back to her strong self."

Finally, I wanted to share some highlights from an update I received on the Class of 1989 Scholarship Fund. Thanks to all those who have contributed over the past 30 years. As of the last report, the value of the fund stood at \$1,184,078. Last year, 59% of MIT undergraduates qualified for a scholarship, and our fund was part of that. Last year, we helped fund scholarships for two Class of 1989 scholars; both are women who will be seniors in 2020-21. Here's a summary of the write-up I received on these "honorary" members of Class of 1989:

Colleen '21 has been a double major in Course 18 (Mathematics) and 22 (Nuclear Science). She plans "to continue pursuing an advanced degree in Course 22, and then pursue research in nuclear science." As she explains, "In 22.01 (Intro to Nuclear Engineering and Ionizing Radiation), we built our own Geiger counters, including soldering the circuit boards. Then we were sent to find the most radioactive public spaces in Boston for a p-set. I got to go up in the Bunker Hill Memorial

and down to the dry docks to count the radiation I was measuring, also calculating the confidence interval for my measurements. It was so satisfying to build the device myself, and then use it in exploring the city I'm currently living in." On the extracurricular side, Colleen has also played varsity softball for MIT, and has volunteered with Big Brothers Big Sisters of Greater Boston.

Emily '21 is a major in Course 1 (Environmental Engineering), taking "courses related to public policy as well as interning for government agencies and officials." She says, "I worked previously under Professor Penny Chisholm, as well as Professor John Fernandez. I'm looking to use my environmental engineering degree to influence environmental policy." In the summer, Emily worked at the South Coast Air Quality Management District in Southern California. She also had some great international experiences through MIT, including the literature course in Madrid, Spain, the MIT SMURF program (Singapore-MIT Undergraduate Research Fellowship), and the Netherlands Terrascope trip.

Congratulations to Colleen and Emily for attending MIT under the strangest of times, and thanks to everyone who has contributed to support them through the Class of 1989 Fund!

-**David Goldstone**, secretary, email: goldstone@alum.mit.edu.

1990

A delightful 2021 to all!

From **Charles Wong**: "The MIT Alumni Association did a remote video blurb on me! <https://alum.mit.edu/slice/mit-pirate-certificate-international-archery-competitions>.

"They were looking for alumni with 'interesting' ways of dealing with the pandemic. Their original idea was to see how I was adapting to the postponement of the Tokyo Olympics. I had to tell them that I'd already been eliminated at the Olympic trials before the pandemic hit, and that my odds all along, at best, hovered only slightly above zero. They apparently shrugged and said, 'Sure, let's do something anyway!' So I was interviewed online on my couch while wearing my Worlds national team uniform. Two hours of raw footage, resulting in a nice two-minute clip! It was a bit out of date when it aired in late July, as outdoor ranges have reopened here. I'm now training

only one day a week on average in my garage, rather than all the time when the video was recorded in May. Most tournaments are still either postponed or canceled, so this season has turned into a very long rest/recovery/rebuild period. This works in my favor, given I have to do just that to cope with a permanent hand injury. That clobbered the season last year. But in the immortal words of Ahnuld: 'I'll be back!'"

We love hearing from you! Please submit your updates and news. Also, check out our class website: 1990.alumclass.mit.edu; on Facebook: www.facebook.com/groups/4958558887/; and LinkedIn: www.linkedin.com/grp/home?gid=1942400.

-**Vandita Malviya Wilson**, email: vandita@alum.mit.edu.

1991 30th Reunion

It seems that with each column, there is more chaos in the world than before. I've got my home office setup nailed and have the chair from my office and a super-wide monitor. It's made my work life a little easier, and I'm definitely more productive. What tips do you have on how to maintain sanity while working in covid times? I was running every day, which was my gift to myself, but with the fires, the smoke has made it unhealthy. So I'm struggling a little with how to get that physical break outside. Plus, going outside just makes me sad. I feel so badly for all the people and animals affected by the fires, and I worry about the impact this will have on the environment. I really hope 2021 has some more positive things in store for us!

We have news from **Arlene Yang**: "Greetings from San Diego! I've been living here with my husband, Jose Lau, and kids for eight years, and love it. In October, I'll be starting as a principal at the law firm of Meyers Nave, where I'll continue to specialize in counseling employers and litigation. I enjoy it, even though it's a long way from what I imagined I'd be doing after a Course 5 major. I'm focusing on being grateful despite the pandemic, like how I spent more time with my family this summer. My daughter is a sophomore at Cornell, and my son is a senior in high school. I still love the performing arts and am currently board president of transcenDANCE Youth Arts Project, which works with teens from underserved areas of San Diego. www.tdarts.org.

It's been a ray of sunshine to help transcenDANCE pivot to support students virtually during a stressful time. It has also been great to have Zoom reunions with Sigma Kappa sisters and other MIT friends, something we wouldn't have considered before March. My one new skill is skateboarding. Although I may be the world's slowest skateboarder, it's been fun trying something new. Stay safe!"

Amy Chu writes: "Covid slowed many things down, and most comic conventions have been canceled or moved online, but people are still buying and reading comics, so I'm still writing, fortunately. For DC, I have a STEM-based Poison Ivy story appearing in *Flash Facts*, a graphic novel anthology for kids ages eight-12 curated by Mayim Bialik from *The Big Bang Theory*. It will be out Feb. 2, 2021. For Marvel, I just finished adapting two Chinese superhero series, *Aero* and *Sword Master*, for American audiences. The *Aero* story featured a two-issue guest appearance of Iron Man, so that makes me the first MIT graduate to write that other famous alum, Tony Stark!"

I didn't get many submissions from my last request for notes, so this is a sparse column indeed. Please do drop a line anytime you get the urge to share what's happening in your part of the world. Stay safe and healthy! With some luck, we may even be able to celebrate our 30th reunion next year.

-**Lola Ball**, email: lola@alum.mit.edu.

1992

Please send news for this column to **Shari C. Fox**, secretary; email: ShariCFox@alum.mit.edu.

1993

Our September survey on the topic of the election drew 114 responses. I am happy to report that when asked how people were doing on a scale of 1 to 10, 37% responded 8, with a mean of 7 and a standard deviation of 2. It was a tight distribution. Hopefully, those 8% in the 1 to 5 range are faring better these four months later. It's presumably January as you read this, and I certainly wish everyone out there a healthy and happy 2021. I think we are all ready to kick 2020 to the curb.

As for the election, 90% of our survey responders believed in September that Biden would win the popular

vote, and 64.5% believed he would win the Electoral College. Over half of us (62%) planned to vote by mail, exactly 1/3 planned to vote in person, and 2% did not plan to vote. (A few additional responders were not US citizens.) When asked how concerned one was with voting fraud, 60% indicated 4 or less on a scale of 1 (low) to 10 (high). Just under 9% voted 8 or above, and the rest were spread evenly across the middle. The final question addressed when people thought the election would be decided. "One month" won, with 43% of the vote; "one week" followed, with 31%; the optimists who voted for "one day" weighed in at 19%; and those less optimistic, who voted for "sometime in 2021," made up 9% of the vote. Thanks for keeping my side job interesting, everyone!

Kathy Peck Perales writes: "**Mico Perales** '93, SM '95 and I have lived in Oberlin, OH, for 10 years. Our three kids are all now attending school online from home (two in college, one in middle school). I opened my intellectual-property law practice (perales.law) here five years ago, and associated with a Cleveland business law firm, calkinslawfirm.com. I've connected virtually with Melanie Lazaro Flores '92 over the past year because of our mutual interest in kids' innovation and entrepreneurship. Her son, Sebastian, offers a patent pending origami-like kit at octogifts.com. My high school and college-aged nieces sell great masks at landkmasks2020.com. My favorite has periodic table elements on it. Elba Nazario Lizardi '95 has moved with husband and two very tall teenage sons from New Jersey to South Carolina, where she's a plant manager for BASF."

Since 2003, **Emily Yeh** has been a professor of geography at the University of Colorado, Boulder. She is chair of the department as well as vice president of the American Association of Geographers.

From the desk of **Yvonne Lin**: "**Roy Liu** and I continue sheltering in place here in San Francisco. We are thankful that the thick marine layer seems to be keeping the smoke in the upper atmosphere, so we don't smell the smoke from the fires. But it sure made for a bizarre day last Wednesday—the eternal night (see online notes for picture of SF skyline from balcony). I hope classmates continue to stay healthy and safe through during these strange times."

—**Diane Hern**, class secretary; email: dhern@alum.mit.edu.

1994

Happy 2021! I think we are all happy to have a fresh start after this past year. Several classmates decided to add to their numerous skills or take up new hobbies during the pandemic.

Tracy Adams spent many months creating a no-code platform that she is launching on a charity site, TogetherWeAct. She hopes the platform will allow nonprofits to focus on their core mission and minimize the behind-the-scenes hassles. If you know of a charity that could benefit from this platform, get in touch with Tracy.

Many classmates have used the time at home to take up new physical challenges. **Hugh Morgenbesser** has been practicing unicycle riding, and I feel by the time of publication, he will have mastered his free-mount technique. **Wenmei Hill** has pedaled over 2,500 miles on her Peloton. She also started WOTD Workout, where she combines the Alphabet Workout with Merriam-Webster's Word of the Day to create a daily workout and write a silly caption using the word. She started it to keep the kids active and only expected to do it for a few weeks. **Surjono Tanoto** has been perfecting his handstand while also learning to paint on his iPad Pro. **Jill Keidl Mickelson** is becoming "Queen of the Grill," learning about things like spatchcock chicken, Bahamian marinades, and two-zone cooking while also perfecting her standup paddle technique. **Jennifer Sun** used her sewing skills to make masks for her medical friends on the frontline.

Art and music seemed to be other areas where our classmates focused some of their spare time at home. **Valerie Samn** started recording herself singing. Her goal was to record and be able to listen without wanting to give up singing. Her latest accomplishment is a four-part piece that she recorded by herself. She says that although painful in the beginning, she is able to make corrections and improve her performances. I'm hopeful she will post a recording to our class FB group. **Noah Greenburg** posted his new bugling skills while also sharing news of his new job. After 23 years as a practicing architect designing public schools, he now works for Seattle Public Schools as the manager of preventative maintenance. He has

a team of around 75 people, talented in about 12 unions (masons, painters, carpenters, glaziers, etc.), and he also gets to help identify and assess longer-term needs for the districts' 9,000,000 square feet of learning environments, many of which are historic.

Jed Macosko, 16 years on faculty in Wake Forest University's physics department, has launched AcademicInfluence.com. Check it out! Some of you are listed as "academically influential." But he's mainly glad that the algorithm lets his own kids (who are heading off to college soon) find which universities have the most influential alumni and faculty. Not surprisingly, MIT does well in that regard!

Please send any news you would like to share with your classmates.

—**Kim Cornwell**, email: sylence@alum.mit.edu; **Christine Harada**, email: chrismit@alum.mit.edu.

1995

Please send news for this column to **Ranjini Srikantiah**, email: ranjini@alum.mit.edu.

1996 25th Reunion

Edward "Ted" Miguel (Courses 14 and 18): "In the midst of 2020's many challenges, I received a wonderful and unexpected professional honor, with my election as a member of the American Academy of Arts and Sciences, the country's oldest scholarly society.

"The Academy citation reads: 'Edward Miguel is a leading figure in development economics and innovator in four key research areas: 1) The use of randomized control trials and natural experiments to evaluate the impact of interventions, emphasizing general equilibrium and long-run effects as highlighted in his work on the impacts of deworming schoolchildren in Kenya. 2) The determinants and effects of civil conflict and civil war in developing countries, including the connection to climate change. 3) The use of pre-analysis plans to increase the credibility and transparency of empirical analysis in the social sciences. 4) The political economy of corruption and ethnic divisions.'"

—Please send news for this column to Class Notes, MIT Technology Review, 1 Main St., Cambridge, MA 02142; email: classnotes@technologyreview.com.

1997

Please send news for this column to **Emily Viehland**, email: typhoon.emily@gmail.com.

1998

Please send news for this column to **Elizabeth Hennings**, email: lizyo@alum.mit.edu.

1999

Please send news for this column to **Amy Laverdiere**, email: amy.laverdiere@gmail.com.

2000

Please send news for this column to **Heather C Toews**, secretary, email: hrcrooks@alum.mit.edu.

2001 20th Reunion

Greetings, classmates! I hope you are all keeping safe and healthy.

After more than eight years as an editor at Science Translational Medicine, **Yevgeniya Nusinovich** is changing things up a bit with her new job as a senior editor at Science. As usual, she will not be handling any papers from college friends and other social acquaintances, but she encourages you to submit your best work to Science and assures you that it will be in good hands. She also hopes to see some of you at research conferences, although in-person conferences did not yet exist as of this writing. In other exciting news, her kids Solomon and Hadassah, both in high school, have earned their black belts in karate, and Yevgeniya is hoping to do the same before long. Meanwhile, her husband, Aaron Ucko '00, is happy that they've never tried to practice karate on him.

Alex Hochberger has joined UDT Software as the chief marketing officer. He has also produced his first live theatrical performance: *Royal Chessmen Presents: A Witcher Speakeasy and Variety Show*. As one of Broward County's first reopened playhouses, the Royal Chessmen nonprofit theater group is navigating the challenging environment of covid-19 while helping to keep stages open and operate live theater in South Florida. By mixing elements of a Renaissance fair and a theatrical performance,

the group entertains live audiences in a covid-19 mitigated environment. Alex also produced a pirate speakeasy and faire, *Yo Ho Ho and a Bottle of Rum*, in September, and helped the group with fairy tales and a witches ball for October/November. You can see the fruits of this labor of love at <https://royalchessmen.com/speakeasy/> or on Facebook at @renfarespeakeasy. Finally, Alex and Bette '02 are pleased to report that their three children are now at David Posnack Jewish Day School in Davie, FL, where their oldest son has started high school.

Roderick Ferguson has switched from many years in the software industry to performing as a singer/comedian/storyteller/actor with modest success but great fulfillment. On a more personal note, he writes, "I was born and raised in Bermuda before coming to Boston to attend MIT. The evolution of attitudes towards LGBTQ folks in Bermuda has consistently trailed the US by at least 15 years. In 2017, a gay couple sued the Bermuda government for the right to marry, and they were successful. In response, a new government passed a law to ban same-sex marriages and provide domestic partnerships in their place. My anger and sadness over the passage of this discriminatory law led me, as a single gay Bermudian, to launch a legal challenge. A second case was launched by Bermudian Gabby Jackson. That case was joined to mine, and collectively, we won in the Supreme Court of Bermuda in June 2018. The government appealed to the Appeals Court, which once again ruled in our favor in November 2018 but denied a stay, making same-sex marriage legal again. The government is appealing one final time to the Privy Council in London, where it will be heard in February 2021 with a similar case from the Cayman Islands. Partly as a result of the visibility of this legal challenge, Bermuda celebrated its first-ever Pride march in September 2019. It's been a very rewarding experience to be part of this, and I'm confident the Privy Council will rule in our favor for the outcome in Bermuda, but there's also the possibility that our case will be used to set a precedent for all countries under the jurisdiction of the Privy Council."

You can read more about the initial ruling here: <http://www.royalgazette.com/same-sex-marriage/article/20180606/court-rules-in-favour-of-same-sex-marriage>.

Congratulations, Rod! Best of luck with the appeal.

–**Andy Kostoulas**, email: andyk@alum.mit.edu, **Angela Yu**, email: wangela@alum.mit.edu.

2002

Happy New Year! We wish everyone a happy and *healthy* 2021!

For **Karen Robinson**, 2020 was about family. Her mother moved to California to be with her and her husband. Her brother helped her mother move and stayed three weeks with them. Before that, Karen had an extended stay in Arkansas and found some pretty hiking trails and creek systems just outside of Little Rock. She writes, "Even with all the uncertainty, frustration, and worry of covid (that I feel very lucky to have been able to navigate), I also feel lucky that we've made the most of working from home remotely." Karen certainly has been productive with her time, too! She took over as president of the MIT Club of Northern California. They try to have about a dozen events per month. Due to the pandemic, the club has experimented with people talking in small, relevant groups to replace introductions, conversations, and connections missed from in-person gatherings. She encourages anyone in the San Francisco Bay area (or anywhere from Fresno over to the Nevada border or up to Oregon) to reach out.

Congratulations to **Sini Kamppari Pearson**, who shared joyous news from Bainbridge Island. Her family welcomed surprise boy-girl twins, Mads and Anja, in June 2020. Big brothers Sterling (five) and Rasmus (two) are "equal parts helpful and agents of chaos." In addition to growing her family, Sini enjoys work at her architecture studio and welcomes everyone to check it out at Studio Kamppari (www.studiokamppari.com). She would love to design your house or office project!

Our classmates also continued to enjoy impressive professional successes. **Teresa Fazio** returned to the Boston area and started a position with the MIT Lincoln Lab in March 2020. Her memoir of her Marine Corps service in Iraq, *Fidelis*, was published in September 2020. Thank you for your service, Teresa! In other exciting news, **Rebecca Hwang** has an updated title. In addition to being a general partner at Kalei Ventures, Rebecca is also a professor of practice and the senior director at

the Global Center for Family Business and Entrepreneurship at Thunderbird School of Global Management.

We are inspired to read and share your news and accomplishments. Please continue to send updates to 2002classnotes@mit.edu, and update your contact information at <http://alum.mit.edu>.

–**Leah Serrano**, email: Leah2002@alum.mit.edu, **Roxanne Cahn**, email: roxie@alum.mit.edu.

2003

When I wrote in September asking you for news, wildfires were burning across the western United States, the covid-19 pandemic was continuing to disrupt and take lives, and demands for racial justice were strong. It felt strange to send you a request for class notes, because it's a trivial thing, but I'm glad I did. Some of you sent updates for the class, and some of you sent notes just for me. I appreciated every message. Whether we knew each other at MIT or not, we are tied together, and I'm grateful I get to add knots to the tangled mess every few months.

To start, I have some sad news. **Daniel Age**, 39, of Haverhill, passed away suddenly on August 14. Dan was the beloved husband of Lindsay (Brown) and adoring father of twin sons Dominic and Vincent, beloved son of Elaine (Vaccaro) Barbera of Peabody and Alan Stiehl of Somerville, and beloved son-in-law of Robert and Janice Brown of Methuen. After graduating from Malden Catholic High School and MIT, he earned dual SB degrees in mechanical engineering and brain and cognitive sciences and an SM in 2005 in media arts and science. In his PhD program at the Media Laboratory, he developed the Huggable, "a sophisticated robotic teddy bear for learning and therapeutic purposes." My condolences to Daniel's family and friends. I hope you were able to find comfort in one another in this difficult time.

We celebrate our accomplishments and milestones in Class Notes, but our words and messages can also help us grieve together, pause together, and move forward together. Despite the pandemic, **Jonathan Sheffi** married Jude on September 1 in a civil ceremony in Arnold Arboretum, with a bigger Jewish wedding to follow. Jon still works at Google, which he really enjoys. Congratulations, Jon and Jude!

Nick Caldwell started a new job as vice president of engineering at Twit-

ter. Seems like a big deal. Congratulations, Nick!

Dr. **Alex Wissner-Gross** published new research in Computing in Cardiology. Alex, you are our most reliable Class Notes contributor, and no matter how late I send out a request, I can always count on you to respond. Thanks!

After four years living and working in Dubai, **Monica Gupta Jain** moved back to the US with her husband, Anuj, and her two children, Nikhil (eight) and Riya (six). Still with Mars Wrigley, Monica will be leading the small format channel as the vice president of sales for the US business. Welcome back, Monica!

Stephanie Willerth spent her summer helping address PPE (personal protective equipment) shortages related to the covid-19 pandemic. Stephanie and 3-D printers to the rescue! <https://onlineacademiccommunity.uvic.ca/researchpartnershipinnovationblog/2020/07/03/uvic-lab-quickly-pivots-in-a-pandemic-and-joins-forces-with-industry-to-develop-ppe/>.

George Whitfield wrote to share that his startup, FindOurView, was starting the MassChallenge Boston accelerator program over the summer. George, I'm sorry it took me so long to add this to Class Notes, and I hope the program was amazing. George's company has built a "dynamic survey and convergent analysis product that automatically summarizes and prioritizes open-ended text feedback from consumers, using a patent-pending system of AI and NLP with an innovative UI/UX." Snazzy. They've had help from the MIT ILP, MIT Innovation Initiative, and the I-Corps national program, and George was excited about the accelerator experience.

Mitul Mehta is still on faculty in the medical school at UC Irvine, practicing retinal surgery. His daughters are eight and five and trying to figure out how online education works, and Mitul and I commiserated about computer kindergarten. My daughter is also five, and I think she prefers participating in my Zoom work meetings over attending her own.

Emily (Oliphant) Perry is doing well in Bountiful, UT, despite an arctic windstorm, power outages, and falling trees. Emily has four children, and her youngest, who was about to turn one, has a talent for getting into anything and everything, particularly the trash. My two-year-old is past his trash scav-



Martin Jonikas '04

Faster photosynthesis, higher crop yields

Despite the increasing abundance of carbon dioxide in our atmosphere, most plants are surprisingly inefficient at converting it into sugar during photosynthesis. Algae, however, do this very efficiently, thanks to a protein structure called the pyrenoid—and Martin Jonikas '04 believes this understudied cellular workhorse could transform food production.

Engineering a pyrenoid into crops like rice and wheat could enhance their carbon uptake and increase yields by as much as 60%, says Jonikas, an assistant professor of molecular biology at Princeton University and the recipient of the 2020 Vilcek Prize for Creative Promise in Biomedical Science, which recognizes outstanding early-career immigrants in the United States.

Because photosynthesis plays a critical role in the planet's carbon cycle, pyrenoids “might also be able to

contribute to solving other problems that we're facing in sustainability, including climate change,” he says.

At eight years old, Jonikas came to the US from France with his geophysicist mother and computer scientist father when the former joined the UC Berkeley faculty. At MIT, he pursued his bachelor's degree in aerospace engineering, but a molecular biology class with professor (now emerita) JoAnne Stubbe inspired him to change fields. “She opened my eyes to the reality that the most amazing machines on Earth are living organisms. I was hooked!” he says.

He went on to pursue a PhD in biochemistry and molecular biology at UC San Francisco, where he became fascinated with photosynthetic organisms while working with advisors including Jonathan Weissman, PhD '93, who has since joined the MIT faculty. By 2010, Jonikas had his own lab at the Carnegie Insti-

tution for Science's Department of Plant Biology. Six years later, he moved to Princeton, where his team focuses on the freshwater, single-celled alga *Chlamydomonas*—commonly known as “Chlamy” among plant biologists. (*Sammy the Chlamy* is one of three music videos his lab has produced with songwriter Jonathan Mann to teach kids about photosynthesis.)

In addition to unraveling the molecular makeup of pyrenoids, his team has generated a library of 60,000 *Chlamydomonas* mutants—the first of its kind for a single-celled photosynthetic organism. Researchers in other areas will be able to use it as a resource for work that could also enhance crop yields.

“In the end, if our goal as a civilization is to produce more food with fewer resources, all of these approaches are worth pursuing,” Jonikas says.

—**Pamela Ferdinand**

enging days... mostly. His new passion is taking apart pens and definitely not putting them back together. There are pen shafts, ink, and springs scattered throughout my house.

John Bloomsburgh is living in Sunnyvale, CA, and wrote simply to connect with me about the ash in the California sky and the flowers in our gardens. We've never met. **Krzysztof Fidkowski** also wrote just to say hello. I don't think Chris and I have seen each other since graduating, but we have fond memories of living together at Next House. **Patrick Nichols** wrote to let me know that an hour earlier, he was trying to take out the garbage, and the lid of his garbage shed fell down and put a huge gash in his forehead. His three daughters provided lots of helpful advice to address the bleeding.

These are the updates that distinguish our class notes from all the others and make ours the very best.

For our final update, **Rebecca Smith** shared that she had just returned from a 2020-style insane road trip and had welcomed a new fur baby, an 11-week-

old greater Swiss mountain dog named Luna, to her family. Becky shared puppy pictures that are on our class blog (<https://mit2003classnotes.blogspot.com>), along with pictures from Monica and Jon. (Patrick sent me a picture of his wound, but I will keep that one between us.)

Hang in there, everyone.

—**Kristie A. Tappan**, email: ktappan@alum.mit.edu.

2004

Because Emily said covid-19 isolation bakes are now considered newsworthy, **Stephanie Chow** made this Black Forest chocolate cake, loaded with kirsch and strong coffee, for her husband's birthday. She also fed it to her two-year-old toddler, not realizing the alcohol and caffeine frosting were not baked out. #ParentingFail #CakeDecorated-ByEwok. The family also welcomed a second child in early April.

Mark Sellmyer and Evan Pruitt '05 welcomed a new baby, Julian, to the family! That makes four kids in the

nine-and-under age group and just one away from a full-starting five. Evan is the assistant director of the master's of architecture program at Jefferson University, and Mark is an assistant professor of radiology, as well as biochemistry and biophysics, at UPenn. It's busy!

Jacob Faber was awarded tenure by New York University's department of sociology and the Robert F. Wagner Graduate School of Public Service.

Christina Palmer, Matt '03, and kids Tessa (seven) and Erin (four) are surviving in their Waltham, MA, home. They miss work and their school friends but have managed to keep their spirits up, despite the daily challenges of two working parents home with school-age kids. Christina is a scientist at Biogen, so lab work from home is definitely a challenge, though she's fulfilling that need with copious science experiments with the kids. Matt started a new job at the start of the pandemic, so navigating that has been different. Everyone keeps busy going on walks and hikes, riding bikes, and doing tons of crafts. While hard, the family time has also been

priceless, and they are all grateful for a safe home and healthy family. “Best wishes to all other '04ers!”

Catherine Tweedie moved to Forest Grove, OR, in 2018 with her partner Nate Ball '05 and children Calvin (six) and Leo (three). Leo was named after Leonardo da Vinci, but so far he is much more lion than artist-scientist. Cat's energy goes into parenting, sculpture, meditation, and better understanding healing of personal and societal traumas. She's been working on a commission for a four-foot-tall Buddha that will be cast in bronze after much more detail is added over the coming months (please, more child care!). A picture of the in-progress sculpture, with the welded steel armature sticking through the wrist, is in the online column. The next step is to get the robes sewed and arranged and hardened with fabric stiffener before painting on clay and texturing. “Please wish me luck! (cattweedieball.com).” Nate Ball has been offering live STEM/engineering videos (on his YouTube channel) for kids, writing his book series *Alien in*

my Pocket and *Let's Investigate with Nate*, and hosting 10+ seasons of PBS's *Design Squad*.

Aadel Chaudhuri and his wife, Humera, welcomed their first child, Adam Alhazen Chaudhuri, on June 2, 2020. "We're overcome with joy!" he says.

After 15 years in the San Francisco Bay Area, **Meena Shah** has moved to London. After her father passed away suddenly last fall, she decided that a move to the UK would give her a chance to spend more time with her extended family, mostly around greater London. As part of this move, she also transitioned to a career in sales, now selling logistics optimization and robotization solutions that she had been designing and building for the last decade. She gets back to Oakland when she can to visit her friends and leash-trained kitty, Shadow.

Nina Kshetry and her husband, Lav Varshney SM '06, PhD '10, welcomed their son Rohin Kshetry Varshney on Oct. 5, 2019. Their daughter, Arya, is four, a proud big sister who enjoys discovering new ways to make her baby brother laugh. The family spent the past year in Palo Alto, CA, connecting with many MIT friends in the area and taking advantage of the beautiful outdoors. They were returning this fall to Champaign, IL, where Lav received tenure at the University of Illinois. Nina continues to build her wastewater and AI company, Ensaras, and after completing several R&D and demonstration projects, is excited to deploy her first commercial project later this year. They all love connecting and reconnecting with MIT folks, so feel free to reach out!

Adam Champy moved back to the East Coast and joined Two Sigma as senior vice president and product lead for Venn, a quantitative investment analysis platform. He lives with his son in Darien, CT, and you can either find him trying to catch up with his son on a bike, playing socially distanced golf, or figuring out the best place to drop a laser into Long Island Sound.

On June 14, 2020, Raul Blazquez-Fernandez, PhD '06, and **Ida Wahlquist-Ortiz** celebrated their 12th anniversary. A dozen years of love, life, and laughter! To kick off celebrations, they made two big paellas and shared samplings with their dear neighbors in Mountain View, CA. They saved some paella to pair with a pinot noir. Their lunch at home lasted a couple of hours, just like in Spain. After

paella and pinot, they took a long walk to downtown Mountain View for yummy lattes. By evening time, their munchkins, Oscar and Victor, were ready to give the celebration a grand finale and made a brownie cake, which they all devoured for dinner and breakfast the next day.

Ran Tao and her husband, Mike Roesler (West Point '06), welcomed their first child, Rylan Tao Roesler, on Apr. 1, 2020. Surprise! He is a happy baby and keeps Mom, Dad, and big brother Chewie on their toes during these crazy times.

Heather (Fireman) Jackson, Benjamin Jackson SM '05, and their daughter Eva (four) uprooted themselves after 10 years in the San Francisco Bay Area and moved down to Orange County. Ben joined Rivian Automotive to build their failure analysis lab, and Heather continues engineering consulting for the nuclear power industry at Structural Integrity Associates. A roundabout way to come back to the place where they had their destination beach wedding 14 years ago!

After 10 years of working in the art industry in Hong Kong and Taiwan, **Robert Hall** decided to go in a very different direction and do an MA in teaching Chinese as an international language at Education University of HK. He says, "I've always wanted to share my passion for the Chinese language and culture through my work, and teaching is a lot more direct way than putting on exhibitions. When I got to MIT, I couldn't speak a word of Chinese, and now I'm learning how to teach it to foreigners. Who would've thought?"

James Samuel and Milly welcomed their third daughter, Josanna Anne Samuel, on Aug. 17, 2020. Janice and Jessie are over-the-moon excited to have a baby sister.

David Coleman and his wife, Ariella, moved to Venice, CA! David is the lead product manager for reporting & analytics at Cornerstone OnDemand.

–**Emily Chi**, email: emilychi@alum.mit.edu.

2005

Michelle Luk and **Douglas Hwang** welcomed their second child, Brady Luk Hwang, into the world on March 11, 2020, at the height of the coronavirus pandemic. They add, "In the meantime, Alexis Luk Hwang (three) has demonstrated a desire to join MIT class of 2038, obsessing about cumu-

lus, cumulonimbus, stratus, and cirrus clouds and the water cycle. We are probably learning more from her than she is from us right now."

I always enjoy reading our class updates and have grown very fond of reading an update from **Eitan Glinert** in each column. I had wondered what would cause him to miss writing in, and it turns out "over six months in a global pandemic" did the trick. I continue to be amazed at how much we are all able to achieve during these "unprecedented times."

Stay safe, and keep the notes coming.

–**Chia Berry**, email: analucia@alum.mit.edu.

2006 15th Reunion

J.B. Persons completed his MS in computer engineering at Virginia Tech, where his wife, Rebecca, simultaneously received her DVM. They will remain in the Blacksburg, VA, area while J.B. continues on a PhD in machine intelligence. J.B. and Rebecca also welcomed home a German shepherd puppy, Artemis, bringing their current pet count to five.

Jennifer L. Wong was recruited to be head of real world evidence for the Americas at Sanofi and global engagement lead for the Sanofi Genzyme specialty care business unit. Based in both Cambridge, MA and Washington, DC, and with a team in Paris, she leads global RWE, AI, digital/data strategy, innovation partnerships, and external engagements across the research and development portfolio, specializing in oncology, rare blood disorders, rare and neurological diseases, and vaccines development. While working full-time and commuting extensively, Jennifer earned her MBA and master of science in healthcare leadership in 2020 from the Cornell Johnson Graduate School of Management and Weill Cornell Medicine, earning not just one, but two Ivy League degrees in less than two years!

Loretta Trevino started a new job as senior aerodynamic CFD engineer at Stratolaunch in Seattle, WA.

–**Anjum Sharma**, secretary, tel: 302-300-6581; email: anjum@alum.mit.edu.

2007

Karl Kulling started his own company, SeventeenOtis, to search for a small business to acquire in the Northeast or Mountain West. He lives in Dallas, TX, with his wife, Katherine Anderson,

and plans to move to wherever he finds a business.

–**Susan (Shin) Jang**, class secretary, email: susanjshin@alum.mit.edu.

2008

Please send news for this column to **Allie Jacobs**, secretary, email: fishie@alum.mit.edu.

2009

Please send news for this column to **Zsuzsa Megyery**, secretary, email: megyery.zsuzsa@gmail.com.

2010

Please send news for this column to **Victoria Lo**, secretary, tel: 415-845-4028; email: victorialo@alum.mit.edu.

2011 10th Reunion

Meena Viswanath moved with her husband and two kids to Rockville, MD. She'll continue to work for Geosyntec Consultants as a geotechnical engineer, specializing in geoenvironmental design and construction and geotechnical instrumentation.

John Boghossian helped take his biotech startup Compass Pathways public on Nasdaq. Compass researches the medical benefits of psychedelics in alleviating mental illness through global clinical trials, including with the FDA.

–**Arti Virkud**, email: virkud@alum.mit.edu; **Grace Yao**, email: graceyao@alum.mit.edu.

2012

Hannah L. (Pelton) DeRusha and her partner, Bill DeRusha, welcomed baby Abigail Marie on Aug. 17, 2020. Big brother Nathan Joseph turned two in September. Hannah currently serves as primary caregiver and teaches and performs Irish dance part time.

Kimberly Q. Li married Anthony Rindone '10 Oct. 24, 2020, in an intimate wedding at Glass House in Cambridge, MA. The two live in downtown Boston with their husky-shiba mix Luna, who chaperoned their first date. They hope to celebrate in a grand way next fall with other MIT alumni and family.

–**Kimberly Q. Li**, secretary, 120 Kingston St., Unit 2107, Boston, MA 02111; tel: 908-307-6230; email: kqli@alum.mit.edu.



Flourish Klink, SM '10

The keys to the fandom

If you've ever dressed up as a character from your favorite movie series, or read a 200,000-word story about that character written by a fellow aficionado, you might be part of a fandom. According to Flourish Klink, SM '10, that term describes a community of people who build their own world—lovingly, and also sometimes critically—around whatever piece of pop culture makes them ravenous for more.

"There's a real element of luck and alchemy when something gains a fandom," says the Manhattan-based Klink, an alum of MIT's Graduate Program in Comparative Media Studies. Even so, "it is clear that there are patterns in things that are successful."

Klink cofounded Chaotic Good Studios in 2014 and now serves as chief research officer. The company consults with major media corporations, using a process it calls Fanalytics to monitor fan engage-

ment—helping clients assess the popularity of books optioned for film, identify appealing plot ideas for sequels, and develop social-media plans for new properties. "We cover everything from small niche communities that are really, really deeply engaged all the way to the biggest that you can imagine," Klink says.

Klink also cohosts a biweekly podcast, *Fansplaining*, with Elizabeth Minkel. Since meeting on a panel at San Diego Comic-Con in 2015, the duo has released more than 150 episodes on such topics as slash fiction (romantic fan fiction typically featuring two male characters) and the "found family" trope (when characters not related to each other forge familial bonds, which Klink argues is integral to attracting a fervent fandom).

This focus on fandom has deep roots. After a youthful obsession with *The X-Files*—"My mom thought

Scully was a great feminist role model"—a teenaged Klink cofounded FictionAlley, which became the largest Harry Potter fan fiction community online, and helped run the first Potter fan convention. These activities caught the attention of Henry Jenkins, then an MIT professor, who interviewed Klink for his 2006 book *Convergence Culture*. Two years later, Klink became Jenkins's grad student at MIT, writing a thesis on Twilight "antifans" (those who hate the vampire series as much as others love it).

"Having a degree from MIT sort of gives you the license to say 'This thing is important' and have people believe you," says Klink, whose side projects include building a database of thousands of Star Trek books—"a public database, if anybody else cares about it."

No doubt there are more than a few fellow fans who do. —**Stephanie M. McPherson, SM '11**

2013

Kyle Smith and **Elise Stave** got engaged in June 2020. Kyle surprised Elise on a mountaintop overlooking the Shenandoah River. They celebrated after the hike with delicious chocolate milkshakes.

Mark Kalinich and **Jonathan Wang** cofounded Watershed Informatics, a bioinformatics startup to accelerate therapeutics and diagnostics development by empowering biologists to perform their own bioinformatics analyses. They encourage people interested in partnering or working with them to reach out as they grow the business.

Nathan Arce (now Nathan Hunt) and **Melissa Hunt** got married in April 2020. Their families joined the wedding via Zoom. The two met and started to date during their undergraduate years at MIT, and both are working for Akamai Technologies.

We love hearing what you're up to! Please share when you have a chance.

—**Henry Zhu**, secretary, email: hxzhu@alum.mit.edu.

2014

Daniel Gonzalez received a PhD in MechE from MIT in June 2019, and since then, he's been working as a postdoc at West Point, about an hour north of New York City, where he's been making cool robots.

Sarine Shahmirian has started her third year of medical school at Case Western Reserve University in Cleveland.

—**Andrea Gutierrez Marty**, secretary, email: andreagu@alum.mit.edu.

2015

Please send news for this column to **Quynh Nguyen**, secretary, tel: 714-260-5416; email: qpnguyen2307@gmail.com.

2016 5th Reunion

Please send news for this column to **Hanna Pang**, secretary, email: hpang@alum.mit.edu.

2017

Please send news for this column to **Vineel C. Adusumilli**, email: vineel@alum.mit.edu.

2018

Rima Das just started graduate school at MIT, where she and **Richard Oates** have just become GRAs (formerly known as GRTs) at Next House. They're super excited to be back on campus and would love to meet other alums in the area. Feel free to reach out at rimadas@alum.mit.edu.

Anika Gupta started a podcast, The Data Pulse, which dives into the growing role that data science plays in the latest biomedical innovations. For ~30 minutes each week, she chats with a different pioneer to help bridge the gap between domains and shine a light on advances being carried out. Check it out at linktr.ee/thedatapulse, where Anika has included a glossary of definitions and links that guests mention.

She can be reached at anikagupta@g.harvard.edu.

Afika Nyati just moved to the Bay Area, so he'd love to get in touch (afikanyati@alum.mit.edu). In his free time he's also been learning about sound design, the art of "taming" sinusoidal waves to generate artificial and natural sounds using digital tools. Read more about his experience at <https://twitter.com/afikanyati/status/1296531000349130753>.

Daniel Mirny discovered a new wine at Trader Joe's.

—**Rima Das**, email: rimadas@alum.mit.edu.

2019

Please send news for this column to **Marianne Olsen**, email: meolsen@alum.mit.edu; **Kelsey Becker**, email: kelseyb@alum.mit.edu.

2020

Please send notes for this column to **Sarah Sime**, email: sarahsime@mit.edu.

Course news

News and notes from alumni of graduate programs

Course 1

Robert B. Sowby, MEng '13, won a trio of young professional awards for his contributions to civil engineering: the 2019 Young Professional Award (American Water Works Association, Intermountain Section), the 2019 A. Ivan Johnson Award for Young Professionals (American Water Resources Association), and the 2020 Daniel W. Mead Prize for Younger Members (American Society of Civil Engineers). In 2018, he completed a PhD at the University of Utah and was promoted to associate at Salt Lake City area engineering firm Hansen, Allen & Luce.

Yannis Constantopoulos, PhD '73, died in April 2019. After graduation and two years of military service in Greece, Yannis worked in Brussels for the soil mechanics firm D'Appolonia. In 1981, he returned to Greece, where he was elected professor of mechanics in the Greek Naval Academy. Parallel to his work at the Naval Academy, he was involved with consulting, which he continued after his retirement in 2013. He is survived by his wife and two sons.

Course 2

Peregrine White Jr., SM '84, died May 8, 2020, at Beverly Hospital in Beverly, MA. He was 62 and a longtime resident of Ipswich. He died from complications of cancer that had impacted his brain, slowly causing a significant cognitive deficit over the last year. He also had covid-19.

He was born in Durham, NC, and moved to the Washington, DC, area when he was 10. There, he attended the Potomac School and Churchill High School. He graduated from Johns Hopkins University in Baltimore with a BS in environmental engineering, followed by a diploma in environmental and applied fluid dynamics from the von Karman Institute for Fluid Dynamics in Brussels, before coming to MIT.

His book *The Idea Factory: Learning to Think at MIT* is still in print through

MIT Press. Well received by faculty and students alike, it has been a popular read for incoming students at MIT and other engineering schools.

After graduation, he worked in Cambridge, where he met Elizabeth Ross. They married in 1995 and moved to Ipswich, where he established an energy consulting firm and was a member of First Church of Christian Science.

After a stint at Burnell Controls in Danvers, he began a job at Market Basket in Rowley, working in the produce department. He became a proud expert on arranging vegetables in attractive displays.

He lived up to his nickname, Pepper, as he was filled with a spice for life. He never gave up, no matter the circumstances, even during his decline over his last year.

Peregrine liked to take off to do things. One summer, as he rode across the country, his bike broke down just as he could see his final coast down to his destination in California, but he didn't give up. He figured out a fix with what he had on hand and made it. He also took off for Italy to ride his bike and got "adopted" by a professional Italian racing team. He learned to speak Italian. He took off for Bruges, Belgium, and traveled around Europe when not studying. He learned to speak French. He finally settled in Cambridge, where he played soccer and kept riding his bike.

Peregrine made great friends everywhere he went. If he'd had his dream job, he would have been a comedian, but he fell just a little short, mostly in timing. He is survived by his son, Samuel, and sisters, Katherine and Emily. He was predeceased by his wife, Elizabeth White; his parents; and his sister, Helen.

John F. Klein, SM '69, ME '69, died on June 6, 2020. His last address was in Littleton, CO.

Course 3

Dr. Phillip Hartley Smith, MTE '52, died in March 2020. Phillip was born in

1926 in Sydney, Australia. After attending primary and secondary school, he left Scots College at age 16 to join the Australian Merchant Navy during WWII. Following service, he attended the University of Sydney, studying mining and metallurgy, graduating with first-class honors and head of the class. While attending university, he was active in the Palm Beach Lifesaving Club and rowed for Wesley College. Awarded a Nuffield Scholarship, he traveled to remote parts of Australia, evaluating mining sites. Phillip sailed to the US to attend MIT as a Fulbright scholar.

After MIT, Phillip joined Inland Steel in Chicago as a metallurgical engineer. While there, he and Professor Elliot of MIT were awarded the National Steel Award for an outstanding technical paper. Phillip also published papers on blast furnace production, the alloying of steel, and the manufacture of free-machining steel, in which field he held patents. After four years, he moved to LaSalle Steel Company, and while there, earned a diploma in industrial relations at the University of Chicago. During the LaSalle years, Phillip became a citizen of the USA.

He joined Copperweld Corporation at its steel plant in Warren, OH. In 1967, he became president and chief executive officer, and in 1974, chairman of the board. During the 10 years of his leadership, Copperweld thrived. Financial World magazine named him one of three outstanding chief executives in the steel and metal working industries. He then became president of the North American operations of the Bekaert group of Belgium, a manufacturer of wire and wire products. Following three years of record earnings for the American subsidiary, he resigned to form his own private consulting firm, Smith, Yuill & Company, which advised major banks, government bodies, and corporations across the globe.

Phillip wrote, edited, published, and lectured on management science and strategic planning. He was a guest lecturer or adjunct faculty at many busi-

ness schools. He established his own publishing house and authored *Quaker Business Ethics*, *Board Betrayal: The Weirton Steel Story*, and three volumes of memoirs. He also published "The American Economic Commentary," a newsletter written for business professionals both foreign and domestic.

He served on the boards of numerous business and public organizations as well as the boards of trustees of several universities and seminaries. He was a founder of the University of Sydney Foundation USA. Grove City College and the University of Sydney awarded him honorary doctoral degrees.

Phillip always had a good book going and was a prodigious letter writer. He enjoyed both golf and tennis. He loved to sing and the sound of bagpipes. He liked taking road trips and traveled widely throughout the world. His Christian faith was important to him; wherever he lived, he participated in the life of a local church.

Phillip is survived by his wife of 64 years, Martha, as well as five daughters, sons-in-law, 11 grandchildren, and four great grandchildren. He was preceded in death by a son and grandson.

Course 6

Dr. Frederick Williams Sarles, SM '55, ScD '61, died July 14, 2020, at Northern Westchester Hospital in Mount Kisco, NY. He was 88 years old; the cause was complications of Parkinson's disease.

Bill resided in Lexington, MA, for more than 50 years, but had recently moved to Rhinebeck, NY. He is survived by his wife of 59 years, Valerie (née Armitage); his son, Stephen; his daughter, Elizabeth; three grandchildren; and one step-grandchild.

From 1961 to 1980, Sarles was a principal researcher and group leader at MIT Lincoln Laboratory, developing—often under top-secret clearance from the Department of Defense—space communications and spacecraft technologies. After retiring from Lincoln Laboratory in 1980, he became a



LaShanda (James) Korley, PhD '05

Creating new polymers, and upcycling the old ones

Most of us either shudder at spider webs or admire their intricacy. LaShanda (James) Korley, PhD '05, sees something else entirely: inspiration for new polymers.

Now a professor of materials science and engineering as well as chemical and biomolecular engineering at the University of Delaware, Korley began her ongoing study of spider silk as a chemical engineering PhD student in MIT's interdepartmental Program in Polymers and Soft Matter. "The foundation of my work is bioinspiration. We don't necessarily try to mimic materials—we take inspiration from those materials and translate aspects of those systems into new material development," Korley explains. For example, she is developing a material that changes shape in response to water—taking its cue from spider silk's ability to "supercontract," shrinking drastically and altering its mechanics, when it gets wet. A

synthetic material with this property could be used in soft robotics or artificial muscle.

Korley's research has progressed from simply designing nature-inspired polymers to creating those polymers more sustainably. One aspect of her work is building new polymers from renewable raw materials such as lignin in wood, and designing them to be reprocessed after serving their original purpose, further reducing their environmental impact.

More recently, she has taken on the challenge of plastics waste. "There are a lot of single-use plastics, and we don't have enough landfill space," Korley says. She and Thomas Epps III '98, SM '99, are leading the Center for Plastics Innovation, one of six new Energy Frontier Research Centers funded by the US Department of Energy. "We are trying to think about ways to augment current mechanical recycling,"

says Korley, describing it as an inefficient process that primarily degrades plastics waste into products with limited uses. Instead, the center will develop new chemical and catalytic processes for turning the waste from everyday plastics like water bottles into the building blocks for high-value products such as fuels, lubricants, and functional polymers.

Korley credits MIT—and her advisors Paula Hammond '84, PhD '93, and Gareth McKinley, PhD '91—with exposing her to many research disciplines. "MIT was a hub for inspiration and creativity," she says. These days, Korley works closely with experts on topics as wide-ranging as catalysis, enzyme engineering, and manufacturing. She says, "What excites me is what we can achieve by being interdisciplinary and bringing together these levels of expertise to generate more sustainable materials." —**Catherine Caruso, SM '16**

consulting engineer (FWS Engineering) for a variety of companies. He was the author or co-author of numerous books, many of which are considered seminal and still cited today.

He was appointed to the National Research Council on Ballistic Acoustics, which examined the recording tapes related to the assassination of President John F. Kennedy; to the White House Ad Hoc Committee on the September 1979 Vela Event, to evaluate the validity of data recorded by a Vela satellite of a possible clandestine nuclear test event off the coast of South Africa; and to assist the government of India on their development of a satellite program.

As a boy, Bill showed great aptitude for science, mathematics, and music. He was assistant organist at the Presbyterian church his family attended, a role he would later assume at First Parish in Cambridge. He won a scholarship to Duke University, where he graduated with bachelor's and master's degrees in electrical engineering. He was a member of the IEEE, the American Institute

of Aeronautics and Astronautics, and the fraternities Sigma Xi and Phi Beta Kappa. He was active for many years in community theater in Lexington, MA, and served for 12 years on the board of the Boston Early Music Festival.

Dr. **Boris T. Subbotin**, ScD '59, passed away from cancer on Aug. 26, 2020, at age 93. Dr. Subbotin obtained his BS and MS degrees at Stanford, then moved east to study under Professor John G. Trump, an uncle of the current president. He wrote his thesis on high-density beams in Van de Graaff accelerators. After obtaining his ScD, he and his family moved back to California, where Dr. Subbotin began a long career in the aerospace industry, primarily with Hughes Aircraft Company. There, he served as technical director and then chief scientist, working primarily in satellite communications for private and military use. In his spare time, he imported European wines and sports cars. He also enjoyed backpacking and skiing with his wife and two children.

Wolfhart Karl Hermann Arthur Weidemann, SM '61, EE '62, died June

28, 2020. Wolf was born in 1935 in Windhoek, Namibia (formerly South West Africa), of German parents. He excelled in school and played the trumpet in the Windhoek Symphony Orchestra as a teenager. He attended the University of Stellenbosch at age 16 and earned a BS in electrical engineering. His first appointment, at 21, as the engineer of the cyclotron project at the Council for Scientific and Industrial Research (CSIR), got him an appointment to study at MIT. A year-long stint at the Argonne National Laboratory in Chicago prepared Wolf for his future position as director of instrumentation at the Atomic Energy Board in Pelindaba. An overview of Wolf's professional career can be found in this excellent article published in 2018: https://issuu.com/saiee0/docs/watnow_sept_2018 (pp 54-59).

Wolf married Marie Le Roux in Pretoria on Jan. 24, 1959. Married 61 years, they had three children, Hermann (USAF pilot and airline captain), Walter (cost engineer), and Luise (lawyer). Throughout his long life, Wolf was involved in advancing the engineering

profession through various organizations and training courses, and he corresponded with numerous friends and relatives around the world in three languages.

Wolf will be remembered as the supreme "mensch": considerate boss, dedicated father, and a sage to all who sought his wisdom.

Frank Philip Tuhy Jr., EE, SM '67, passed away at home on June 3, 2020, after a four-year, well-fought battle with pancreatic cancer.

Born in Perth Amboy, NJ, and raised in Woodbridge, NJ, Frank settled in Basking Ridge, NJ, and lived there for 30 years. He attended Rutgers University and MIT. As an electrical engineer, he started his career at Bell Laboratories. After the breakup of the Bell System, he worked at Bellcore and Next Level Communications. He finished his career as a consultant for Silicon Valley communications companies, and supported additional telecom companies in China, Japan, and South Korea.

Frank is survived by his beloved wife, Jan; his son, Rob; and daughters, Rachel,

Dianne, and Kathleen. The greatest joys of his life were his five grandchildren.

Frank was the ultimate DIY handyman. He repaired jewelry, rebuilt clocks, remodeled kitchens and bathrooms, and built storage sheds and a patio. He would often fly or drive hours just to help one of his kids install a ceiling fan or rewire a light fixture. He was also interested in sport cars and owned Corvettes and an Acura NSX. His mechanical skills rivaled those of a professional; he was meticulous in the care and maintenance of his cars, and was a great source of knowledge for fellow NSX owners.

Frank proudly marched with the 50th reunion class at MIT's commencement in 2017, a testimony to his strong and enduring connection to and respect for the Institute. He was actively involved in the MIT alumni club, serving as vice president of communications. He also planned many events, including food and wine adventures and the club picnic, serving as the barbecue master. He served MIT as an educational counselor for 45 years.

Frank became a member of the MIT Club soon after settling in New Jersey close to 50 years ago, but his commitment to the club began to soar when he retired in 2012. He slipped into the role of unofficial club photographer and provided documentation of the club's history and legacy. He was a critical part of the club, and his presence will be greatly missed by all.

In 2016, Frank was honored by the MIT Club of Northern NJ with the Joseph Wenick Award, its highest recognition, given in sincere appreciation of long-term, outstanding service. Frank, along with his many talents and wisdom, will be missed for his love of family. He will also be remembered as a master of puns and terrible dad jokes.

Course 10

Bahjat S. Beshty, SM '70, died on March 16, 2020, at home. Bahjat is survived by his wife of 42 years, Michelle; his sons, Walead and Tariq; his four sisters, his brother, and many nieces, nephews, and extended family.

Bahjat was born in July 1938 in Tripoli, Libya. He earned a BSc from University College, London; an MS from the University of Birmingham; and a PhD from Imperial College, London. His primary academic and occupational focus was chemical engineering

research; he held numerous patents in combustion and catalysis, in addition to pharmaceutical process design, but his personal interests spanned all sciences, especially particle physics.

Course 11

Peter Coe Verbica, SM '92, joins Silicon Private Wealth and Viant Capital as a managing director. Patricia Williams, SPW's founder and CEO, states, "We're a diverse team, and I've been privileged to work professionally with Peter for years. He's ethical, collegial, and a deep thinker. He and his family's roots are multi-generational, including their link to landmark Henry Coe State Park. As a former economics professor and non-profit investment committee chair, Peter considers defense, as well as offense, in portfolio management. Peter values our advanced platform's competitive pricing and flexible structure. Peter brings an inimitable breadth of experience." Viant Capital delivers "top quality investment banking and financial advisory services to emerging, high-growth companies."

Course 15

Gordon Ralph Waive '82 died in June 2020. Gordon was born in Rotherham, UK, in June, 1935. From his early years, he was blessed with an outstanding singing voice. He carried his love of music and singing throughout his life. He contracted polio as a child, which left him with a weakness in his legs and feet. Gordon would not allow it to stop him from doing what he wanted, including playing sports.

At 16, Gordon entered the National Provincial Bank as a clerk, and by the time the bank merged with Westminster Bank to form the new, powerful, NatWest Bank, he was already at managerial status. Gordon was asked to lecture and teach at the bank's training college and returned regularly throughout his career to speak on what had become his "specialist subject."

In 1963, Gordon married Gill Dickinson. Gill joined him in singing with various choirs. He reached the pinnacle of his musical achievement when he joined the renowned Philharmonia Chorus. During his many years there, he toured extensively and took part in several recordings to great critical acclaim.

At NatWest Bank, his management career flourished, and he felt particularly privileged to be selected to attend

Alan Robock, SM '74, PhD '77, started working on climate change as a graduate student at MIT, publishing the first paper using a climate model to show how human emissions of carbon dioxide change climate over time. He has studied global warming ever since.

a course at MIT in 1982. Here, among other things, he became a "disciple" of Ed Schein. Being at MIT also led to his subsequent love of America and American life. He returned several times to summer schools and to revisit MIT Alumni. He spent many holidays in Boston and Cape Cod, meeting those with whom he had formed lasting friendships. Gordon's final role with NatWest Bank was as regional director of the east of UK, based in Nottingham, which he held for several years.

In retirement, Gordon set up his own company, Secantor. He also devoted much of his time to chairing and supporting charities.

Gordon passed away on May 25, 2020, following a long illness, during which Gill cared for him at home. He still maintained a lifelong passion for sport, watching football, cricket, and golf. He also loved wine, food, and socializing with friends. Gordon will be greatly missed by his many colleagues and friends. As a proud husband to Gill, father to Tim and Andrew, and grandfather to Tom, Ben, and Lulu, he is much mourned.

Aurelio "Butch" Madrazo, SM '74, died on Aug. 11, 2020. No other information has been provided.

Course 16

Lucius Perry Gregg Jr., SM '61, died on Dec. 28, 2019, at the age of 86. A native of Chicago, Lu graduated from the US Naval Academy in 1955, becoming only the fourth African-American to graduate, and the first to graduate "with scholastic distinction." He went on to have a distinguished career in the military and serve on advisory committees to the federal government and major universities. After MIT, Lu completed Harvard's Advanced Management Program in 1975.

At age 25, he became the youngest pilot with his own crew to fly passengers for the Military Air Command, and he served as a project scientist at the Office of Scientific Research/Office of Aerospace Research.

After 10 years of military service, Gregg became associate dean of sciences at Northwestern University and a program officer at the Sloan Foundation. He held vice-president positions in the headquarters of several major corporations, including the First National Bank of Chicago, Bristol Myers Squibb, Citibank, and the New York Daily News. For 10 years, he was corporate vice president of communications at Hughes Aircraft/Hughes Electronics in Los Angeles.

He served on the visiting committees in physics at Harvard and in aero & astro at MIT. He was on the academic advisory board at the Naval Academy, a founding trustee of the Fermi National Accelerator Laboratory and the White House Fellows Selection Committee, vice chairman of the Corporation for Public Broadcasting, and a member of the Commission on Human Resources of the National Academy of Sciences, National Research Council.

Gregg received an honorary doctor of science from Grinnell College and the first of many listings in *Who's Who in America* when he was 33 years old.

In 2007, Gregg's leadership and achievements received permanent preservation in The HistoryMakers, the largest internet-based oral archival project of key African-American contributors to American life, society, and culture. An integral part of the American experience, The HistoryMakers' stories are ones of success against the odds, achievement in the face of adversity, and above all, inspiration. <https://www.thehistorymakers.org/biography/lt-col-lucius-p-gregg>.

Myron Kayton, PhD '60, died from covid-19 in May 2020. He was an internationally known authority in the fields of inertial navigation and guidance, as well as the author of the definitive textbook *Avionics Navigation Systems* and several other books. He is best known as the deputy director for guidance and control for the lunar module that landed man on the moon during the Apollo Project. He also worked on the Space Shuttle rendezvous radar and many

other aerospace projects. He was an instrument-rated pilot and avid traveler, ran his own consulting business for two decades, and taught classes in power systems management.

After working at NASA, Dr. Katon worked at TRW as chief engineer for Spacelab Avionics, headed the system engineering team for Space Shuttle Avionics, and was project engineer for a nuclear power plant. He was a life fellow of the IEEE, was an elected member of its corporate board of directors, and served two terms as president of its Aerospace and Electronic Systems Society. He taught simulation methods, multi-sensor navigation systems, and land navigation at UCLA, and published more than 80 papers and articles. In 1981, he formed Kayton Engineering Company in Santa Monica, CA, and taught at the University of California in Los Angeles.

He received the IEEE's Millennium Medal and the 2006 Kershner Award for his work on avionics, navigation, communication, and computer-automation systems. His name is included on the Wall of Honor at the Smithsonian National Air and Space Museum. He is a fellow in the National Science Foundation. He received a Cooper Union Presidential Citation in 1980 and the CUAAGano Dunn Award in 1975. He was inducted into the Cooper Union Hall of Fame in 2009.

Myron's daughter Sue ('78) and grandson Daniel ('07) are also MIT alumni.

Donald "Pete" Roane, SM '60, passed away peacefully at home in Dutton, VA, on April 8, 2018.

He graduated from the US Naval Academy in 1952. He served 35 years in the Navy, retiring in 1987 at the rank of rear admiral. His naval decorations included the Legion of Merit, the Bronze Star with "V," the Meritorious Service Medal, the Navy Commendation Medal, and the Combat Action Ribbon.

After returning from his first deployment, on the destroyer USS *Hale*, Pete married Barbara Humphrey in December 1952. They were blessed with three sons: Peter, Bob, and Pat, and seven grandchildren, one great-grandson, and eight nieces and nephews. Although service in the Navy often kept him away from home for many months, Pete was a devoted and supportive family man who especially cherished his time with

Barbara, his "one and only." Barbara passed in 2012.

After 35 years of Navy life, Barbara and Pete made their home at Old Office on the Piankatank River in Mathews County, VA, in 1987. Pete was involved with many community organizations and was a parishioner of Ware Episcopal Church, serving as senior warden of the vestry and treasurer for many years.

Course 17

Arthur L. "Len" Brown Jr., SM '57, died April 8, 2020, a few weeks shy of his 89th birthday. Len leaves his beloved wife, Judith (Mahoney) Brown, whom he married on Dec. 26, 1955, and a large family who respected and treasured him.

Born in Winthrop, MA, Len graduated from Newton North High School in 1949, and attended Tufts College on a Navy ROTC scholarship. At Tufts, Len was invited to join the Tau Beta Pi engineering honor society, and upon graduating in 1953 with a civil engineering degree, he joined active service in the US Navy Seabees, Civil Engineer Corps. He was stationed in Shelburne, Nova Scotia, where he managed the construction of a joint Royal Canadian Navy/US Navy Oceanographic Research Station designed to function as an undercover submarine detection station.

Len's former MIT professors hired him at their engineering firm, Simpson Gumpertz & Heger. Len went on to found or cofound and manage three Boston-area consulting companies: Weidemann Brown, Brown Rona, and Boston Building Consultants, before retiring at the age of 72. Len's lifelong profession of consulting engineer matched well with his delight in solving complex structural problems in existing buildings, historic renovations, and new building construction. Among the specialty engineering projects he worked on, his favorites were the US Pavilion at Expo 67, Pope John Paul II's altar on Boston Common in 1979, Harvard's restoration of its Weld Boat-house, the adaptive reuse of Lowell's historic Boott Mills, and the preservation of numerous old covered bridges in Vermont.

Len played lacrosse, rugby, and soccer in his youth, later transitioning to badminton and squash, downhill skiing, sailing, sculling, and the special brand of golf that he played by his own rules.

In 1952, Len met Judy Mahoney when he was a student at Tufts and she was a student at Jackson College; they were married three years later, and were soon young parents of six active children. He is survived by Judy, his wife of 64 years, and their children and grandchildren.

Course 19

Alan Robock, SM '74, PhD '77, has received the 2020 Rutgers University–New Brunswick Chancellor's Award for Global Impacts. The award honors individual faculty whose research or teaching or service have catalyzed global partnerships or generated international impacts and exceptional public engagement. Dr. Alan Robock is a distinguished professor of climate science in the department of environmental sciences at Rutgers University. He has been concerned with global impacts his entire career. Before graduate school, he served as a Peace Corps volunteer in the Philippines for two years, inspired by the Wisconsin tradition of providing more Peace Corps volunteers than all but one other university. At MIT, he started working on climate change, publishing the first paper using a climate model to show how human emissions of carbon dioxide change climate over time, and has studied global warming ever since. He worked with the Intergovernmental Panel on Climate Change (2007 Nobel Peace Prize) in multiple roles since 1992, including as a lead author of the most recent Fifth Assessment Report. In the 1980s, he started working on nuclear winter, and continues to actively research and communicate about this topic. In addition to scientific publications, he makes presentations to academic groups, community groups, and scientific organizations, and in television and radio interviews. His international participation helped support the campaign for the 2017 United Nations Treaty on the Prohibition of Nuclear Weapons. In 2017, the International Campaign to Abolish Nuclear Weapons was awarded the Nobel Peace Prize "for its work to draw attention to the catastrophic humanitarian consequences of any use of nuclear weapons and for its groundbreaking efforts to achieve a treaty-based prohibition of such weapons" based partly on the work of Professor Robock. He has received

numerous awards for his work on global impacts, including the Cassandra Award in 2018, "for his warnings on the climatic consequences of nuclear conflict." The award noted that today, the world is more concerned about global warming, and nuclear war is less likely, because of the work of Professor Robock.

TPP

John MacNeil, SM '07, died on May 9, 2020 at his home in Washington, DC after a two-and-a-half-year battle with lung cancer. He had been working as an analyst at the Office of the District of Columbia Auditor. John will be remembered fondly by his classmates, as he edited and wrote articles for the TPP newsletter. During class, it was common to hear him ask a question with his signature passion and intensity while always maintaining good humor. John never missed a TPP social event and hosted numerous gatherings and poker nights at his apartment.

Veronica (Ronnie) Foreman, SM '18, has moved on to SpaceX as the operations lead for the commercial launch sales team with a focus on global sales and business development efforts. Previously, she spent two years working as a payload engineer at Virgin Orbit. When not at the "rocket factory," Ronnie enjoys spending her time along the beaches of Southern California with her dog Stitch or training for her next marathon!

Thomas Weber, SM '97, reports that he has been appointed full professor of operations, economics, and strategy at the Swiss Federal Institute of Technology in Lausanne (EPFL).

Attention

Alumni of all MIT graduate programs

Please send your news for inclusion in Course news to:

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Puzzle corner

Send problems, solutions, and comments to Allan Gottlieb at New York University, 60 Fifth Ave., Room 316, New York, NY, 10011, or gottlieb@nyu.edu. For other solutions and back issues, visit the Puzzle Corner website at cs.nyu.edu/~gottlieb/tr.

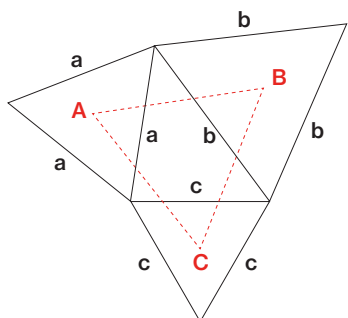
This being the first issue of a calendar year, we again offer a “yearly problem” as well as the solution to last year’s problem.

Problems

Y2021 How many integers from 1 to 100 can you form using the digits 2, 0, 2, and 1 exactly once each, along with the operators +, −, × (multiplication), / (division), and exponentiation? We desire solutions containing the minimum number of operators; among solutions having a given number of operators, those using the digits in the order 2, 0, 2, 1 are preferred. Parentheses may be used; they do not count as operators. A leading minus sign, however, does count as an operator.

J/F1 Ken Knowlton wonders what is the maximum number of checkers that can be placed on an 8 × 8 board such that no three checkers lie in a straight line (horizontal, vertical, or diagonal).

J/F2 Ermanno Signorelli wants you to show that Napoleon’s triangle is always equilateral. For any triangle with sides *a*, *b* and *c*, first draw equilateral triangles on each side. Let A be the center of triangle *aaa*. Do the same for B and C. Napoleon’s triangle is then triangle ABC.



Speed department

Sorab Vatcha wants to know the longest English word with its letters in reverse alphabetical order. Repeated consecutive letters, such as “oo” in “wool,” are permitted.

Solutions

Y2020 As expected, the year 2020 was bad for our yearly problem. Unexpectedly, it was even worse for humankind’s health. Although I do not like 0^0 , I decided to permit it this time and even allowed Bob Anderson’s exotic use for 8 in his solution below:

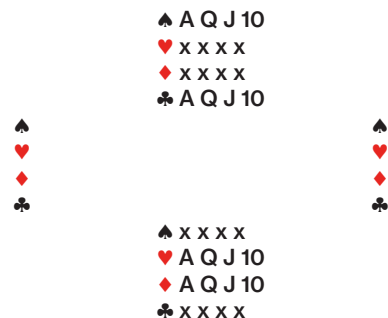
$1 = 2^0 + 2 \times 0$	$8 = 2^{2+0^0}$	$21 = 20 + 2^0$
$2 = 2^0 + 2^0$	$9 = (2 + 0^0)^2$	$22 = 20 + 2 + 0$
$3 = 2^0 + 2 + 0$	$10 = 20/2 + 0$	$23 = 22 + 2^0$
$4 = 2 + 0 + 2 + 0$	$18 = 20 - 2 + 0$	$40 = 20 \times 2 + 0$
$5 = 2^2 + 0^0$	$19 = 20 - 2^0$	$100 = 200/2$
$6 = (2 + 0^0) \times 2$	$20 = 20 \times 2^0$	

S/O1 In Richard Thorton’s bridge problem, Dick Overbid has bid 7 no-trump and his partner, Jane Mathwhiz, is aghast when she sees Dick’s hand. Between them they have all the aces, queens, and jacks, but no kings. To make the contract, she must make two successful finesses. She can finesse East for both red kings or West for both black kings, or some combination thereof. Jane immediately chooses the play with maximal success probability. Before any card was played, what was her probability of success?

The following solution is from Jim Larson.

Jane must make all the tricks to complete the 7 no-trump contract, so the specification that she must make two successful finesses implies that she can win the other two kings by the only other method available, dropping singleton kings with her aces.

The following diagram gives a suggestion of what portions of the N-S hands might look like.



Since she is able to make the finesses specified, she will have aces behind the targeted kings and enough length in those suits to finesse repeatedly without the opponent outlasting her.

A decent strategy is for Jane to choose the two kings that can't be dropped, out of the four choices available, and finesse for those. The resulting probability of Jane being successful with this strategy is: $1/6 \times 1/2 \times 1/2 = 1/24$.

However, Jane has a better strategy available. She should finesse all four suits. The location of each of the kings is independent, so the chance of all kings being on the correct side is $(1/2)^4 = 1/16$, which is a higher probability.

S/O2 Rather than having soldiers march in a square, Phil Cassidy has a square of marching soldiers. He writes:

As a square group of soldiers begins marching forward in formation, their mascot dog starts running forward from the back edge along the center line of the square formation. When he reaches the front edge, he immediately reverses his run along the center line; he reaches the rear edge of the formation just as it passes the starting location of the front edge. If the square formation is 50 feet on a side, how far does the dog run?

The following solution is from Robert Bird.

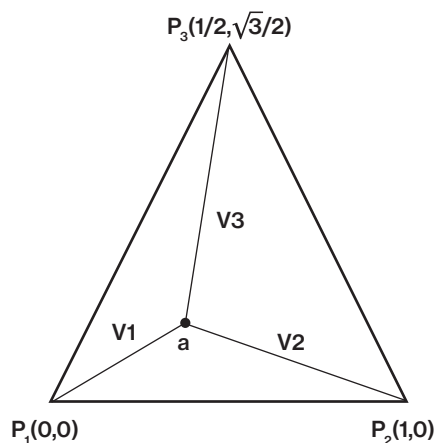
The leading edge of the group of soldiers travels a distance, x , at velocity, V , in the time, t , required for the dog to reach at velocity v . (1) $x = Vt$ and (2) $50 + x = vt$. The trailing edge of the group travels 50 feet in the time, T , for the dog to reach them: (3) $50 = VT$ and (4) $50 + 2x = vT$.

Dividing (2) by (1) gives $(50 + x)/x = v/V$ and dividing (4) by (3) gives $(50 + 2x)/50 = v/V$. Hence $(50 + x)/x = (50 + 2x)/50$, which gives $x = 35.355$ feet. So the dog travels $50 + 2x = 120.71$ feet.

S/O3 We end with a different kind of geometry problem from Bruce Heflinger—one where none of the parts are moving.

Three line segments whose lengths satisfy $a^2 + b^2 = c^2$ meet at a point (x_0, y_0) interior to an equilateral triangle, each segment having its opposite end at a vertex of the triangle. Show that the angle between the two shorter segments is 150° .

Phil Winterfeld sent the following solution, which makes the problem appear much less ferocious than I had feared.



Consider the equilateral triangle shown in the preceding figure with vertices $P_1, P_2,$ and P_3 located at points $(0,0), (1,0),$ and $(1/2, \sqrt{3}/2)$, respectively. The point of interest, (X,Y) , is located inside the triangle. Form vectors \vec{v}_i by connecting points P_i to (X,Y) , where \hat{i} and \hat{j} are unit vectors in the x and y directions, respectively:

$$\vec{v}_1 = -X\hat{i} - Y\hat{j}$$

$$\vec{v}_2 = (1 - X)\hat{i} - Y\hat{j}$$

$$\vec{v}_3 = \left(\frac{1}{2} - X\right)\hat{i} + \left(\frac{\sqrt{3}}{2} - Y\right)\hat{j}$$

The point (X,Y) is chosen such that:

$$|\vec{v}_1|^2 + |\vec{v}_2|^2 = |\vec{v}_3|^2$$

Show that the angle, a , between \vec{v}_1 and \vec{v}_2 is 150° .

The angle a is given by the definition of the dot product between two vectors:

$$\cos(a) = \frac{\vec{v}_1 \cdot \vec{v}_2}{|\vec{v}_1||\vec{v}_2|}$$

$$\cos(a) = \frac{-X(1-X)+Y^2}{\sqrt{X^2+Y^2}\sqrt{(1-X)^2+Y^2}}$$

The relation between the vectors' magnitudes is:

$$X^2 + Y^2 + (1 - X)^2 + Y^2 = \left(\frac{1}{2} - X\right)^2 + \left(\frac{\sqrt{3}}{2} - Y\right)^2$$

This reduces to:

$$X^2 + Y^2 = X - \sqrt{3}Y$$

Then,

$$\cos(a) = \frac{-X+X^2+Y^2}{\sqrt{X^2+Y^2}\sqrt{X^2-2X+1+Y^2}}$$

$$\cos(a) = \frac{-\sqrt{3}Y}{\sqrt{X-\sqrt{3}Y}\sqrt{-\sqrt{3}Y-X+1}} = \frac{-\sqrt{3}}{2}$$

$$a = \cos^{-1}\left(\frac{-\sqrt{3}}{2}\right) = 150^\circ$$

Other responders

A. Andersson, L. B., T. Barrows, J. Bergmann, M. Brand, W. Burke, J. Chandler, B. Deitrick, N. Derby, S. Dibert, J. Feil, G. Fischer, S. Golson, T. Griffin, J. Hardis, T. Harriman, A. Hirshberg, J. Kotelly, P. Kramer, N. Lang, J. Langer, R. Lipes, J. Mackro, M. Marinan, T. Mattick, S. McGinnis, D. Mellinger, A. Moulton, G. Muldowney, S. Nason, A. Ornstein, R. Orr, J. Prussing, B. Rhodes, J. Rulnick, L. Schaidler, B. Schargel, S. Silberberg, T. Sim, J. Steel, A. Stern, S. Swaminathan, M. Viswanathan, D. Waggar, R. Wake, R. Whitman, J. Winters, and Y. Zuss.

Solution to speed problem

Spoonfeed



Mike Speciner '68

Acton, Massachusetts

"I got to play with computers at MIT at a time when that was a real privilege," recalls Mike Speciner, a self-described generalist who double-majored in math and physics. His wide-ranging career includes stints developing software, hardware, imaging algorithms, teleconferencing techniques, and much more. He holds multiple patents, has coauthored a book on network security, and cofounded The Singing Torah. Speciner is also something of a generalist in his giving to MIT, supporting numerous initiatives that help provide opportunities for MIT students and researchers.

Inflation-protected giving. Speciner has made multiple gifts through the MIT Office of Gift Planning, including a charitable remainder unitrust (CRUT), which provides income to donors and their designated beneficiaries. When a CRUT terminates, the gift goes to a designated cause at MIT, the Department of Mathematics in Speciner's case. "I think of the CRUT primarily as a gift," Speciner says, "but also as a tax deduction that avoids capital gains taxes, and an investment that provides inflation-protected income. MIT investment management is superb."

A positive difference. Speciner's first major gift supported music at MIT, and he continues to support the arts as a member of the Council for the Arts at MIT. Over the years he has given gifts in multiple areas he views as important to making a better world. "Math is fundamental to pretty much everything," he says. "Physics to understanding how the universe works. Earth, atmospheric, and planetary sciences to understanding and ultimately saving the Earth. Brain and cognitive sciences for understanding understanding. MIT continues to make a positive difference in the world, and I can be a small part of that."

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