

# An Upscale Weight Problem

This being the first issue of a calendar year, we again offer a "yearly problem" in which you are to express small integers in terms of the digits of the new year (1, 9, 9, and 4) and the arithmetic operators. The problem is formally stated in the "Problems" section, and the solution to the 1993 yearly problem is in the "Solutions" section.

## Problems

**Y1994.** Form as many as possible of the integers from 1 to 100 using the digits 1, 9, 9, and 4 exactly once each and the operators +, -, x (multiplication), / (division), and exponentiation. We desire solutions containing the minimum number of operators; and, among solutions having a given number of operators, those using the digits in the order 1, 9, 9, and 4 are preferred. Parentheses may be used for grouping; they do not count as operators. A leading minus sign does count as an operator.

**JAN 1.** Theodore Hoffman is dismayed to realize that he gains weight just by moving his scales. He writes:

The puzzle surfaced when I moved my bathroom "Detecto" scales from a section of bare wood floor to a rug. Imagine my surprise when I found that, according to the scales, I had gained 10 pounds in the process of moving them. So, I made a few readings under varied conditions. Here they are:

OBJECT	SCALES LOCATION/READING ON SCALES			
	On floor or wood	On 3/8" foam pad	On 5/8" pile rug	On 3/4" wood on top of rug or foam
Scales alone	0	0	0	0
Me	145	153	155	145
2 weights	18 1/2	19 1/2	19 3/4	18 1/2

(The Detecto scales register from 0 to 255. The overhang of the weight-carrying top platform clears all surfaces by 3/8")

My curiosity abounds as to the explanation.



SEND PROBLEMS, SOLUTIONS, AND COMMENTS TO ALLAN J. GOTTLIEB, '67, THE COURANT INSTITUTE, NEW YORK UNIVERSITY, 251 MERCER ST., NEW YORK, N.Y. 10012, OR TO: GOTTLIEB@NYU.EDU

**JAN 2.** Donald Savage asks: The present U.S. flag has 50 stars arranged in alternate rows of 6 and 5. If Puerto Rico were to become a state, what would be an appropriate arrangement of the stars on the revised U.S. flag?

## Speed Department

Speedy Jim Landau wants to know what is the matter with the function

$$f(\lambda) = \frac{1}{\lambda + \sin(\lambda)}$$

where  $L$  is the latitude?

## Solutions

**Y1993.** The following solution is from John Drumheller:

1	1 <sup>993</sup>	30 (19-9)*3	59 -
2	93-91	31 19+9+3	60 (1+9)*(9-3)
3	1 <sup>99</sup> *3	32 (9/9)+31	61 -
4	1 <sup>99</sup> +3	33 (1*99)/3	62 -
5	9-13+9	34 1+(99/3)	63 (9-3+1)*9
6	((1*9)+9)/3	35 (9*3)-1+9	64 91-(9*3)
7	19-9+3	36 (13-9)*9	65 -
8	(9*3)-19	37 1+9+(9*3)	66 9+(3*19)
9	1 <sup>93</sup> *9	38 39-1 <sup>9</sup>	67 -
10	1 <sup>93</sup> +9	39 1 <sup>9</sup> *39	68 99-31
11	(9/3)-1+9	40 1 <sup>9</sup> +39	69 ((9-1)*9)-3
12	13-(9/9)	41 -	70 -
13	19-9+3	42 -	71 -
14	13+(9/9)	43 -	72 (9+9)*(3+1)
15	(1*9)+9-3	44 -	73 -
16	19-(9/3)	45 ((3+1)*9)+9	74 93-19
17	(9*3)-1-9	46 19+(9*3)	75 3-((1-9)*9)
18	(9*3*1)-9	47 9+39-1	76 -
19	1-9+(9*3)	48 (1*9)+39	77 (9*9)-3+1
20	39-19	49 31+9+9	78 (1*9*9)-3
21	(1*9)+9+3	50 (9*9)-31	79 91-9+3
22	19+(9/3)	51 (9-1+9)*3	80 (9*9)-1 <sup>3</sup>
			81 (1/9)*9 <sup>3</sup>
			82 (9*9)+1 <sup>3</sup>
			83 93-1+9
			84 (19+9)*3
			85 1-9+93
			86 99-13
			87 ((1+9)*9)-3
			88 91-(9/3)
			89 -
			90 9(3-1)+9
			91 -
			92 93-1 <sup>9</sup>
			93 1 <sup>9</sup> *93
			94 1 <sup>9</sup> +93
			95 99-1+3
			96 (1*99)-3
			97 1+99-3
			98 99-1 <sup>3</sup>
			99 -1 <sup>3</sup> *99
			100 1 <sup>3</sup> +99

**A/S 1.** The late Bob High wanted to know the long-

est legal go game on a 2x2 board with no passes.

The following solution was from the proposer himself: Note that by the "ko" rule, a legal game cannot repeat a game position with the same player to move. The longest legal game on a 2 x 2 board without passes is 23 moves (24 positions); it is given by:

```

  X  XO XO  O  O  OO  O  O  OO  OO
  -  -  X  O  XO  O  X  X  XX  O  O
  O  OX O  OX O  X  X  XX  X  O
  X  X  X  O  O  OO  O  O  OO  OO
  
```

(There are a total of 57 legal positions on the 2 x 2 board; 8 if we all take symmetries into account. The longest legal game *with passes* I've been able to construct has over 50 moves, and traverses 44 of the legal positions!)

**A/S 2.** Thurston Sydnor wonders where, in the first quadrant, the curve  $x^y = y^x$  intersects itself.

Al Cangahuala writes that one solution to the equation is clearly  $x=y$ . One can find where the second solution intersects this line by performing the substitution  $y=kx$ . Then  $x^{kx}=(kx)^x$  and thus  $x=k^{1/(k-1)}$ . We get the  $x$ -coordinate of the intersection by taking the limit as  $k$  approaches 1 (since the intersection occurs at the  $x=y$  line. But, letting  $n=1/(k-1)$ ) we get that

$$\lim_{k \rightarrow 1} k^{1/(k-1)} = \lim_{n \rightarrow \infty} (1/n+1)^n = e$$

So the point of intersection is  $(e, e)$ .

**A/S 3.** Dave Mohr has noticed that the temperature sign in his bank alternates integer readings expressing Fahrenheit and Celsius. Assuming that the readings are perfect (and perfectly rounded), for what temperature(s) is one's uncertainty of the precise temperature at a minimum?

The following solution is from Eric Lund: Let  $F$  be the thermometer reading in degrees Fahrenheit and  $C$  be the thermometer reading in degrees Celsius. Let  $F_{nom}$  and  $C_{nom}$  be the exact temperature, i.e.,  $F_{nom}=1.8 C_{nom} + 32$ . If  $(F, C)$  is a solution to this problem, then for all integers  $n$ ,  $(F+9n, C+5n)$  is also a solution. Therefore we need only consider the range  $32 \leq F \leq 41, 0 \leq C \leq 5$ . Construct the following table:

C	F	F <sub>min</sub>	F <sub>max</sub>
0	32	31.5	32.5
0	33	32.5	32.9
1	33	32.9	33.5
1	34	33.5	34.5
1	35	34.5	34.7
2	35	34.7	35.5
2	36	35.5	36.5
3	37	36.5	37.5
3	38	37.5	38.3
4	38	38.3	38.5
4	39	38.5	39.5
4	40	39.5	40.1
5	40	40.1	40.5
5	41	40.5	41.5

From the table we see that for any integer  $n$ , the combinations  $F=9n+35, C=5n+1$  and  $F=9n+38, C=5n+4$  give the temperature to within 0.2 degrees Fahrenheit.

Continued on Page MIT 40

## XXII NUCLEAR ENGINEERING

James K. Liming, SM '83, writes from Fountain Valley, Calif.: "I am currently the Southern California branch office manager for Erin Engineering and Research, Inc., where I supervise and perform risk analysis and reliability engineering services for complex facilities worldwide." . . . J. H. Goldberg, SM '60, reports from Jupiter, Fla.: "I am president of Florida Power & Light's Nuclear Division, which owns and operates four nuclear plants." . . . From Augusta, Maine, Jeffrey H. Musk, SM '88, sends word: "I will be living in Seoul, South Korea, for the next two years serving with the army." . . . Vincent P. Manno, SM '78, NUE '79, ScD '83, writes to tell us that he has been appointed chair of the Department of Mechanical Engineering at Tufts University. Mass. Manno lives in Sudbury, Mass. . . . Ken Brooks, SM '89, reports: "I have just finished a PhD this summer in the Woodruff School of Mechanical Engineering's Radiological Engineering program at the Georgia Institute of Technology. My major research involved diagnostic medical physics pertaining to automated image quality of mammographic images. I have also just accepted an appointment as assistant professor in the Department of Radiation Oncology of the Emory University School of Medicine. Prior to entering the PhD program and after MIT, I had spent a couple of years at IBM as a systems engineer. Karen, my wife of two years, and I currently live in Northwest Atlanta."

Frederick W. Buckman, PhD '70, president and CEO of Consumers Power Co., in Jackson, Mich., has received the George Westinghouse Gold Medal of the ASME. Buckman received the medal, established in 1952, for his "exemplary leadership in support of the nuclear power option in the United States, for pioneering vision and tireless energy in championing the development and promotion of the Modular High Temperature Gas-Cooled Reactor, and for distinguished technical contributions in nuclear fuel performance improvement and reactor analysis methods." Since the mid-1980s, Buckman has been part of the management team that has converted an abandoned nuclear plant into the nation's largest combined-cycle natural gas cogeneration facility, the Midland Cogeneration Venture. His other major projects and activities include the \$90-million steam generator replacement project at Palisades, improved nuclear operating and regulatory performance, improved electric distribution and transmission system performance, high performance in generating efficiency and safety, and a resolution of all outstanding MCV financial issues. . . . Captain Randolph M. Brooks, SM '76, OCE '76 (XIII), has reported for duty at Naval Sea Systems Command Headquarters in Washington, D.C.

*Alumni may send information about themselves for Course News via e-mail to mitalum@mitvmc.mit.edu*

## TPP TECHNOLOGY AND POLICY PROGRAM

Jean Bernard, SM '81, and Fabienne Caen have an addition to their family. Barthelemy was born July 15, 1993, and joins his brother, Timothee, who is now three. . . . Win Hayward, SM '81, dropped by TPP while visiting Cambridge to tell us he is now the director of Multi-Family Housing for Fannie Mae (FNMA, Federal National Mortgage Association) and is the

company's guru on lead paint in housing. . . . Franz Neubacher, SM '83, visited MIT this past summer. He has founded an environmental consulting company, UV&P-Neubacher and Partner, doing innovative environmental management and incineration work in Austria and Germany. He also reports that he miraculously survived an extraordinary automobile crash and is lucky to be alive. . . . Eric Paillas, SM '84, is still with GTM participating in the construction of a major bridge between England and Wales. Eric now lives in Bristol and has two daughters, Claire and Juliette. . . . Francois Jacques, SM '85, dropped by TPP to say he has been director of strategy and part of the management team of Ciments Lafarge, a \$1-billion-per-year company, since early 1993—Bravo and Bonne Chance! . . . Louisa Koch, SM '88, is currently with the U.S. Office of Management and Budget. . . . Lola Matysiak, '91, SM '92, has announced her engagement. A 1994 wedding is planned.

Steve Thomas, SM '92, has moved to Chicago to be an investment analyst with Euro American Arbitrage. . . . Congratulations are in order for Ram Josyula, SM '93, and Elaine. They are planning a June 1994 wedding. . . . Kok-Keo Lim, SM '91, EE '92 (VI), SM '93 (XIII), SM '93, is a research engineer with the Ministry of Defense in Singapore. . . . Hotasi Nababan, SM '93 (I), SM '93, now in corporate planning and development at Garuda Indonesia, recently accompanied his directors to Cambridge to negotiate a contract for their airline with MIT. . . . Renata Pomponi, '90 (VIII), SM '90 (XXI), was a member of the rowing team that won the gold medal at the Bay State Games this past summer. . . . Adil Najam, spent his summer co-editing *Papers on International Environmental Negotiation* with Professor Lawrence Susskind, MCP '70, PhD '73 (XI), of MIT and Professor William Moomaw, PhD '65 (V), of the Fletcher School of Law and Diplomacy at Tufts. The book was published by the Program on Negotiation at Harvard Law School and will be one of the prescribed texts for a course on international environmental negotiation. Adil's own paper in the book is on North-South environmental policy—Richard de Neufville, TPP, MIT, Room E40-252, Cambridge, MA 02139.

*Alumni may send information about themselves for Course News via e-mail to mitalum@mitvmc.mit.edu*

## STS PROGRAM IN SCIENCE, TECHNOLOGY & SOCIETY

Hugh Gusterson presented "The Ethics of Nuclear Weapons Work: Some Problems for Carol Gilligan" at the meetings of the International Society for Political Psychology in Cambridge, Mass., in July. His article "Realism and the International Order After The Cold War" was published in *Social Research* 60. . . . Lily Kay presented three lectures on the history of biochemistry and molecular biology at the XIX International Congress of History of Science held in August in Zaragoza, Spain. . . . David Ansley, a science and medical reporter for the *San Jose Mercury News* will serve as acting director of the Knight Science Journalism Fellowships this year. Ansley is filling in for director Victor McElheny, who is on leave from MIT while he writes the biography of Edwin Land.—Graham Ramsay, STS program, MIT, Room E51-128, Cambridge, MA 02139.

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**A** scary police lineup at best, according to the bride and groom (all suspects *not otherwise classed are from '92*). From left, standing: Seth Cohen, Adam Riess, Iren Chow, Henry Chung, '93, Dawn Watkins Chow (the bride), who covers the lower half of the face of Marc Wisnudel, '91, John Watkins Chow (the groom), Dan Green, Ellen Shen, '91, Mike Gull, Kate Bergeron, '93, Brian Lu, '91, who is obscuring almost entirely—save for a bit of forehead—Ashley Shih, '91, Enrique Herrera, '91, Sue Katz, Brian Katz, '91, Amelia Lapeña, '94, and Jeff Falkowsky. From left, kneeling: Henry Houh, '89, Albert Cheng, Mohsin Ansari, Mike Rizen, '91, and Theresa Derderian.

And the list keeps going. . . Congratulations to Jennifer Hill, who was married to Rice graduate Brian West in San Marino, Calif., on June 26. The reception was held at the Athenaeum at Cal Tech. Amy Anderson Chang ('88) and her husband Andrew Chang ('88) traveled to California for the wedding. Currently, Jennifer and Brian are living in Austin, Tex., while Jennifer pursues a PhD in biomedical engineering at University of Texas. Jennifer recently patented a photopolymerized hydrogel material used to prevent thrombosis and hyperplasia following balloon angioplasty. Congratulations on the patent, too! I'm happy to spread such exciting news to our peers.

Navy ensign Robert B. Pember recently passed the midway point in a six-month deployment aboard the guided missile frigate USS *Hawes*, home-ported in Charleston, S.C., as part of the aircraft carrier USS *Theodore Roosevelt* Battle Group. In August, elements of the battle group were in the Red Sea, where they were enforcing the U.N.-imposed "no-fly" zone over southern Iraq. USS *Hawes*, Standing Naval Force Mediterranean, is working with NATO allies to enforce the U.N.-imposed "no-fly" zone over Bosnia-Herzegovina. While on station in the Adriatic Sea, the 445-foot-long Oliver Hazard Perry-class frigate participated in Operation Provide Promise, which provides relief supplies to war-torn former Yugoslavia and performed a medical evacuation of two Italian fishermen whose ship was fired upon by the Serbo-Montenegro Navy when it sailed into Montenegro's coastal waters. Be well, Ben, and be careful.

Ramon Cajina wrote from Prague in August telling me that he just finished getting a graduate degree in fluid mechanics in Belgium. After graduating, he interrailed around Europe—visiting Prague, Poland, Hungary, Austria, Switzerland, Italy, and Greece. Malee Lucas ('93) did some traveling with him. Ramon writes that he attended Melanie Lazaro and Trinidad Flores's wedding in Florida in July. Congratulations to Melanie and Trinidad. . . Joanne Gutierrez also send word about

Melanie and Trinidad, as well as filling me in on her life. Joanne finished a master's degree in Course VI at MIT last spring and has moved to Phoenix to work in the rotational program for Motorola's Semiconductor Products Sector. During her first three months, she chose to work on zener diode development (zener diodes are special diodes that also operate in the reverse breakdown). Thanks for the explanation, but I still don't get it. The weather in Phoenix was mostly in the 100s over the summer, reports Joanne. She says that the Valley of the Sun (Phoenix is surrounded by mountains) is beautiful and offers plenty of great terrain and breathtaking views for hiking and camping. Lately, Joanne has seen a bunch of MIT alums including Kiet Van, Paul Duran, Pablo Rodriguez, Kathy Nelson, and Evaristo Gonzales, who is working for Ford.

Alexandre Witze spent last academic year at UC/Santa Cruz in a graduate program for science journalism, directing herself away from geology and all the research that goes with it. After UCSC, Alex started doing a required internship, writing for the weekly science section of the *Dallas Morning News*. When she has completed her internship, Alex hopes to contribute to national magazines and newspapers as a freelance writer. She will be based in south Lake Tahoe, Calif., and may be looking for skiing lessons. Alex has also ventured to the land down under a few times this year as her parents have moved from New Jersey to Sydney, Australia. Alex mentions that Debbie Wells was working at the seismological laboratory at Caltech and last she heard, Debbie was thinking about going back to grad school this past fall.

Emilio Mayorga went back to Nicaragua after graduation from MIT to see his folks and to look for an environmental job, but the economy there is quite devastated, making it difficult to find work. After nine months he returned to the States "to the safety and warmth of graduate school." Emilio is in Seattle at University of Washington's School of Oceanography. He says that his research will

actually deal with the Amazon, and next summer he may go to Brazil to start doing field research. In Nicaragua, Emilio became an educational counselor (EC) and is planning to continue with it in Seattle. He has heard from another EC enthusiast, Glorybell Silhy, who went back to El Salvador after graduation and was recently married.

Jonah Benton moved back to New York City this summer after working in Hartford, Conn., for eight months at Travelers Insurance. Jonah is consulting and writing software with a friend of his. He is working long hours but still finds time to go to Fairway Market on 74th and Broadway. Fairway Market, Jonah describes, is "reason enough to move to New York: mushrooms alone occupy nine square feet. Their fruit is wonderful and they have the best bagels in the city. I love food and cooking and Fairway is about the closest to an ideal supermarket that I've ever seen. When I get to heaven I want to be able to shop there, only without the crowds. Great place."

Don't fret classmates. The class gift—the Program for the Encouragement of Technology (PET)—is still under way. There will be a workshop at MIT in January 1994. It will be the first time that our program is being implemented. Junior high school students from the Cambridge/Boston area will be participating. If you would like to get involved, please call me @ (303) 920-7769 or try Maryglenn Vincens in the Alumni/ae Association office (617) 253-5489. Sorry for the short notice, but get in touch with us ASAP. Also, don't forget to send in your pledges. Thanks so much.

I'm still in Aspen, so keep writing.—Leslie Barnett, secretary, P.O. Box 7604, Aspen, CO 81612-7604, (303) 920-7769 (home), (303) 925-1961 (work)

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Please send news for this column to: Mari Madsen, secretary, 12-16 Ellery St. #405, Cambridge, MA 02138

### PUZZLE CORNER

*Continued from Page MIT 50*

#### Other Responders

Responses have also been received from S. Althuler, L. Antinarelli, M. Archambault, S. Balbus, J. Banerjee, R. Banerjee, L. Beckett, B. Benulis, L. Bernacki, S. Booker, S. Boylan, F. Carbin, E. Chaglassian, C. Coltharp, N. Cosman, C. Counselman, S. Cram, C. Dale, K. Doniger, M. Driscoll, P. Duffy, A. Egler, A. Elsworth, A. Eurdolian, S. Feldman, A. Flemming, M. Foley, M. Fountain, J. Friedman, L. Gowan, M. Hailperin, W. Hartford, W. Hartford, R. Hedrick, R. Hess, D. Hopkins, J. Keilin, J. Kelleher, C. Kelly, R. King, N. Ko, T. Lawson, H. Ma, C. Meissner, A. Ornstein, B. Parry, R. Pena, N. Petite, J. Prussing, H. Reynolds, K. Rosato, J. Rudy, M. Samuelson, J. Solman, K. Thorpe, A. Tracht, N. Ulman, L. Vogel,

#### Proposer's Solution to Speed Problem

It has a pole at the equator.

were both out attending the conference and a training session at Aspen Tech in Cambridge.

Chan Yoo was married to Gia Kim (post-doc MIT) in October. Chan is currently working on a PhD in NukeE at MIT. In attendance at the wedding were Melissa Frank, Steve Cheng, Thomas Chang, David Yuen, Lisa Louie, '90, Chris Hwang, '86, Chih-ming Chiang, '87, and David Redkey, '88. Chan and Gia honeymooned in Mexico.

Well, that's it for this month. Thanks again to everyone who wrote in, and start planning those reunion trips! Please send news and photos!—Henry Houh, secretary, 4 Ames St., Cambridge, MA 02142; phone: (617) 225-6680, fax: (617) 253-2673, e-mail: tripleh@mit.edu or henry\_houh@mit.edu



**T**he Mastrian/Williamson, '91, wedding—back row, from left: Sue Perrin, '91, Jamie Nagle, '91, Iman Brivanlou, '92, Jeanne Druding, '91, Henry Wong, '92, Adam Braff, '91, Mark Hanson, '88, Emil Dabora, '91, Shawn Mastrian (the groom), '91, Jane Williamson (the bride), '91, Richard Williamson (father of the bride), '57, William Fincke, '51, Reza Jalili, '89, Susanne Perutz, '91, Bill Joseph, '91, Kristine AuYeung, '91, Paul Lefelhocz, '91, Cathy Morrison, '91. Front row, from left: Aric Ledell, '93, Peter Philliou, '51, Laura Adams, '91, Cary Gumbert, '94, Cynthia Madra, '91.

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Congratulations to Julif Wissink and Sayan Chakraborty ('89)! They were married this summer in Belding, Mich. Among the MIT alums attending were Erica Wickstrom, Lynn Chewning, Laura Fleming, Toby Sanders, Sam Druker ('89), Mike Berube ('89), Denis Bulsen ('88), Chris Racicot ('88), Scott Lordi ('88), Phil Cohen ('88), Steve (Benny) Stein ('88), Tareq Hoque ('88), and Terry and Cathy (Sybert) Olkin ('88). Word has it that the night before the wedding there was a pig roast at Julie's farm. Everyone had a lot of fun and got to see the baby cows and pigs! . . . Joon A. Ooi is getting an MBA at Stanford Business School. . . . Sandy Serkes is working on an MBA at Harvard. . . . Debbie Bein and Julie Kim are both in the master's program at MIT's Sloan School of Management.

Teresa Zimmers is doing research at NIH in addition to serving as the computer guru, office manager, grant writer, and database designer for a nonprofit cancer organization. Teresa is also the executive director for a new science education initiative which is working to create novel hands-on, kit-based teaching modules on everything from electromagnetism to cell biology to astronomy. They are now beginning to test-market the kits and would welcome suggestions and ideas from anyone who is interested in contributing. In between all these commitments, Teresa is working on a PhD at Johns Hopkins in the biochemistry, cellular and molecular biology program—but don't think that Teresa doesn't take time out for fun. She recently took a month off and went to Hawaii, where she learned to boogie board, surf, and play golf. She's also planning to head off to Costa Rica to watch the turtles hatch and enjoy the rain forests before they all disappear.

Jon Woodman graduated from Ohio State University College of Law in May and completed the bar exam for the state of Ohio in July. Upon being licensed, Jon will be opening his own law office and practicing mainly in the area of criminal law. . . . Looks like after F. Burris Jackes's mechanical engineering training at MIT, he has decided to try something totally different—the entertainment

industry. Burris was the scenic designer in the recent Chiswick Park Theater production of *Nostalgia: A Musical Revue*. After MIT, Burris went to Northwestern University to study stage design. His other professional credits include *A Broadway Revue* at the Chiswick Park Theatre, and when he's not designing scenery, he is the theater's technical director.

Linda Kah writes that she's been living in Somerville and working for a PhD in geology at Harvard. She's learned that finding both a suitable thesis topic and the rocks to go with it has been quite a challenge. In 1991, Linda spent a few months working in northern Montana but decided to leave that thesis prospect for a more remote field area: Arctic Canada. Linda ended up spending two months in a tent on Northern Baffin Island, where she was 100 miles from the nearest people, enjoyed 24 hours of sunlight, great views of icebergs, and amazing weather. Luckily there were no encounters with polar bears, although if there were, Linda was prepared. She had learned to shoot a 12-gauge shotgun just in case. The only downside was that she had to spend the two months up there with no shower!

Celisa Date was featured in the July 25, 1993, issue of the *San Jose Mercury News*. The article talked about the importance of summer internships for college students. Celisa was an intern for Intel Corp.'s flash memory group in Santa Clara, Calif. She is currently in the doctoral program in solid state physics at Stanford.

Thanks to everyone who wrote in! Keep sending in the news to—Ning Peng, secretary, 483 Beacon St., #41, Boston, MA 02115, or ning@athena.mit.edu

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Congratulations to Jane Williamson and Shaw Mastrian, who were married on August 21! The wedding party included Kristine Au Yeung, Susanne Perutz, Cathy Morrison, Emil Dabora, Adam Braff, and Paul Lefelhocz. A host of other MIT alums, including friends of her father, '57, attended the wedding (see photo). Jane did her best to gather information about classmates who attended her wedding, but as she was the one getting married, she writes, "I got to talk to people for about one minute each." Jane spent the summer at Hahn Loeser & Parks, a Cleveland law firm, where she "worked with lots of wonderful people

and had a very good experience." She sends news that Cynthia Madras started graduated work at Tufts in September.

An article in the *St. Louis American* featured Rhodes Scholar Darcy Prather's extraordinary experiences and ambitions. After Prather returned from Oxford last spring, he taught in a summer program for inner city youths in his hometown of St. Louis. Prather began work for a management consulting firm in Chicago in the fall, but told the *American* that he plans to "come back to open my own school."

Please send news of recent travels, projects, or adventures to Andrew Strehle, secretary, 566 Commonwealth Ave., #406, Boston, MA 02215, (617) 262-3495

## 92

Hey everybody, Happy New Year! This month marks three semesters or a year and a half since we've graduated and gone our separate ways. Despite the time and space that has distanced many of us, I am proud to say that our '92 spirit is going strong. The letters keep pouring in with really exciting news about our friends.

Kim A. Heroy and Greg Rogalski were married August 1 in an outdoor ceremony in Colorado. Congratulations! If I'd known I could have swung by for a *Tech Review* photo opportunity. Kathryn Fricks, Karina Ribgy, and Laura Walhof were bridesmaids and Bensen Wen was the best man. Kim and Greg spent their honeymoon in Ecuador, and now they're back in Berkeley, Calif. In May, Kim finished a master's degree in environmental engineering at University of California Berkeley and is now working for Radian Corp. Greg works as a software developer for Oracle Corp. Kathryn Fricks is working on a master's degree in aerofastro at MIT. Karina Ribgy, also in graduate school at MIT, is working toward a PhD in materials science and engineering. Laura Walhof is teaching high school chemistry in Chicago. She spent the summer with Kim and Greg in California taking a class for science teachers at Exploratorium, a science museum in San Francisco. Bensen Wen is working as a programmer in Boston. Kim and Greg also report they've seen quite a bit of Ken Duda and Jen Hwang ('91), who were married in May. Ken received a master's degree in Course VI from MIT this past spring and has started working on a PhD at Stanford.

# Kissing Cosines

**H**ello from the land of boxes. My wife, Alice, has accepted a position as associate medical director of Roche Dermatologics (the dermatology division of the Hoffman LaRoche drug company) and we have moved to New Jersey! As many of you can well imagine, the local recycling center will be well supplied with cardboard and packing paper.

## Problems

**N/D 1.** Lester Steffens wonders what is the highest score a Bridge pair can obtain on a single hand (excluding illegalities and penalties for reneging, etc.) when neither of them has a card higher than a ten.

**N/D 2.** Nob. Yoshigahara wants you to substitute the digits 1-9 once each in the following equation.

$$\frac{AB}{CDE} + \frac{FG}{HI} = 7$$

**N/D 3.** John Rule has a point P situated inside a square ABCD so that PA=1, PB=2, PC=3. He wants you to calculate angle APB "using only the methods of Euclid."

## Speed Department

Here is a "mental creativity challenge" from my NYU colleague Ron Bianchini. Each item contains the initials of words that make it correct and you are to fill in the words. For example, given "16 = O. in a P." the answer is "Ounces in a Pound." Now try the following five examples: "9 = P. in the S. S."; "88 = P. K."; "13 = S. on the A. F."; "32 = D. F. at which W. F.," "18 = H. on a G. C."

## Solutions

**JUL 1.** We begin with a well-known computer problem suggested by the late Robert High:

In your favorite programming language (C, Lisp, Apl, etc.) write a program that, when run, produces output that is an exact copy of its own



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source code. Calls to system functions to "echo" the source from a file are not in the spirit of the problem!

Although I personally use C more than Lisp, my conversion to the Emacs "editor" has somewhat rekindled a love of Lisp that I had as an MIT undergraduate. The Lisp solution from Walter Hamscher also appeals to me. Hamscher writes:

I've never sent a response to any of the puzzles in your column till now—this problem concerning self-duplicating code was just too easy an opportunity to advertise my favorite language, Lisp:

```
((lambda (x) (list x (list (quote quote) x))))
(quote (lambda (x) (list x (list (quote quote) x)))))
```

Here is a C solution from Scott Brown:

```
char a[]="char a[]=:main()
{printf(a+48,a,34,a,34,10,a+9);}
%.9s%c%.9s%c%.9s%c%.9s%c%.9s";
;main(){printf(a+48,a,34,a,34,10,a+9);}
```

**JUL 2.** A "classic" from Gordon Rice:

While cleaning out my office for retirement, I came across my freshman physics text, *Introduction to Mechanics and Heat*, 2nd edition, 1939, by N.H. Frank. On page 204 is the following gem:

A slender homogeneous rod of length 60 cm., resting on a perfectly smooth horizontal surface, is struck a blow at right angles to the length of the rod at one end of the rod. Find the distance through which the center of the rod moves while it makes one complete revolution.

The following solution is from Matthew Fountain:

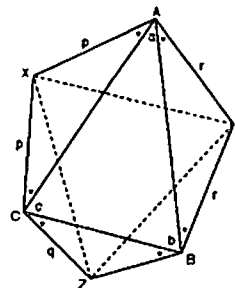
The center of the rod moves 62.8 cm. The force  $F$  on the end of the rod normal to its length imparts an acceleration  $a$  to the center of the rod equal to  $F/M$ ,  $m$  being the rod's mass. As  $F$  is 30 cm. out of line with the center of gravity of the rod,  $F$  produces a torque  $T = 30F = 30ma$  on the rod. Recalling that the definition of "moment of inertia" is "the ratio of the torque applied to a rigid body free to rotate about a given axis to the angular acceleration thus produced about that axis and equal to the sum of the products of each element of mass by the square of its distance from the given axis," we may write:  $(30ma)/(d\omega/dt) = \int_0^{30} mx^2 dx = 300m$ . Therefore  $d\omega/dt = 30ma/300m = a/10$ .

Although a sharp blow exerts a varying force, at every instance the ratio of rotational acceleration to the acceleration of the center of gravity remains constant, and consequently the velocity of rotation in radians is at each instant equal to one-tenth the velocity of the center of the rod in centimeters. In the time it takes the rod to rotate  $2\pi$  radians the center of the rod advances  $20\pi = 62.8$  centimeters.

**JUL 3.** Consider an arbitrary triangle ABC. From each of the vertices, extend two lines on the exterior of the triangle, each at a 30-degree angle from the sides. These lines intersect at the points X, Y, and Z opposite sides AB, BC, and CA. Show that triangle XYZ is equilateral.

Howard Stern sent us a nicely done solution, reprinted below.

Consider the accompanying diagram:



where  $\triangle ABC$  has angles  $(a,b,c)$ , angles denoted by a "\*" are  $30^\circ$ , and we are to show  $\triangle XYZ$  is equilateral.

Lengths  $(p,q,r)$  are labelled as such because  $\triangle s$  AXC, BCZ, and AYB are isosceles. In addition, by the Law of Cosines we have:

$$p = \frac{AC}{\sqrt{3}} \quad q = \frac{BC}{\sqrt{3}} \quad r = \frac{AB}{\sqrt{3}}$$

Applying the Law of Cosines again we have:  
 $XY^2 = p^2 + r^2 - 2pr \cos(60^\circ + a) =$

$$\frac{AC^2}{3} + \frac{AB^2}{3} - \frac{2(AC)(AB)}{3} \left[ \frac{1}{2} \cos(a) - \frac{\sqrt{3}}{2} \sin(a) \right]$$

But  $\cos(a) = \frac{AC^2 + AB^2 - BC^2}{2(AC)(AB)}$  using the Law of Cosines.

Also  $\frac{\sin(a)}{BC} = \frac{\sin(b)}{AC} = \frac{\sin(c)}{AB} = Q$  (some constant) by the law of Sines.

Substituting and simplifying we get:

$$XY^2 = \frac{AC^2}{6} + \frac{AB^2}{6} + \frac{BC^2}{6} + \frac{\sqrt{3}}{2} Q(AC)(AB)(BC)$$

Due to the symmetry of the problem, solving for the other sides: XZ or YZ yields exactly the same expression. Thus the three sides are of equal length, implying  $\triangle XYZ$  is equilateral.

## Better Late Than Never

**F/M 3.** Harold Boas has located references to a variant of this problem that appeared on the Cambridge Math Tripos Exam in 1871 so problems like this have been around for over a century.

**JUL 5D.** Tim Johnson was able to generalize this problem to the case where an unknown number of the M jars have weight A and the remaining jars have weight B for arbitrary M, A, and B.

## Other Responders

Responses have also been received from H. Boas, E. Dawson, W. Hartford, R. Hess, H. Hodara, R. Hoffman, T. Johnson, N. Megill, D. Miller, R. Moeser, G. Neben, S. Ponzio, J. Prussing, K. Rosato, E. Sard, A. Ucko, and C. Wampler.

## Proposer's Solution to Speed Problem

"Planets in the Solar System," "Piano Keys," "Stripes on the American Flag," "Degrees Fahrenheit at which Water Freezes," "Holes on a Golf Course."

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Thomas J. Kessler, '86; December 19, 1992; East Rochester, N.Y.  
E. Balasubramaniam, '90; August 7, 1993; Worcestershire, England

A week ago a colleague complimented the cover of the second edition of my book with George Almasi (*Highly Parallel Computing*). It seems he received an examination copy. This surprised me since we are just now sending in page proofs to the publisher for January availability. As best we can understand it, he received a blurb on the second edition, including a cover picture, and recently used the first edition. Strange. A related occurrence happened to me while waiting with my son for someone to arrive by train. We went to the library and Michael, who *loves* buttons, wanted to use the computer terminals there. So we went to the electronic books in print and looked up mine. Sure enough, the second edition was right there—but I was not listed as a co-author! Virtual reality reigns.

**Problems**

F/M 1. We begin with a bridge problem that Jerry Grossman reports arose in a Sarnia, Ontario, sectional pairs game.

	North	
	♠ K 10 9 6 4	
	♥ 3	
	♦ K Q 10 7 4 2	
	♣ K	
West		East
♠ J 8 3		♠ Q 7
♥ 9 5 2		♥ K 10 8 7 6
♦ 8 5		♦ 9 3
♣ J 9 6 5 2		♣ Q 10 8 4
	South	
	♠ A 5 2	
	♥ A Q J 4	
	♦ A J 6	
	♣ A 7 3	

The contract is an ambitious 7 NT. West leads the 2 of clubs. How do you bring home the contract?

F/M 2. The late Robert High played a game in which two opponents took



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# PuzzleCorner

turns rolling a die. The loser is the first one not to improve on the other player's last roll. What is the probability that the first player will win?

F/M 3. Dudley Church recommends the following problem from *The Puzzling Adventures of Dr. Ecco*, written by my NYU colleague, Dennis Shasha.

There are 13 logicians in a room, all wearing jackets. On the front of each logician is a name tag and all the logicians have different names. On the back of some of the jackets is a big X. Each of the logicians can see the back of everyone else's jacket, but not his own. Initially, someone comes into the room and says, "At least one of you has an X on his back." The problem is for each logician to figure out whether he has an X or not.

They do this in the course of several rounds. In each round, the logicians who have not yet decided whether they have an X on their backs speak in alphabetical order. Each logician either says:

"I don't know whether I have an X on my back," or "I don't have an X on my back," or "I do have an X on my back and at least one other logician does also but has not yet said that he does," or "I do have an X on my back and all other logicians who do have already said so."

They are not allowed to say anything else.

As soon as a logician decides, that is, announces, that he does or doesn't have an X on his back, he stops speaking. This is what happens: In the first round, four people decide. In the second round, three people decide. One decider in the second round says there are more X's. In the third round, the remaining six decide.

## Speed Department

If Greg Fulkerson is giving a demonstration of simultaneous chess games (not necessarily blindfolded), how can he arrange things so that you will never lose

more than 1/2 of the games played (assume an even number of simultaneous games)?

## Solutions

OCT 1. Unfortunately, I inadvertently omitted part of the M/J 1 question that Tom Harriman calls "Superwiener." The correct Superwiener is as follows (now renumbered OCT 1).

The opening lead is the three of clubs by West. How does South make the contract of seven spades?

	North		East
	♠ 10 9 8 7 6		♠ 5 4 3 2
	♥ A K		♥ K Q J 10
	♦ A 10 9 8 7 6		♦ K Q J 5 4
West			
♠			
♥	9 8 7 6 5 4		
♦	6 5 4 3 2		
♣	3 2		
	South		
	♠ A K Q J		
	♥ A 3 2		
	♦ Q J 10 9 8 7		
	♣		

Peter Rauch found this double Vienna Coup (hence the name "Superwiener") to be just his cup (coup) of tea (beer?):

1. Ace of Clubs, throw a diamond
2. Spade 6 to Spade Jack
3. Ace of Hearts, throw Ace of Diamonds
4. Heart 3, ruff with spade 7
5. Spade 8 to Spade Queen
6. Heart 2, ruff with spade 9
7. Spade 10 to Spade King
8. Ace of Spades, throw Diamond King
- 9-13. Run South's Diamonds

OCT 2. Thomas MacDiarmid asks you to cut a triangle out of paper—an equilateral is best to start with. Then fold each of the corners upward so that the vertices meet; the result is a tetrahedron. This does not work for all triangles. MacDiarmid wants you to determine which triangles can be folded into a tetrahedron with just three folds, one for each vertex. The following solution is from Robert Moeser.

Consider the triangle ABC with interior angles a, b, c. In order for any two vertices to meet when folded, it is clear that each side of the triangle must be divided into two equal lengths. Figure 1 shows the triangle with midpoints M, N, and O labeled as well as additional deductions about angles along the fold lines.

In figure 2 we see the cones which are formed when AM is rotated about MO and BM is rotated about MN. In order for A and B to meet at the new vertex T, the cones must intersect. Each cone uses twice the angle between the fold line and the triangle edge. In order for intersection  $2a+2b>180$ . Since  $a+b+c=180$ , we

can infer that  $c<90$ . By repeating the identical argument for each set of cones, the requirement for triangle ABC is simply stated as "no angle greater than 90 degrees."

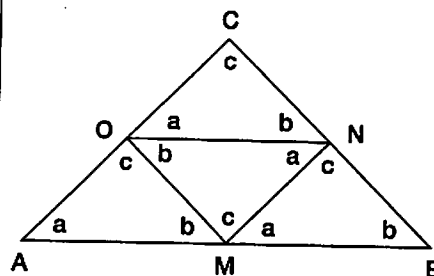


Figure 1

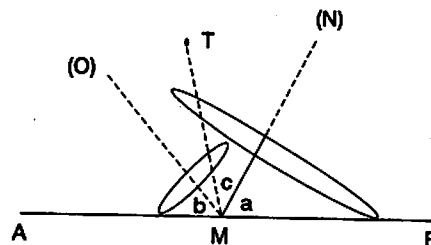


Figure 2

OCT 3. Nob Yoshigahara wants you to replace each letter by a unique digit (excluding zero).

$$\frac{AB}{CDE} + \frac{FG}{HI} = 7$$

The following solution is from Edward Sheldon:  $AB/CDE$  must be less than 1, therefore  $FG/HI$  must be greater than 6, which means  $HI$  must be less than 20, thus  $H=1$ . Since  $C$  not 1,  $AB/CDE$  must be less than 1/2, thus  $FG/HI$  must be greater than 6.5. Viable combinations of  $HI$  and  $FG$  are found as follows:

HI =	12	13	14	15	16
6.5*HI	78	85	91	98	-- <=FG
7*HI	84	91	98	--	>FG

Since the two fractions must reduce to a common denominator, if  $HI=15$ , either E or G must be 5, therefore,  $I=5$ , and  $L=2, 3$ , or 4. The possible solutions for  $HI$  and  $FG$  are:

HI=12, FG={78,79,83}
HI=13, FG={85,86,87,89}
HI=14, FG={92,93,95,96,97}

There are 12 possible solutions. For each one, A&B come from a set of 5, with only  $5*4=20$  combinations.  $20 * 12 = 360$ , which is small enough for an exhaustive search with a hand calculator. The search resulted in:

$$95/247 + 86/13 = 7$$

Continued on Page MIT 30

# MIT LIFE INCOME FUNDS

## MR. AND MRS. PETER M. RINALDO

HOME: Briarcliff Manor, New York

**CAREER:** After graduating from MIT with an S.B. in chemical engineering in 1944, Mr. Rinaldo was commissioned as an ensign in the U.S. Navy, which sent him to Princeton and back to MIT to become a radar officer. In 1946, he completed his naval career as a lieutenant (junior grade) aboard the heavy cruiser, the U.S.S. Macon, married, and in 1947 returned to MIT to earn his master's. He then joined the Dewey and Almy Chemical Company and spent his entire career there and with W.R. Grace, which acquired Dewey and Almy in 1954. He subsequently served as vice president of Grace's Industrial Chemicals Group and vice president of the General Industrial Products Group.

Since retiring in 1982, Mr. Rinaldo has been enjoying himself. He is president of the board of trustees of the Ossining Public Library; he drives a fire truck as a volunteer for the Briarcliff Manor Fire Department; he writes and publishes books; and he likes to hike, ski and canoe with his wife Dorothy.

**LIFE INCOME FUND:** Peter M. (1944) and Dorothy W. Rinaldo Fund in the Karl W. Compton Pooled Income Fund

**QUOTE:** We chose to invest in a Life Income Fund specifying that the remainder go to scholarships because we wanted others to have the same opportunity to go to MIT that I did; and because, in the meantime, the investment increases our current income. We chose the Compton Fund because Karl Compton was the president of MIT when I was there and a trustee of Dorothy's alma mater, Western College for Women in Oxford, Ohio, and we much admired him.

**For more information** about gifts of capital, write or call D. Hugh Darden, W. Kevin Barker or Frank H. McGrory at MIT, 77 Massachusetts Avenue, Room 4-234, Cambridge, Massachusetts 02139-4307; (617) 253-3827

Photo: Lane Photography, Ossining, New York

# DONORS' PROFILE

# Puzzle

Continued from Page MIT 47

## Better Late Than Never

1992 OCT 2. Eugene Sard believes that the improved solution suggested in the August/September 1993 issue is mistaken and that the original solution of 169 feet is correct. Sard writes: "The proposed improved solution seemingly ignores the fact that any 'shortest possible route' from 'A to B via the river' is the hypotenuse of a Pythagorean triple." Hence, Sard concludes, 92 and 133 cannot be solutions.

## Other Responders

Responses have also been received from K. Bernstein, E. Biek G. Blondin, J. Brown, F. Carbin, J. Chandler, J. Cronin, M. Crystal, A. Dehnel, J. Dorsey, C. Estes, S. Feldman, P. Fermat, M. Fountain, D. Garcia, J. Grossman, A. Halberstadt, J. Harmse, W. Hartford, J. Hearn, R. Hedrick, R. Hedrick, R. Holt, J. Keilin, R. Laeach, D. Lang, P. Lao, P. LeBar, B. Levere, T. Lydon, J. Miller, S. Negahdaripour, J. Peltier, G. Perry, G. Raymond, K. Rosato, E. Sard, H. Sard, S. Shapiro, R. Short, N. Spencer, D. Wachsman, D. Waggoner, C. Wampler, N. Wickstrand, A. Wiegner, K. Wood, and R. Yaseen.

## Proposer's Solution To Speed Problem

Ask to play 1/2 of your games as white and 1/2 as black. When white opponent n makes a move, play that move against black opponent n, then play black opponent n's move against white opponent n and so on. You will probably end up with the same number of wins as losses, but there is always the chance that white opponent n and black opponent n will both resign, giving you two wins with no counterbalancing losses.

Cassandra Santos works on propulsion for NASA's Mission Operations Division in Houston. I spoke with Paul while he was on a recent trip back to New England to attend the Design for Manufacturing and Assembly Workshop in Newport, R.I. He was recently voted into the League City, Tex., volunteer fire department after receiving substantial training in hoses, gear, ropework, arson, and the jaws of life. Although he's not exactly wishing for a League City blaze, Paul had not yet been called into action when I spoke with him in October. Paul enjoys bird-hunting near San Antonio and has also taken up shark fishing in the Gulf of Mexico. On a recent trip 60 miles off the coast, he spent 45 minutes reeling in an 8 ft., 130 lb. hammerhead shark, which he shared with friends and MIT alumni at a teriyaki barbecue.

Congratulations to Bennett Brown! The Student Loan Marketing Association (Sallie Mae) recently awarded Bennett with a First-Year Teacher Award, which "recognizes outstanding performance by new elementary

school teachers." Bennett, who was one of 100 teachers nationwide to receive the award, teaches 11th and 12th grade physics and chemistry at Du Sable High School in Chicago. According to "Sallie Mae," superintendents nominate one teacher from their district, who is selected on the basis of their instructional skills; interaction with students, faculty, and parents; and other distinguishing characteristics. A special aspect of the award is that a separate Teacher Tribute Award also honors the teacher who most influenced Bennett's decision to pursue an education career. Bennett chose James Jefson, who was Bennett's mathematics teacher in West Des Moines, Ia.

A picture of Princeton, N.J.'s "Palmer Square" arrives on Nicola Bird's postcard, which she received for free and admits is a bit "cheesy." She continues to enjoy her work with Camp, Dresser, & McKee, an environmental consulting firm, and will attend Columbia University Law School this fall. Nicola visited Eva Regnier, '92, in Paris during June, and sends news that Eva is working on recycling projects for European companies. Nicola recently joined MIT's Educational Council and is interviewing prospective MIT students. She says, "It's a bizarre experience. I feel far too young to be interviewing anyone, and yet I feel so OLD next to these bright-eyed eager young teenagers."

Please send your news and even your cheesiest postcards to: Andrew Strehle, secretary, 566 Commonwealth Avenue, # 406, Boston, MA 02215, or call (617) 262-3495

# 92

Hey folks! Well, it looks like this winter season has slowed everyone down a bit. Unfortunately, I received only *one* letter this month. Thank you, Matt "Skeeter" Hockett, for

being my saving grace. Matt is living in Minneapolis and is now well into his second year of medical school at the University of Minnesota. This fall he served as best man at the wedding of Ruth Bunker to Dinesh Lathi. Congratulations, Ruth and Dinesh. In attendance were Jeff Jacobson, Mike Doane, Mike Pieck, CJ Whelan, Bob Rockwell ('93), and Vijay Lathi ('94), the groom's brother. Matt welcomes anyone in Minnesota to look him up.

Matt also posed a good question—How does one go about changing their address with the Alumni/ae Association in order to stay in touch with MIT and other classmates? It's very simple really. You can call Alumni/ae Records directly at (617) 253-8270 and they will update your address, or you can call the Alumni/ae Association at (617) 253-8200. If you forget these phone numbers, call MIT's main information line, (617) 253-1000, and they will connect you. You can also mail a change-of-address postcard to MIT, Alumni/ae Records, 77 Massachusetts Ave., Bldg. 12-087, Cambridge, MA 02139. If you need to reach the Alumni/ae Association, it's Bldg. 10-110 for their main office. You can also send e-mail to John Blake at [Jblake@MITVMC.MIT.edu](mailto:Jblake@MITVMC.MIT.edu). If you write to me, I can also update your address, though I am a much less efficient channel to go through.

I was fortunate enough to see Joanne Gutierrez when I was in Phoenix in October, via the Grand Canyon. Arizona is more than worth the trip if anyone has doubts as I did.

While visiting with Joanne, I found out that Matt Bloom is grinding through medical school at Duke University in North Carolina. We spoke briefly on the phone. Matt says he likes school, but the hours are long and he misses fellow MITers. . . . Also heard news about Jenny Rigney. She is in graduate school at UMichigan. I met a couple of other friends of Jenny's in Phoenix through Joanne. As a matter of fact, we could have played "This is Your Life; Jen Rigney," as we had friends on hand representing her high school, college, and graduate school. . . . Lastly, I also stunned Karl Koschnitski ('93) in Phoenix by unexpectedly showing up at his door. He lives in the same apartment complex as Joanne.

Now comes the moment of truth, friends. I have thoroughly enjoyed reporting our class news for the past year, and as you all may or may not realize, I have at least another four years of reporting to do. At that time, we will have our first class reunion and you may or may not choose to reelect me. No, I am not plugging for reelection. I am asking you to continue to make my job as fun and successful as it has been for the past year by writing to me. You've all been great. But if one more month goes by without news from you, I will fall into a seriously depressed state and will have to start soliciting information. That won't be easy—we have at least 1,000 classmates scattered across the country as well as others. Please help me let everyone know what you're up to. Thanks.—Leslie A. Barnett, secretary, 42575 E. Hwy. 82, Aspen, CO 81611, (303) 920-1988 (home), (303) 925-1961 (work), or (303) 925-9389 (fax)

# 93

I hope that everyone enjoyed the holiday season with all the family and feasting. And back to work so soon! What ever happened to having January off? But back to what our

classmates are up to.

The other day I got on the M2 bus from Vanderbilt Hall to Harvard Square, and there were Karen Lee, Wyn Kao, Kenway Louie, and Yvonne Lin. Karen and Wyn are both in the HST program. They claim they're lucky if they're out of classes by 5 p.m. (classes start at 9 a.m.). Kenway is attending Harvard Medical School and says he likes his classes. He reports that Otway is having a good time at Tufts Medical School, but it's a lot of work. Yvonne is also going to Harvard, but she is studying epidemiology at the School of Public Health. Also living in Vanderbilt Hall are Oliver Chen and Kelly Sullivan.

In other news, Reshma Patel, and our class president, is working in investment in New York City. . . . Our VP, Ivana Markovic, is working as a chemical processes engineer at Michelin down in South Carolina. . . . Lisa Chow, our treasurer, is now part of a think tank in Japan.

Fulfilling their Navy ROTC obligations are ensigns Joseph K. Rivera, Juan C. Garcia, John G. Abbamondi, Andrew J. McFarland, and Frank J. Desimone. . . . Finally, I would like to congratulate Chad Gunnlaughsson on his engagement to Rebecca Milam ('94).

Please feel free to tell us what you are up to! Address your letters to—Mari Madsen, secretary, 12-16 Ellery St., #405, Cambridge, MA 02138

ment and will marry Christina Yun (Wellesley '86) next August. Mike Hon, Hoang Do, and Raju Rishi all work for AT&T in New Jersey. Hoang and Raju are both happily married and Mike will tie the knot with Grace Lee next March. Chris Thorman is enjoying his work for a multimedia firm in San Francisco. Karim Roshd is writing a book in Paris. Basil Horangic is at Chicago Business School and is considering taking a break between an MBA and PhD.

I would like to thank all of you who wrote, especially Hanson Cheah who gets this month's award for reporting on the largest number of classmates. Please write and if possible include news on other classmates that you have kept in touch with. Keep sending that e-mail, it's quick, it's easy, and best of all you get to save 29 cents on the postage!—Catherine Suriano Singer, secretary, 131 Main Street #3, Andover, MA 01810, or e-mail: singer@mit.edu

## 89 5th Reunion

The reunion is rapidly approaching, and I hope people are thinking about coming.

The committee has a lot of fun events planned, and it will be a good chance to see people and catch up. If anyone would like to ask any of the committee members about it, please feel free to call any of them. So far the committee is: Hugo Ayala, Laura Brauer, Derek Chiou, Carissa Climaco, Nancy Gilman, Henry Houh, Ron Koo, Juli Lee (chair), Kenney Ng, Christine LeViness, Catherine Rocchio, Dave (Duis) Story, and Lori Tsuruda. To obtain their (or any other numbers of grads), call the new toll-free MIT Alumni/ae Association number: 1-800-MIT-1865.

Everyone should have received a few reunion mailings by now, but if you haven't, it is possible that the Alumni/ae records have a different class affiliation listed (if you graduated in more or less than four years, or if you were in a co-op program). To fix that, just call the toll-free MIT AA number.

Submissions for the class calendar are still trickling in, so please send those pictures or video tape (either VHS or 8 mm). All submissions will be returned. We'll be publishing the school-year calendar, which will feature pictures of classmates, families, and other alumni/ae events, shortly after the reunion.

Here are this month's list of people to please write in: Brian Brown, Andrew Brabson, Scott Hockett, Annabel Nickles, and Kee Wee. What are y'all up to? If anyone knows about any of these people or anyone else, please write in!

In May, Josephine Cheung graduated with an ScD from MIT in materials science, and is now working at the construction specialties division at W.R. Grace in Columbia, Md.

I received more information on Bill Maney and Angeli Salgado's wedding. They were married last August in Monterey, in the San Carlos Cathedral, an historic Presidio mission that dates from the late 1700s. "The setting was just picturesque. The program was extremely personalized—I could feel their touch in every little detail from the passages they chose to the hymns and other music which their friends performed. In fact, Bill helped to write the processional music," writes Ron Koo.

In attendance were Ron, Steve Payne, Steve Brobst, G, Steve Malinak, Thespina Hadjimichel, Lissa Sabia, Phil Kuhn, Joe Lichy, and Elizabeth Greyber, John Flight, Mark Coiley, Grace Tseng, '90, Laura Scolnick, '90, Dan Mittleman, '88, Ed Kim, Nadine Regner, '91, Mike Turek, '88, Joe Landry, '88, Armando Fox, '90, Dave Berners, '90, Illy King, Karen Tsuei, Dave Maes, '87, Greg Carlin, G, Greg Schaffer, '64, and Mitch Liu, '92. Bill and Angeli took a two-week honeymoon in Greece.

On the weekend prior to the wedding, Bill held his bachelor party in Yosemite. Fourteen guys, including Joe Lichy, Joe Landry, Mike Turek, John Flight, Rodrigo, Dan Mittleman, Greg Carlin, and Ron, camped out in Tuolumne meadows, which is at 8,600 feet. They had a BBQ and drank, while Bill played his guitar and sang late into the night.

The next day, the group hiked to Cathedral Lakes, nestled in a bowl at 9,600 feet. "The lake was beautiful—clear blue and cold because it is fed by melting snow. Amazingly enough, the sides of the bowl of granite which contained the lake still had snow in several patches that got direct afternoon sun!" Ron threw a few snowballs that day.

Angeli held her bachelorette party in Calistoga the same weekend. She had a party of eight, with Laura and Thespina part of the party.

Ira Scharf writes in about Tom Farkas and Julie Primost's (Tufts '91) August wedding, held in Red Bank, N.J. They had a very nice ceremony outside on a beautiful sunny afternoon. Among the people in attendance were Alex Rosen, who was the best man, Ira and Brian Luschwitz, who were both groomsmen, Dean Ebesu, Ron Scharf, '92, and Joe Lichy, who came in from California. All shared the festivities with Tom and Julie for a weekend.

Ira is working in Cambridge for BBN, in their speech recognition group, and also hopes to finish a master's in computer science this year at MIT as well.

Harry Hochheiser writes to say hello. Harry just started a new job at Mass General Hospital, doing software development for the department of biomedical engineering. Harry has been enjoying his job so far.

Barak Yedidia recently become engaged to his dance partner, Valerie Lisiewicz (UCLA '88). Val and Barak have been competing in ballroom dance for the past two years and are currently Northern California Champions. Barak is working for GE in San Jose, training operators of power plants. Barak and Val plan a European honeymoon this May or June, and may even plan it so they can stop by our reunion on the way.

Chris Maeda is working on a PhD through CMU, although he is working in the CS department of the University of Washington. Chris was at MIT in October, presenting some of his research results at a talk at the Lab for Computer Science.

Susan Streisand is engaged to Steven Zweig, but haven't yet set a date. ("By the time it gets in print we'll probably be married—is the lag really that long?" Susan comments).

Dan Garcia won both a three-year NSF fellowship and an "Outstanding Graduate Student Instructor" award at Berkeley. Dan recently spent an evening with Mark Itzkowitz and his wife, Julie, and "had a blast." Dan sees a lot of ex-Baker people: Christina Schwarz, '90, Saskia Duyvesant, '91, and Adam Schwartz, '88. Dan has also been hucking plas-

# ClassNotes

tic and trading puzzles with fellow grad student Hsin-Chao Phil Liao, '91. "Graduate life is treating me well," Dan comments.

Well, that's it for this month. Thanks again to everyone who wrote in, and I hope everyone is starting to plan those reunion trips! Please send news and photos! Thanks!—Henry Houh, secretary, 4 Ames St., Cambridge, MA 02142; phone: (617) 225-6680; fax: (617) 253-2673; e-mail: tripleh@mit.edu or hhh@mit.edu or henry\_houh@mit.edu

## 90

Alex Chen received a master's in mechanical engineering from the University of Michigan in Ann Arbor. Now he is in Schenectady, N.Y., working at the GE Research and Development Center as a mechanical engineer in the Mechanical Systems Dynamics Program. . . .

Anne Law is starting her first year at Northwestern's Kellogg Graduate School of Management after spending the past couple of years working in international marketing at Beiersdorf AG in Hamburg, Germany. Before classes began at Kellogg, Anne traveled to Hong Kong and China. In Hong Kong, Anne met up with Koh-Ann Chu and went out to take part in some karaoke!

David Plass recently got engaged to Sue Rodis of Woodbury, N.Y. They're planning an October 1994 wedding on Long Island. Sue is an orthodontist in West Islip, N.Y. She graduated from Tufts Dental School in 1988 and the Tufts Orthodontics Program in 1991. David, who is currently living in Manhattan, and Sue plan to settle down in Long Island after the wedding. . . . Kimberly McNeil Keithline is now a lieutenant in the U.S. Navy, working for Naval Reactors in Washington, D.C. She is responsible for manufacturing reactor cores for nuclear-powered submarines and surface ships. Kim is also very happily married to a navy submariner!

Looks like that's all the news I have this time. Let's keep those letters rolling in! Send news to—Ning Peng, secretary, 483 Beacon St., #41, Boston, MA 02115, or ning@athena.mit.edu.

## 91

Lola Matysiak writes, "Hi! Just wanted to give you some news...I just got engaged!" Rob Lohr, '89, proposed to Lola on a swan boat in the Boston Public Garden last August. "It was

incredibly romantic and totally unexpected!" The couple plan a June 1995 wedding in New York. Rob is a management consultant at Price Waterhouse in Boston and Lola continues at Los Alamos National Labs in New Mexico.

Paul Duncan continues working for Ocean Engineering Space Systems in Houston. Jeff Meyers, '88, and Jud Hedgecock, '87, work with Paul in the Life Support and Cryogenics Division, and Art Schlou and Rich Patten, '88, also work for the company, which just bought ILC Space System in Houston. He sends news that

# PuzzleCorner

It has been a year since I specified the size of the backlogs for the various kinds of problems that are printed; let me do so now. I have a multi-year supply of regular problems, two years of speed problems, but chess, bridge, and computer problems are in short supply. This may well mean simply that these specialty problems are of less interest, in which case my exhausting the current supply will lead to three regular problems per issue.

## Problems

**APR 1.** In a high-stakes game of rubber bridge with N-S vulnerable, West leads the spade king against 6NT. Jorgen Harmse wonders what dummy should play to the first trick?

- ♠ 8 3 2
- ♥ A K Q 7
- ♦ 7 6 5
- ♣ 5 4 2
- N
- S
- ♠ 5 4
- ♥ 6 3
- ♦ A K Q 4
- ♣ A K Q J 6

**APR 2.** Eugene Sard has a square sheet with side 2, which he has folded so that a vertex falls on the midpoint of an opposite side. How long is the fold line?

**APR 3.** Albert Mullin writes that real-number constants abound in mathematics, physics, chemistry, and engineering. They provide a "firmament" for computational activities. Here is a *new* real number constant that you may find amusing. Define  $f_n$  as follows

$$f_1 = \pi$$

$$e^{f_2} = \pi^\pi$$

$$e^{e^{f_3}} = \pi \pi^\pi$$

and so on. Put

$$F = \lim_{n \rightarrow \infty} f_n$$

Surely this limit exists. Further, convergence is *super* fast. The problem is to compute F to several decimal places using just a hand-held calculator.

## Speed Department

Speedy Jim Landau wants you to find an English word with three consecutive double letters; now one with five; now one with a triple letter. Why is 6 afraid of 7 and finally why can't you curse the Hudson?

## Solutions

**N/D 1.** Lester Steffens wonders what is the highest score a Bridge pair can obtain on a single hand (excluding illegalities and penalties for reneging, etc.) when neither of them has a card higher than a ten.

Bob Wake was able to obtain the max possible score (setting 7NT vulnerable re-doubled) with no card higher than a *nine*. Jorgen Harmse notes that these hands are called Yarboroughs.

If a total "helpmate" is allowed, West—with a hand headed by two nines, an eight, and two sevens, and a partner headed by a nine, two eights, and two sevens—can single-handedly take all 13 tricks defending seven notrump redoubled. West could lead the four and seven of hearts, then the six, nine, and three of diamonds, with opponents pitching the club honors and everyone who can follow playing just underneath the card lead:

	North	
	♠ Q J 10	
	♥ —	
	♦ A K Q J 10 8 5 2	
	♣ J 10	
West		East
♠ —		♠ 9 8 7 6 5 4 3 2
♥ 7 4		♥ 8 5 2
♦ 9 6 3		♦ 7 4
♣ 9 8 7 6 5 4 3 2		♣ —
	South	
	♠ A K	
	♥ A K Q J 10 9 6 3	
	♦ —	
	♣ A K Q	

**N/D 2.** Nob. Yoshigahara wants you to substitute the digits 1-9 once each in the following equation.

$$\frac{AB}{CDE} + \frac{FG}{HI} = 7$$

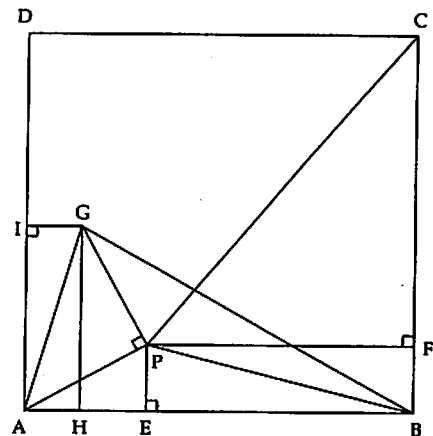
OOPS!! Somehow I managed to repeat the same problem in two consecutive issues (OCT and N/D). The solution for OCT 3 given last issue works just fine for this problem as well. The answer is

$$\frac{95}{247} + \frac{86}{13} = 7$$

**N/D 3.** John Rule has a point P situated inside a square ABCD so that PA=1, PB=2, PC=3. He wants you to calculate angle APB "using only the methods of Euclid."

Viewing Pythagoras and Euclid as "colleagues," I agree with Robert Holt, whose solution follows.

I suppose "methods of Euclid" means avoid analytic geometry. Anyway, in the diagram, EP ⊥ AB, FP ⊥ BC, G is chosen so that PG ⊥ AP and AP = PG, GH ⊥ AB, and GI ⊥ AD. Then GH = AE + EP, GI = AE - EP, AP<sup>2</sup> - AE<sup>2</sup> = BP<sup>2</sup> - BE<sup>2</sup> by the Pythagorean Theorem, and BE<sup>2</sup> - AE<sup>2</sup> = 3. Next, AB<sup>2</sup> = (AE + BE)<sup>2</sup>, so BE<sup>2</sup> = AB<sup>2</sup> - AE<sup>2</sup> - 2AE BE, and 3 = AB<sup>2</sup> - 2AE<sup>2</sup> - 2AE BE = AB<sup>2</sup> - 2AE (AE + BE) = AB<sup>2</sup> - 2AE AB. Similarly we obtain 5 = BC<sup>2</sup> - 2BF BC = AB<sup>2</sup> - 2BF AB. From these two results we have 2 = 2AE AB - 2BF AB, or 1 = AB (AE - BF), or AB AE - 1 = AB BF. Now a ΔABC = 1/2 AB GH = 1/2 AB (AE + EP), a ΔAPG = 1/2 AP<sup>2</sup>, and a ΔABP = 1/2 AB EP. Therefore a ΔBPG = 1/2 AB (AE + EP) - 1/2 AP<sup>2</sup> - 1/2 AB EP = 1/2 AB AE - 1/2 AP<sup>2</sup> = 1/2 (AB AE - 1) = 1/2 AB BF = a ΔBGP. Since triangles ABP and BGP have two equal corresponding sides and the same area, the included angles are congruent (or supplementary, but that is impossible by the construction of G). Angles APB and BPG are equal and add to 270 degrees, hence each is 135 degrees. (Angle APB cannot be just 45 degrees as P is in the half of the square nearer side AB. Angle APB must be less than angle ADB which is 45 degrees.)



Continued on Page MIT 48



SEND PROBLEMS, SOLUTIONS, AND COMMENTS TO: ALLAN GOTTLIEB  
NEW YORK UNIVERSITY  
715 BROADWAY, 10TH FLOOR  
NEW YORK, N.Y. 10012,  
OR TO: GOTTLIEB@NYU.EDU

# MIT LIFE INCOME FUNDS

## MR. DENMAN KITTREDGE McNEAR

HOME: Kentfield, California

CAREER: Denman McNear's grandfather, George W. Kittredge, MIT Class of 1877 and a former chief engineer of the New York Central Railroad, was responsible for Mr. McNear's ambition to go to MIT and to be a railroader. Born in San Francisco, he entered MIT in 1942, left in 1944 to serve two years in the U.S. Navy, and finished his civil engineering degree in 1948. He then joined a Southern Pacific Railroad training program in California while earning an M.B.A. from Stanford. Starting as an instrument man on a surveying team, he spent his entire career with the Southern Pacific Transportation Company, rising to the position of president in 1976 and then chairman and CEO in 1982. He retired in 1990.

A past president of the Association of Alumni and Alumnae and current president of the Class of 1948, Mr. McNear has long been active in MIT affairs. He has been a member of the MIT Corporation, and serves now on the Educational Council, the Department of Civil Engineering Visiting Committee, and the Corporation Development Committee. He recently accepted the position of chair of the new Katharine Dexter McCormick '04 Society. He is also a long time volunteer with the Boy Scouts and Junior Achievement, Inc.

LIFE INCOME FUND: Denman K. McNear Charitable Remainder Unitrust.

QUOTE: "A special attraction of MIT's Life Income Funds is that they also allow donors to provide for other charitable causes from their trust remainder. Therefore I can honor some of my other commitments to youth and education through my MIT fund. I have designated the Marin Council of the Boy Scouts and Junior Achievement, Inc., as well as MIT as beneficiaries."

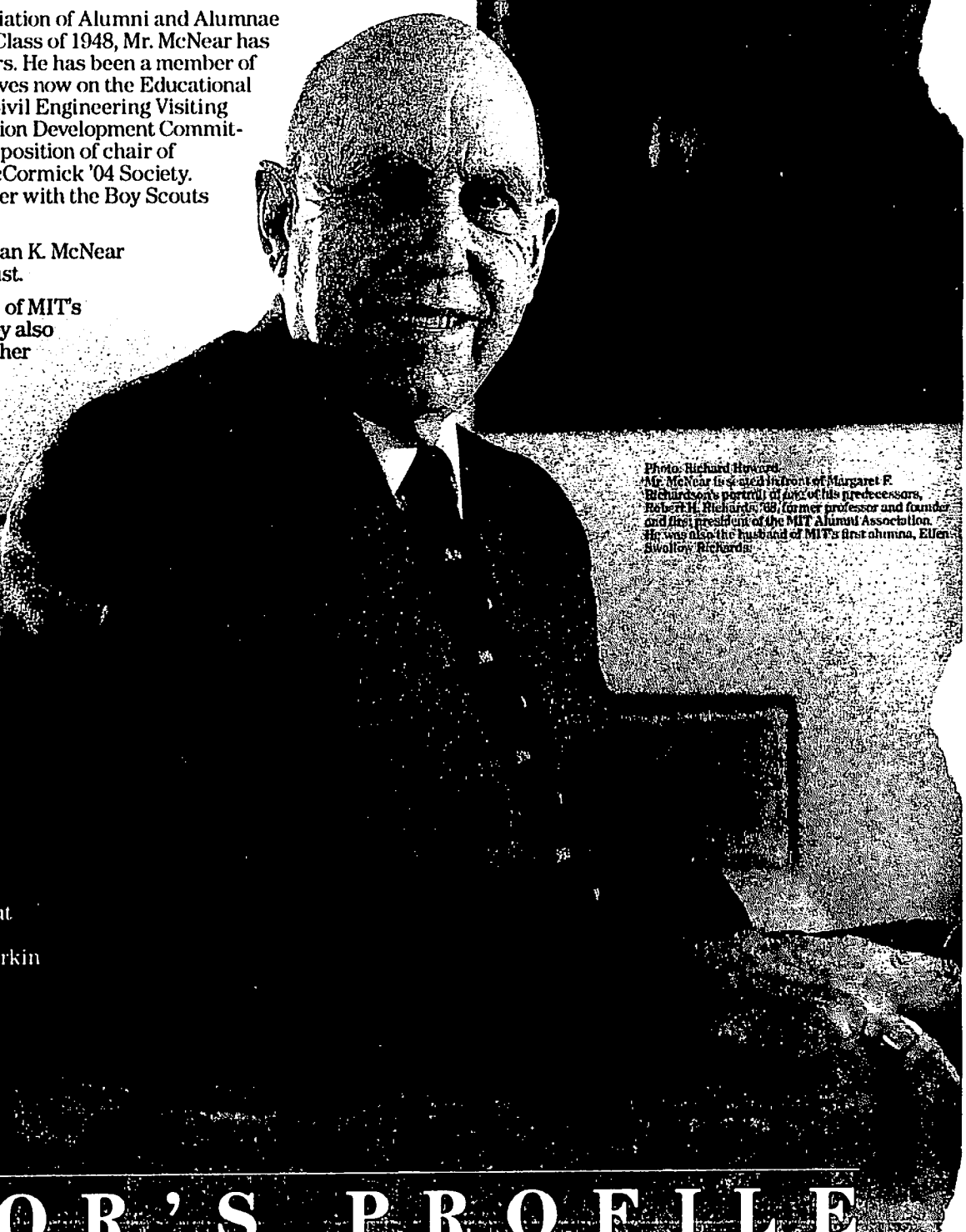


Photo: Richard Howard.  
Mr. McNear is seated in front of Margaret F. Richardson's portrait of one of his predecessors, Robert H. Richardson, '89, former professor and founder and first president of the MIT Alumni Association. He was also the husband of MIT's first alumna, Ellen Swallow Richards.

For more information about gifts of capital, write or call D. Hugh Darden, W. Kevin Larkin or Frank H. McGrory at MIT, 77 Massachusetts Avenue, Room 4-234, Cambridge, Massachusetts 02139-4307; (617) 253-3827.

## DONOR'S PROFILE

# Puzzle

Continued from Page MIT 63

## Better Late Than Never

1990 Apr 2. Frank Rubin has found (with his faster computer) that 39,402,191,713 is prime and if one replaces (all three instances of) 1 with any other digit, the result is still prime.

1993 Jul 3. Frank Rubin points out that this problem is sometimes called Boneparte's theorem, after its discoverer.

## Other Responders

Responses have also been received from K. Bernstein, C. Brooks, J. Bross, A. Dehnel, R. Doherty, M. Fountain, F. Furland, J. Hahn, W. Hartford, R. Hess, R. Holt, A. Katzenstein, J. Keilin, S. Levitin, M. Lindenberg, N. Markovitz, J. Miller D. Moyer, T. Pappas, W. Peak, K. Rosato, F. Rubin, R. Sackheim, E. Sard, H. Sard, I. Shalom, S. Shalom, R. Sinclair, N. Tsang, N. Wickstrand, and K. Woods.

## Proposer's Solution To Speed Problem

Bookkeeper; boob-bookkeeper; brasssmith. Because 7 8 9. Because the Hudson is not a dammed river.

news on other classmates that you have kept in touch with. Keep sending that e-mail to singer@mit.edu; for those of you who prefer snail mail, send to: Catherine Suriano Singer, secretary, 131 Main Street #3, Andover, MA 01810.

# 89 5th Reunion

The reunion is right around the corner, and I hope people are starting to make plans.

For more info about the reunion, call the new toll-free MIT Alumni/ae Association number: 1-800-MIT-1865.

If you haven't received any reunion mailings by now, it is possible that the Alumni records have a different class affiliation listed (if you graduated in more or less than four years, or if you were in a co-op program). To fix that, just call the toll-free MIT AA number.

Our Class Scholarship fund has awarded another scholarship this year, to John Chiou, '94. John is a senior in the Biology Department, and plans a career in medicine. John was a TA for "Introduction to Experimental Biology" last spring, and his UROP involved cloning and sequencing of gene fusion in *E. Coli* for the purpose of implementing improvements to that course. John has assisted with research at the Boston Heart Foundation, and continues to volunteer several hours each week at Children's Hospital. Please consider designating your gifts to our scholarship fund so that we can continue our support of stu-

dents like John.

Submissions for the class calendar are still trickling in, so please send those pictures or video tapes (either VHS or 8 mm). All submissions will be returned. We'll be publishing the school-year calendar, which will feature pictures of classmates, families, and other alumni/ae events, shortly after the reunion.

Here are this month's list of people to please write in: Zsuzsanna Gaspar, Frederic Kloer, Cheryl McCullum Smith, Nat Seshan, and Feei Wang. What are y'all up to? If anyone knows about any of these people or anyone else, please write in!

Jon Lyszczarz graduated from the Uniformed Services University of the Health Sciences, was promoted to lieutenant, and is now serving as a physician in the Navy.

David Campbell, Jr. finished his second deployment to the Mediterranean with the Navy Seals, and is planning on leaving the Navy, hiking the Appalachian Trail, bicycling across the country, and finding a job in the alternative energy field.

Eric Reifschneider became a member of the Illinois bar in November '92, and completed his first year as a corporate lawyer with Katten Muchin & Zauis, Chicago's fourth largest law firm. Eric is a member of the firm's technology group, and has been reviewing and drafting software license, consulting, and confidentiality and noncompletion agreements. Eric has assisted clients in venture capital transactions and has also worked on several White Sox player contracts.

Barry Margulies writes that he is "still slaving away in grad school, still at Hopkins, seeing other alums come and go (mostly come, though)." Also in Barry's program are Larry Buxbaum, '87, and Pierre Chevray, '87, both MD/PhD candidates who are the same year as Barry in the PhD program. Newer arrivals include Eleanor Hoff, '91, and Teresa Zimmers, '90, who just started after a few years at NIH. Barry still shares a bench with Mary-Elizabeth Harmon, '90, in Wade Gibson's lab, experimenting on human cytomegalovirus (human herpes virus 5).

"Things have been going better, research-wise, over the last few months; Lady Science has actually been smiling on me. I hope this luck will last all the way to graduation..." Barry writes. Barry has also started giving back to the 'Tute: giving his first interviews for undergrad applicants this year. Barry was excited that one of his interviewees was accepted early. "Oh, what a feeling to be a part of someone's future like that!"

Barry also writes that Alice Lin is in her second year in a PhD program at Tufts School of Medicine downtown. She just passed orals, and "is a model scientist (as always)." Miky Ishida is now living in Seattle, temping until she can get a job in an architecture firm in the area. Miky recently moved from LA because of the better job market in Seattle. Christopher Wolfe, '87, and Ellen (Lin) Wolfe, '88, moved back to Schenectady so that they could stay employed with GE. They had their first son, Nicholas, in September.

Tom Farkas writes about his August 15th wedding to Julie Primost (Tufts '91). Among those attending the wedding held in Red Bank, N.J., were Alex Rosen, who was the best man; groomsmen Ira Scharf, Brian Luschwitz, and Arnold Zipper; Joe Lichy, Dean Ebesu, John Ofori-Tenkorang, David Perreault, SM '91,

Joaquin LaCalle-Melero, SM '92, Douglas Fleckner, '64, Oscar Fleckner, '63, Mary Eisenberg, '64, and Dave Tutelman, '63.

Tom and Julie honeymooned in Italy for two weeks, visiting Rome, Pompeii, Florence, and Venice, and had a wonderful time. Tom and Julie are now living in Ossining, N.Y., where Tom is working at Philips Labs on advanced development of compact fluorescent lamps. Julie commutes to NYC, where she is a Latin teacher at Brooklyn Poly Prep School. Tom and Julie plan on attending the reunion, and Julie is looking forward to the reunion even more than Tom!

Well, that's it for this month. Thanks again to everyone who wrote in, and I hope everyone is planning those reunion trips! Please send news and photos! Thanks!—Henry Houh, secretary, 4 Ames St., Cambridge, MA 02142; phone: (617) 225-6680, fax: (617) 253-2673, e-mail: tripleh@mit.edu or hhh@mit.edu or henry\_houh@mit.edu

# 90

The MIT Alumni/ae Association has informed us of the death of our classmate Sabrina Goodman. Sabrina lost her battle with cancer in early November. She died peacefully among her family and friends at her home in California. At the time of her death, Sabrina was a student on medical leave from the University of Rochester, where she had been pursuing a PhD in psychology. At MIT, Sabrina received dual bachelor degrees in cognitive science and mathematics. She was a resident of the Fenway House, a member of Alpha Phi Omega, and active in the Tech Random Music Ensemble and the Experimental Study Group (ESG). A memorial service was held in early December in Huntington Beach, Calif.

In other class news, Ed Hahn was in Boston in mid-November to visit with Chi Phi alums, including John Lee, '89, Jim Deeds, '89, Jeff Welch, '91, Ken Jung, '91, and Joe Pacatte, '91. They had a barbecue and proved that you can still have an awesome barbecue in 20 degree weather. Ed is now working for TWA in aircraft engineering in Kansas City. . . . Ken Woolner is a software developer for Oracle Corp. in Redwood Shores, Calif. He's also pursuing a master's degree in engineering-economic systems at Stanford. In Ken's spare time, he runs a baseball league. . . . Charles Li writes from Minneapolis, Minn. Charles is finishing his final year of medical school at the University of Minnesota and waiting to find out the location of his residency program in general surgery. . . . Rachel McCarthy is also finishing up medical school. Rachel is at the University of Florida.

Jema Gonzalez is finishing up an MBA at Wharton, majoring in strategic management. Jema spent her past summer working as a management consultant at Deloitte and Touche in northern New Jersey. . . . Maureen Fahey has just received a ScD degree in materials science at MIT. She has since started working at 3M in Austin, Tex. . . . Also in the Austin area is Paul Anderson. In fact, Paul recently had a housewarming party where fellow alums Samir Nonoga and Steve Peltzman were spotted. . . . Pankaj Vaish is now assistant vice-president at Citibank's Global Finance Department in New York City.

tant for Pittiglio Rabin Todd and McGrath in Costa Mesa, and Florence is a QA analyst for Pacific Biotech. The wedding was especially memorable for two reasons: the Rose Parade marching band was practicing on the road adjacent to the church, and there was a fistfight between the photographer and the videographer during the ceremony. Luckily, lots of the wedding guests brought their own cameras, and Kelvin says that pictures of the ceremony and reception are starting to trickle in.

Jane Fisher, '89, and Christopher Monroe got married last August 7th in Salem, after dating for 8 years! The reception resembled a Next House 5th East reunion, with over 30 MIT alumni/ac showing up and making it quite a party. They honeymooned for a couple of weeks in Paris and western France, but say that they had to (unfortunately) come home because they bought roundtrip tickets! Jane and Chris currently live just west of Denver, where Jane is an actuary with Life Partners Group, a small life insurance corporation south of Denver. Chris received a PhD in physics from the University of Colorado at Boulder in 1992, and is in the process of wrapping up a post-doc at the National Institute of Standards and Technology (NIST) in the area of atom-trapping and laser-cooling.

John Slater deserves special recognition for sending me the first actual letter (as opposed to e-mail or MIT donation form) that I have received in a long time! He and his wife, Amy Beth Van Atta (an absolute dream, according to John!), were married on April 24, 1993, in San Francisco. They met in Chicago, and now live in the Bay Area. John has been very busy this past year helping to launch the Apple Newton, and his wife is moving up the ladder at Cable and Wireless, an international telecommunications services company, where she is focusing on the biotechnology industry. John and Amy Beth highly recommend New Orleans during the Jazz Festival, which is where (and when) they spent their honeymoon. John has run into Diana and George Apostol, as well as Andy Vyros, '88, in the Bay Area.

Briefly... Navy Lieutenant Michael Schimpf is currently stationed on board the USS *America*, which has been operating in the Adriatic enforcing the "no-fly" zone over Bosnia-Herzegovina. His squadron, which flies the F-14A Tomcat fighter, has had the opportunity to visit Trieste, Italy, and Corfu, Greece. . . . Neal Hoyer says that he will have started a new job at Ford in Dearborn on January 3rd. The new job involves Finite Element structural analysis of engines. Dave Graham also works in the same division at Ford. . . . Irene C. Griff received a PhD in molecular biology from Princeton this past year, and is now a postdoctoral fellow at Johns Hopkins Medical School. . . . Salvador Castillo recently separated from the Air Force, and is now pursuing a PhD at the University of California/Santa Barbara in the area of educational policy. He is also working as an Air Force reservist in launch support at Vandenberg Air Force Base. . . . Robert A Biedenharn reports that he is living near Cincinnati with his wife, Andrea, and his 2 children: 5-year-old Isabella and 2-year-old Carlo. . . . Lauren Mahorter Snellgrove is working in the area of experimental fluid dynamics at the NASA/Marshall Space Flight Center in Huntsville, Ala. She married James

Glenn Snellgrove, a computer scientist who is originally from Georgia, on September 14, 1991.

Mark Harysch has relocated to the KI Sawyer Airforce Base (near Marquette, Mich.) due to the closing of Loring AFB in Caribou, Maine. By the time this is published, Mark and his wife, Sherry, should have already had their first child, who is expected in January. . . . From a clipping in the *Metuchen-Edison Review* (Edison, N.J.), we hear that Stephen Hoening is engaged to marry Melanie Paige Derman in April. Stephen graduated from Columbia College of Physicians and Surgeons and his fiancée is a graduate of Brown and the Albert Einstein School of Medicine. Both Stephen and Melanie are surgical residents at Beth Israel Hospital in Boston. . . . Christine (Keherley) Dorn writes that she lived in Strasbourg, France for the past year, and is now doing student teaching in French in Boise, Idaho. She and her husband plan to move to Germany next year, where she will hopefully find a teaching position. . . . Jerry Hershkovitz is already in Germany, working on a six-month assignment for Motorola in Munich. He is assigned to the same project on which he was working while at Motorola's Austin, Tex., facility...

Until next month.—Jack Leifer, class secretary, 2703 Swisher Street, #202, Austin, TX 78705; phone: (512) 472-7507, fax: (512) 472-7546, e-mail: leifer@ccwf.cc.utexas.edu or MIT1987@mitvma.mit.edu

# 88

This is about the time that we would all be coming back to class after spring break and getting ready for mid-terms. Tell us where you went for spring break this year! Here's the news. . . . Stephanie Keenan writes that she has joined her husband, Jim, in Iceland where he is stationed at the Naval Air Station dental clinic. She enjoys the country, but writes that the weather takes some getting used to. They are expecting a new addition to their family soon. Stephanie received an MA degree from the College of William and Mary in August and writes that "...after all that work in American studies, [she] eventually found a job working for the government in engineering of all things," and is in charge of planning for future construction projects on the base. She was back in the States for the wedding of Angela Polen, '90, where she saw Kimber Lynn (Zinger) Drake. Kimber Lynn married Steve Drake on September 12, 1992. She is a mechanical engineer at ECRM and has been very active in musical theater. Kimber Lynn recently performed in *A Chorus Line* and *Guys and Dolls* at the Turtle Lane Playhouse.

Glenn Serre is employed at Gain Technology, Inc. (a division of Sybase) in Palo Alto, Calif. Glenn writes that he is a release engineer, officially, but is actually more like a professional hacker, for a multimedia application development system (Gain Momentum). Glenn is still seeing Ting and is buying a house in Mountain View, Calif. . . . Mark Luetgten finished a PhD in Course VI last May, and is now working at a small company called Alphatech out in Burlington, Mass. . . . Susan Lee is currently a grad student at Cornell University. Susan will receive a PhD in mathematics in June 1994.

# ClassNotes

Erik Heels and his wife, Pirjo, are expecting their first baby on April 7th. Pirjo is working as an RN/BSN at York Hospital, and Erik is in his second year of law school at U. Maine Law. Erik recently completed a two-year project that is now available via e-mail entitled: "The Legal List, Law-related Resources on the Internet and Elsewhere." If you want a copy contact Erik (heels@justice.eliot.me.us).

David M. J. Saslav is working at Oracle Corp. with Sharmini Nathan in the Desktop Products, Interoperability Testing Group. He married Melissa Smith (U. of Montana '84), the development director for the renowned Kronos Quartet. David is singing in two Bay Area choral arts groups and has started a small singing group from amongst the many musically inclined and highly talented Oracle employees, called the "SQL\*Notes". David writes, "Such harmonic confluence abounds out here in the Silicon Valley." One of the members is Christopher Andrews who, like David, was an MIT Logarithm; another was a Harvard Veritone, and a fourth was a Wellesley Widow (who married a fellow AI Lab member, Arthur Gleckler). David is also using MIDI as the basis of a small living-room business.

Peter H. Schmidt graduated with a master's from Sloan '92, and is now working at Midnight Networks, a network software development and consulting firm that he started with Art Mellor, '85, Hollie Schmidt, '87, SM '92, and John Reardon, '90. They have been in business for a little over a year, and are up to seven full-time people, with plans to hire more in the next few months. They are having a great time running their own business, but it does not leave them much time for anything else. Hollie and Peter are renting half of a big duplex in Waltham, five minutes from the office. Peter reports that Joan and Dave Kaffine have a new daughter, Meghan Elizabeth.

Jennifer Raeder-Devens and Douglas Devens are spending 1994 in Normandy doing research for Elf Oil Co. of France. . . . James Robinson graduated cum laude from St. John's University of Law in June of '92. James is currently an associate at the law firm of Meyer, Meyer, & Metli in Smithtown, N.Y.

Jeffrey Szilagyi, who is currently an associate at J.P. Morgan in New York, returned from Singapore in late September, where he saw Jesse Ho (Sloan SM '92) in Hong Kong. Jeffrey is also enjoying season tickets to Jets football and Knicks basketball games. He writes that work is going well, and that he is looking forward to recruiting at Sloan.

Robert Swiston and Greer Swiston, '87, write that Rob is doing well at FASTech, a young start-up that was recently ranked in *Inc.*'s top 500 companies (they were ranked #1 in New England!). Greer continues contract work at Fidelity Investments.

Steven Schondorf and his wife, Kristin, '91, write of their wedding in July 1993 at the Ford Mansion in Dearborn, Mich.

I would like to thank all of you who wrote, and encourage those of you who didn't to do so soon! Please write and if possible include



# PuzzleCorner

Some news from our readers, two of whom are more involved with puzzles now than ever. Mary Lindenberg will be reviewing problems for *Mathematics Teacher* magazine. Frank Rubin, now retired from IBM, "[does] puzzles full time, as both vocation and avocation." He runs the "Contest Center" at 59 DeGarmo Hills Road, Wappingers Falls, NY 12590.

## Problems

**M/J 1.** Jorgen Harmse, inspired by a previous Bridge column asking how good you could do with a lousy hand, has a reverse question basically asking how bad can things get when you have a great hand. Specifically Harmse writes: You hold the AKQ of spades, hearts, and diamonds and the AKQJ of clubs (I told you it was a great hand!). What is the highest contract the opponents can make against best defense?

**M/J 2.** Mark Oshin notes that, given a regular tetrahedron, there is a plane that is equidistant from the four vertices; in fact there are several such planes. How many?

**M/J 3.** The late Bob High was "behind the eight ball": A billiard ball with a small black dot on the exact top is rolled around a circle of radius equal that of the ball. Assume no slippage or twisting. Where is the black dot when the ball returns to its original position?

## Speed Department

A cute set from Pete Chandler. Note that the answer to the first one is given so that you get the idea. The remainder are answered at the end of the column, as usual for speed problems.



SEND PROBLEMS, SOLUTIONS, AND COMMENTS TO: ALLAN GOTTLIEB  
NEW YORK UNIVERSITY  
715 BROADWAY, 10TH FLOOR  
NEW YORK, N.Y. 10012,  
OR TO: GOTTLIEB@NYU.EDU

$\frac{I}{O} \quad \frac{I}{O}$	Le Vel	Y O J U S T M E	T O U C H ↓
CAKE	Knee Lights	Bridge Water	F R I E N D misunderstanding

## Solutions

**Jan 1.** Theodore Hoffman is dismayed to realize that he gains weight just by moving his scales. He writes:

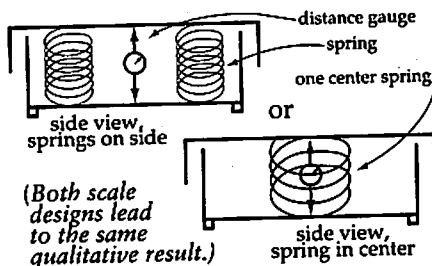
The puzzle surfaced when I moved my bathroom "Detecto" scales from a section of bare wood floor to a rug. Imagine my surprise when I found that, according to the scales, I had gained 10 pounds in the process of moving them. So, I made a few readings under varied conditions. Here they are:

OBJECT	SCALES LOCATION/READING ON SCALES			
	On floor or wood	On 3/8" foam pad	On 5/8" pile rug	On 3/4" wood on top of rug or foam
Scales alone	0	0	0	0
Me	145	153	155	145
2 weights	18 1/2	19 1/2	19 3/4	18 1/2

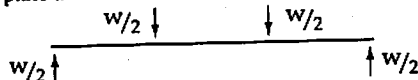
(The Detecto scales register from 0 to 255. The overhang of the weight-carrying top platform clears all surfaces by 3/8".)

This seems to be one for the M.E.s. Len Nasser writes: Although you've probably heard from every other M.E. grad, I'll add my response.

Assuming that the Detecto scale has feet on the bottom, the explanation for the differing weight values is simply due to bending of the bottom plate, a classic beam problem. The figures below illustrate the assumed design:

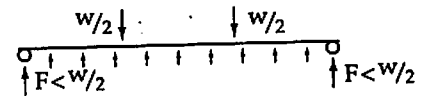


When a person stands on top of the scale on a solid floor, the forces acting on the bottom plate are:



This causes the plate to bow downward, increasing the distance for the distance gauge. However, since the scale is most likely calibrated this way, it is accounted for in the weight determination.

On a carpet, the compressed carpet material between the scale feet also exerts an upward force, tending to keep the bottom plate flatter:



This causes the distance gauge to read less of a distance, and hence give a greater "weight." And the thicker the carpeting, the greater this effect. There are three ways I can think of to eliminate the problem: (1) use a rigid (i.e., thick) bottom plate; (2) put wide feet directly under the springs; or (3) eliminate the feet altogether.

(By the way, the beam deflections are all given in *Mark's Standard Handbook for Mechanical Engineers.*)

**Jan 2.** Donald Savage asks: The present U.S. flag has 50 stars arranged in alternate rows of 6 and 5. If Puerto Rico were to

become a state, what would be an appropriate arrangement of the stars on the revised U.S. flag?

Avi Ornstein suggests a 7x9 rectangle with truncated corners and Harry Hochheiser suggests alternating rows of 8 and 9. Winslow Hartford noticed that the latter solution is given by Marilyn vos Savant in the February 13 issue of *Parade Magazine*.



## Other Responders

Responses have also been received from C. Helin, P. Lally, P. Molten, K. Rosato, R. Sacks, S. Silberberg and D. Weidman.

## Proposer's Solution To Speed Problem

1. Circles under the eyes
2. Split level
3. Just between you and me
4. Touchdown
5. Upside-down cake
6. Neon lights
7. Water under the bridge
8. Misunderstanding between friends

# MIT LIFE INCOME FUNDS

## MR. C. WILLIAM RITTERHOFF

HOME: Vero Beach, Florida

CAREER: Bill left MIT as a junior in 1943 when the U.S. Army Enlisted Reserve Corps was called to active duty. On the day he graduated from Officer Candidate School as a second lieutenant in 1944, he married Margery McKenney (Wellesley '44). He returned to MIT after the war and completed his degree in mechanical engineering in 1947.

In 1948, starting in a supervisory position at the Sparrows Point, Maryland, plant, he began his career with Bethlehem Steel Corporation. He retired in 1982 as an executive vice president and director of the corporation in Bethlehem, Pennsylvania.

During their 43-year marriage, the Ritters have raised three children: Leslie, William, Jr. and James. After his wife's death, Bill married Marita C. Halsey. They moved to Florida and started their travels with a 27,000-mile trip around the world by Concorde. They plan to continue their world travels.



LIFE INCOME FUND:  
C. William Ritterhoff  
(1944) Fund in the  
Karl Taylor Compton  
Pooled Income Fund.

QUOTE: I feel a great indebtedness for the superior education I received at MIT. For my 50th reunion, I gave a great deal of thought about giving a meaningful gift.

A charitable remainder trust made this possible. It is a win-win situation for all concerned — MIT gets a significant gift and we get income for life. I hope my classmates will inquire to see how such a trust can do the same for them.

For more information about gifts of capital, write or call D. Hugh Darden, W. Kevin Larkin or Frank H. McGrory at MIT, 77 Massachusetts Avenue, Room 4-234, Cambridge, Massachusetts 02139-4307; (617) 253-3827.

Photo: Sudden Images, Vero Beach, Florida

## NOR'S PROFILE

# PuzzleCorner

trip to Manila (14 degrees N latitude) around the end of April, he calculated that the sun should be directly overhead around noon, and indeed it was. For a spherical earth in a circular orbit around the sun with the earth's axis tilted at 23 degrees with respect to its orbital plane, find an exact trigonometric expression to give the latitude at which the sun is directly overhead (around noon) as a function of time of year.

## Speed Department

Hillary Fisher wants to know how many times a year does Earth revolve.

## Solutions

F/M 1. We begin with a bridge problem that Jerry Grossman reports arose in a Sarnia, Ontario, sectional pairs game.

	North	
	♠ K 10 9 6 4	
	♥ 3	
	♦ K Q 10 7 4 2	
	♣ K	
West		East
♠ J 8 3		♠ Q 7
♥ 9 5 2		♥ K 10 8 7 6
♦ 8 5		♦ 9 3
♣ J 9 6 5 2	South	♣ Q 10 8 4
	♠ A 5 2	
	♥ A Q J 4	
	♦ A J 6	
	♣ A 7 3	

The contract is an ambitious 7 NT. West leads the 2 of clubs. How do you bring home the contract?

George Blondin managed to squeeze this one into his schedule; indeed, in some cases, he did it twice.

Since the heart finesse works, declarer has 12 easy tricks. Another trick must come from heart jack, spade 10 or small club. This is done with a 3 suit squeeze on East at trick 9 followed, if needed, by a 2 suit squeeze on West at trick 11.

First nine tricks are club K, spade ace, club ace, all the diamonds.

	North	
	♠ K 10 9	
	♥ 3	
	♦ x (lead to trick 9)	
	♣ -	
West		East
♠ J x x		♠ Q
♥ -		♥ K 10 9
♦ -		♦ -
♣ J x	South	♣ Q
	♠ x	
	♥ A Q J	
	♦ -	
	♣ 3	

If East discards a heart, heart king falls to ace setting up heart jack.

If East discards a spade, spade 10 is made on a finesse.

If East discards a club, South discards heart jack. Now, when the heart queen and ace are lead, West must discard from S J x or C J.

Club discard sets up South's 3. With spade discard, a lead to spade king drops queen and jack, setting up spade 10 for last trick.

F/M 2. The late Robert High played a game in which two opponents took turns rolling a die. The loser is the first one not to improve on the other player's last roll. What is the probability that the first player will win?

A slick solution from Kenneth Bernstein who realized that to solve the problem you need only solve the problem, which you can do by solving the problem . . .

Let P(n) be the probability that the player whose turn it is will win when the current roll to beat is n. This must be equal to the probability that this player will roll m (with m>n) and that the other player will *not* win. Thus:

$$P(n) = \sum_{m=n+1}^6 (1/6)(1 - P(m))$$

This recursion relation is easily solved: P(m) = 1 - (5/6)<sup>6-m</sup>. At the beginning of the game n=0. Thus the desired probability is 1 - (5/6)<sup>6</sup>.

If the regular die is replaced with an unbiased k-sided die, the above procedure leads to the probability 1 - ((k-1)/k)<sup>k</sup>. This expression is relatively insensitive to k, varying from a high of 0.75 (for k=2) to a low of 1-1/e=0.63 (for k=∞).

F/M 3. Dudley Church recommends the following problem from *The Puzzling Adventures of Dr. Ecco*, written by my NYU colleague, Dennis Shasha.

There are 13 logicians in a room, all wearing jackets. On the front of each logician is a name tag and all the logicians have different names. On the back of some of the jackets is a big X. Each of the logicians can see the back of everyone else's jacket, but not his own. Initially, someone comes into the room and says, 'At least one of you has an X on his back.' The problem is for each logician to figure out whether he has an X or not.

They do this in the course of several rounds. In each round, the logicians who have not yet decided whether they have an X on their backs speak in alphabetical order. Each logician either says:

I don't know whether I have an X on my back, or I don't have an X on my back, or I do have an X on my back and at least one other logician does also but has not yet said that he does or I do have an X on my back and all other logicians who do have already said so.

They are not allowed to say anything else.

As soon as a logician decides, that is, announces, that he does or doesn't have an X on his back, he stops speaking. This is what happens. In the first round, four people decide. In the second round, three people decide. One decider in the second

round says there are more Xs. In the third round, the remaining six decide.

The following lucid solution is from Ira Gershkoff.

I assume the question is how many Xs were there at the start of the game, and how did each come to the conclusion that he did or did not have an X on his back.

If there were only one X, that person would see no other Xs. He would be able to decide immediately, and announce that there are no other Xs. Everyone else would decide in turn, and the game would require two rounds at most.

If there were only two Xs, the first of them to speak would not be able to decide, but the second one would know he had an X, because he would see only one X, and would realize that if he did not have an X on his back, the first logician with an X would have been able to decide. Once the second X logician decides, each remaining logician in that round knows that the decider is the last X to speak that round, since if there were more, he would not have been able to decide. Therefore each of the remaining logicians does not have an X and can so announce. In the second round, the remaining Xer sees no more Xs and knows that he has the remaining X, but everyone else must now wait for the remaining Xer to decide and announce whether there are more Xs or not. (With only two Xs there are no others, but the other logicians don't know this.) Those logicians who must speak before the remaining Xer cannot decide until the Xer decides. This game might take three rounds but does not meet the requirement that one of the second round deciders states there are more Xs.

If there are three Xs, the last logician with an X to speak would see that the other two were not able to decide, and that there are no more Xs in view. He would therefore know that he had an X, and so announce. The remaining logicians in the first round would then decide that they do not have Xs. The second and subsequent rounds would play like the two-X scenario above.

If there are four or more Xs the game must go at least four rounds, which does not fit the data of the problem. Therefore there must be three Xs, and the X logicians are the 1st, 7th, and 10th speakers. The last Xer to decide must be the first speaker, or else the game will go four rounds.

## Other Responders

Responses have also been received from R. Bishop, F. Carbin, J. Chandler, T. Curtis, S. Feldman, M. Fountain, C. Gabor, I. Gershkoff, J. Grossman, J. Harmse, W. Hartford, R. Hess, R. Holt, D. Lang, C. Larson, G. Marks, S. McCartney, D. McMahon, R. Moeser, L. Nissim, P. Rauch, J. Rich, K.L. Rosato, G. Roskes, J. Rudy, I. Shalom, L. Stefens, A. Taylor, D. Van Patter, D. Wachsman, K. Wise, and K. Woods.

## Proposer's Solution to Speed Problem

366 (367 in leap years) on its axis (definition 1), relative to the stars, plus once around the sun (definition 2), or 367 (368) plus a fraction.

# MIT LIFE INCOME FUNDS

## MRS. HOLLAND H. HOUSTON

HOME: Lacey, Washington

**CAREER:** Born in Spokane, Mrs. Houston met her husband, Holland, a 1924 graduate of Course 6A, when he was travelling as an electrical engineer with the Federal Power Commission and she was secretary to the director of the Washington State Public Service Commission. They married in 1940 and settled in Seattle, where Mr. Houston served as president of the MIT Club of Puget Sound. In 1948, the governor appointed Mr. Houston state power commissioner, a position he held during the turbulent struggles among California, Oregon, Washington, Idaho, Montana, public and private power companies and others over water rights to the Columbia River and rights to the power generated by the Bonneville Power Authority and the Grand Coulee Dam. When the governor's term of office ended, Mr. and Mrs. Houston retired to their farm overlooking a bay on Puget Sound. Mr. Houston died in 1972.

**LIFE INCOME FUNDS:** Frances A. Houston Gift Annuities, to be added to the Holland H. (1924) and Frances A. Houston Fund.

**QUOTE:** We have no close relatives, and since Holland had so loved MIT and I loved my associations with it, I had no thought but to make MIT the sole beneficiary of my will. I only recently realized that I could make a gift to MIT and retain enough income to live in the retirement community I am enjoying now. When I asked MIT for help in setting up the gift, Mr. Darden responded with MIT precision and with thoughtful kindness. I now have several gift annuities and peace of mind.

**For more information** about gifts of capital, write or call D. Hugh Darden, W. Kevin Larkin or Frank H. McGrory at MIT, 77 Massachusetts Avenue, Room 4-234, Cambridge, Massachusetts 02139-4307; (617) 253-3827.

Photo: Richard Howard



## DONOR'S PROFILE

## Deceased

The following deaths have been reported to the Alumni/ae Association since the *Review* last went to press:

William H. Vogt, '19; November 25, 1993; Rochester, N.Y.  
Max S. Salomon, '22; June 2, 1992; Margate, Natal, South Africa  
George W. Jones, '24; February 1, 1994; Leesburg, Fla.  
Julian T. Baldwin, SM '24; January 10, 1992; West Chester, Pa.  
Arthur G. Hall, '25; November 19, 1993; Wauwatosa, Wisc.  
Andrew George Olsen, '25; January 1, 1994; Daytona Beach, Fla.  
Bruno E. Roetheli, '25, SM '27; December 26, 1993; Wellsboro, Pa.  
Charles Kingsley, Jr., '27, SM '32; February 20, 1994; Pittsburgh, Pa.  
Clara F. Smyth, MPH '27; December 19, 1993; Falmouth, Mass.  
Raymond P. Delano, Jr., '29; November 11, 1993; North East, Md.  
Laurence L. Waite, '29; December 26, 1992; Arcadia, Calif.  
Carlton E. Wood, '29; February 5, 1994; Santa Maria, Calif.  
Lloyd T. Goldsmith, SM '29; August 14, 1993; Sherman Oaks, Calif.  
Ellis Edlow, '31; November 13, 1993; Pompano Beach, Fla.  
Howard P. Emerson, '31; February 15, 1994; Zachary, La.  
Alfred M. McClure, SM '31; December 4, 1993; Tucker, Ga.  
James R. Merrill, '33; January 26, 1994; Santa Barbara, Calif.  
Fred A. Bickford, SM '33, PhD '33; December 27, 1991; Painted Post, N.Y.  
Robert J. Stoddard, SM '33; December 4, 1990; Inver Grove Hts., Minn.  
Graydon L. Abbott, '34; January 14, 1994; San Jose, Calif.  
Raymond P. Holland, Jr., '34; November 29, 1993; Roswell, N.M.  
James H. Kimberly, '34; January 29, 1994; West Palm Beach, Fla.  
Ruth MacFarland, '34; February 21, 1994; Stafford Springs, Conn.  
Dillard Jacobs, SM '34; October 28, 1988; Nashville, Tenn.  
Baldwin Anciaux, '35; January 29, 1994; Seattle, Wash.  
Edward H. Taubman, '35; January 22, 1994; Baltimore, Md.  
Karl P. Goodwin, '37; February 24, 1994; Needham, Mass.  
Irwin G. Freyberg, '38; December 16, 1993; Chappaqua, N.Y.  
George B. Wood, '38 December 26, 1993; San Diego, Calif.  
Humbert P. Pacini, '39; February 7, 1994; New Hartford, N.Y.  
John H. Bech, Sr., '40; February 18, 1994; Wilton, Conn.  
John J. Casey, '40; February 15, 1994; Port Washington, N.Y.  
Merlin L. De Guire, SM '40; June 1984; Clearwater, Fla.  
Luis G. Jimenez Michelena, '41; December 14, 1993; Madrid, Spain  
Alan E. Surosky, '41; January 7, 1994; Winter Springs, Fla.  
Karl F. Cast, SM '41; September 26, 1993;

Hendersonville, N.C.  
Milton Kaplow, '42; September 2, 1989; White Plains, N.Y.  
Duncan M. Wilson, '42; November 1993; Potsdam, N.Y.  
Newton I. Steers, Jr., '43; February 11, 1993; Bethesda, Md.  
Robert P. Dodds, '44; December 21, 1993; Encinitas, Calif.  
Floyd M. Jennings, MCP '44; September 9, 1992; Seattle, Wash.  
Geno DiBagno, '45; November 22, 1990; Greensburg, Pa.  
Richard J. Howard, Jr., '45; January 30, 1994; Buffalo, N.Y.  
James V. Chabot, '46, SM '65; December 27, 1993; Blacksburg, Va.  
Alan H. Yates, SM '46; November 6, 1993; Centerport, N.Y.  
James S. McCoy, '47; July 30, 1993; Detroit, Mich.  
Charles Norville Payne, SM '48; February 9, 1993; Annapolis, Md.  
David R. Israel, '49, SM '51; February 15, 1994; Alexandria, Va.  
Herbert G. Lauterbach, PhD '49; January 25, 1994; Wilmington, Del.  
Grant H. Strong, '50; June 22, 1992; Richland, Wash.  
Peter C. Darin, Jr., '51, SM '60; February 7, 1994; Seneca, S.C.  
Edmund R. Renier, '51, SM '52; February 6, 1994; Lake Forest, Ill.  
Albert H. Rooks, '51; December 22, 1993; Seattle Wash.  
Alfred A. Wolf, Jr., '53; January 22, 1994; North Truro, Mass.  
Charles R. Sandlin, NE '53; January 12, 1994  
James J. Arnold, '54; October 5, 1993; Tulsa, Okla.  
Frank J. Leeds, '54; July 26, 1991; Milton, Mass.  
Gerard De Saussure, PhD '54; October 29, 1991; Oak Ridge, Tenn.  
Satyaki Basu, SM '55, ScD '60; June 5, 1985; Calcutta, India  
Svein Hovind, '56; July 15, 1993; Oslo, Norway  
Charles J. Novak, '57; January 21, 1994; Allendale, N.J.  
Mary R. Rocchio, '57, SM '65; January 7, 1994; Sherborn, Mass.  
David M. Ross, '58; 1994; Miami, Fla.  
Robert Booth, '60; August 8, 1993; Tacoma, Wash.  
Albert S. Trube, '60; January 29, 1989; Houston, Tex.  
John R. Talbot, SM '62; February 1, 1994; Westfield, N.J.  
William G. Kay, Jr., SM '63; February 5, 1994; South Dartmouth, Mass.  
Finis Morgan, '64; October 20, 1993; Alexander City, Ala.  
Stephen L. Snover, '65; February 11, 1994  
Donald C. Watters, SM '67; February 2, 1993; Johns Island, S.C.  
Daniel J. Harnett, '68; November 2, 1992; Los Angeles, Calif.  
Rolf Steendal, SM '68; December 7, 1993; Wrentham, Mass.  
Charles G. Lange, PhD '68; June 25, 1993; Los Angeles, Calif.  
John F. White, PhD '73; January 13, 1994; Summit, N.J.  
Thomas F. Vasak, '74; 1993  
John C. Dunlap, '79; March 27, 1993; Fort Lauderdale, Fla.  
Owen C. Zidar, '84; April 24, 1993; Bloomfield Hills, Mich.  
Xiu-Bing Wei, SM '87; December 7, 1993; Malden, Mass.

It has been a year since I reviewed the criteria used to select solutions for publication. Let me do so now. As responses to problems arrive, they are simply put together in neat piles, with no regard to their date of arrival or postmark. When it is time for me to write the column in which solutions are to appear, I first weed out erroneous and illegible responses. For difficult problems, this may be enough; the most publishable solution becomes obvious. Usually, however, many responses still remain. I next try to select a solution that supplies an appropriate amount of detail and that includes a minimal number of characters that are hard to set in type. A particularly elegant solution is, of course, preferred, as are contributions from correspondents whose solutions have not previously appeared. I also favor solutions that are neatly written, typed, or sent via e-mail, since these produce fewer typesetting errors.

## Problems

**JUL 1.** Jorgen Harmse is greedy. He wants South to make a bid of 1NT redoubled with 6 overtricks (for the highest possible declare score) against best defense after a reasonable auction. Your editor is not a Bridge guru, but when I become omnipotent you will get more points for bidding and making 7NT redoubled than for bidding 1NT redoubled and making 7.

**JUL 2.** Nob Yoshigahara wants you to find three positive integers. 1) The smallest integer having the property that the first 10 digits of its square root are unique. 2) The smallest integer whose square consists of 10 digits all unique. 3) The smallest integer having the property that the first 10 digits of its reciprocal are unique.

**JUL 3.** Timothy Malony is not at all afraid of sunburns. Just before a business



SEND PROBLEMS, SOLUTIONS, AND COMMENTS TO ALLAN J. GOTTLIEB, '67, THE COURANT INSTITUTE, NEW YORK UNIVERSITY, 251 MERCER ST., NEW YORK, N.Y. 10012. OR TO: GOTTLIEB@NYU.EDU

served as executive director of the Southern Growth Policies Board, an economic think tank serving the 14 governors of the southern states and located in Research Triangle Park, N.C. White served as the chief policy planner for higher education in the U.S. Department of Education during the Carter administration.

Albert Teich, '64 (VIII), PhD '69, and Mark S. Frankel are co-editors of *The Genetic Frontier: Ethics, Law, and Policy* (American Association for the Advancement of Science, 1994). The book is a collection of 15 essays that look at the implications of the Human Genome Project, begun in 1990 at a cost of \$3 billion. *Alumni* may send info for *Course News* to [mitalum@mitvmc.mit.edu](mailto:mitalum@mitvmc.mit.edu)

## **XVIII** MATHEMATICS

Robert R. Reitano, PhD '76, writes: "I was promoted to second VP at the John Hancock in March 1994. I manage the Investment Policy and Research Department." . . . Jerrold Grossman, PhD '74, a professor in the Oakland University Mathematical Sciences Department, is the 1993-94 recipient of the Award for Distinguished College or University Teaching of Mathematics. The award is given by the Michigan Section of the Mathematical Association of America. Grossman, on staff of Oakland since 1974, has written a textbook in discrete mathematics, two manuals for students and instructors, and numerous articles. His previous honors include OU Teacher of the Year, an Outstanding Teacher Award from the Michigan Association of Governing Boards, and an OU Alumni Association Award for Outstanding Academic Advising.

Charles G. Lange, PhD '68, died on June 25, 1993. Lange was with the University of California at Los Angeles and a member of the the American Mathematical Society for 45 years. No further information was provided. . . The Association of Alumni and Alumnae has been notified that Grant H. Strong, '50, of Richland, Va., died on June 22, 1992. No further information was provided. *Alumni* may send info for *Course News* to [mitalum@mitvmc.mit.edu](mailto:mitalum@mitvmc.mit.edu)

## **XX** APPLIED BIOLOGICAL SCIENCES

From Holtwood, Pa., Harmon L. Liebman, SM '54, writes: "During the past year, I've had the good fortune to have traveled to the Mideast and Africa as well as within the U.S. on matters of industrial interest. Some of this was as a paid consultant, some just to help out a bit in the area of food dehydration and freeze-drying. Hopefully, we'll see some of the food technology group in Atlanta during July '94." . . . Laura Green, PhD '81, reports: "I am president and senior scientist of the consulting firm, Cambridge Environmental, Inc. The company specializes in toxicology and risk assessment, environmental modeling, and scientific problem-solving. I am always happy to hear from other scientists and engineers interested in consulting."

*Alumni* may send info for *Course News* to [mitalum@mitvmc.mit.edu](mailto:mitalum@mitvmc.mit.edu)

## **XXII** NUCLEAR ENGINEERING

From Rome, Italy, Arnaldo Turrinchia, SM '62, writes: "I am head of the nuclear systems group at ENEL SpA Construction Department. I design work on containment systems for advanced nuclear power plants." . . . Sadik Kakac, SM '59 (II), SM '60, writes from Coral Gables, Fla.: "I am professor and chairman of the Department of Mechanical Engineering at the University of Miami. Last January I received the 1994 Science Award of the Association of Turkish-American Scientists. The award recognizes outstanding scientific work and teaching accomplishments as an educator." . . . Frederick W. Buckman, PhD '70, was named president and CEO of PacifiCorp of Portland, Ore. He was president and CEO of Consumer Power Co. in Jackson, Mich.

Xiu-Bing Wei, SM '87, of Malden, Mass., died on December 7, 1993. She was an ear, eye, and nose specialist, and plastic surgeon, as well as a laser medicine researcher at MIT. She won several awards for her research on the clinical applications of lasers on oral-facial cancer. She was a founding fellow of the American Society for Laser Medicine and Surgery and a member of the executive board of the International Society for Laser Medicine and Surgery. Wei was an active member of the Boston Chinese community. She also advised the Massachusetts Office of International Trade and Investment.

*Alumni* may send info for *Course News* to [mitalum@mitvmc.mit.edu](mailto:mitalum@mitvmc.mit.edu)

## **TPP** TECHNOLOGY AND POLICY PROGRAM

Eric Pallais, SM '83, is the construction manager for GTM on half of one of the largest bridges in the world, the new Severn Crossing. He and his wife, Natalie, are expecting their third child this summer. . . . Richard Davies, SM '84, has been working for British Rail on its privatization program and he has just returned from a mission to the Czech Republic. . . . Philippe Jolly, SM '85, and Sabine Abravanel got married on March 5, 1994. Best wishes from everyone at TPP! . . . Kevin Fitzgerald, SM '86, is in his last year of a doctorate in demand-side management of electric power and would appreciate any job offers. . . . Henry Elkington, SM '88, a consultant from the Boston Consulting Group in telecommunications, is married to Sabina and had a daughter last summer. . . . Simon Stokes, SM '88, was married in September to Sarah "Buzz" Burrows, and continues European law as a solicitor for McKenna and Co. in London. . . . Seab Adamson, SM '91, is an environment and energy consultant for London Economics, and has just returned from a three-week mission to China. . . . Nick Mabey, SM '93, has obtained a post as research fellow at the London Business School doing research into the economics of global climate change. At the same time, he is studying for a PhD in environmental economics at University College in London.—Richard de Neufville, TPP, MIT, Room E40-252, Cambridge, MA 02139

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# PuzzleCorner

**O**ops. I am sorry to say that there was a typesetting error in the APR 1 problem resulting in a Bridge hand that could not be made. The good news is that our clever readers were able to solve the problem since it was worded "Jorgen Harmse wonders what dummy should play to the first trick." Answers included "Taps" and "What Kind of Fool Am I" as well as correctly guessing the typo. However, I am reprinting the correct problem as A/S 1 below.

## Problems

**A/S 1.** As mentioned above the problem was misprinted (the Spade 8 should have been an Ace). The correct problem is:

In a high-stakes game of rubber bridge with N-S vulnerable, West leads the spade king against 6NT. Jorgen Harmse wonders what dummy should play to the first trick?

- ♠ A 3 2
- ♥ A K Q 7
- ♦ 7 6 5
- ♣ 5 4 2
- N
- S
- ♠ 5 4
- ♥ 6 3
- ♦ A K Q 4
- ♣ A K Q J 6

**A/S 2.** Frederick Furland wants you to show that two WRONGS can add up to a RIGHT (at least cryptarithmically).

**A/S 3.** Here's one from Jeff Kenton (and his mother?).

Suppose someone offers to play you a game with three specially made dice. He tells you that each die has from 1 to 6 spots on each of its 6 faces, but that the faces are not necessarily all different. The dice are "fair" in that each face has a 1/6 chance of being on top when its die rolled. If you agree to play (but not before), he will let you examine the

dice and choose one. He will then choose a different one and pay you 6 dollars each time you roll a higher number than he does. If he rolls higher, you pay him 5 dollars. Should you ignore what your mother told you about betting against people with funny dice, and play the game?

## Speed Department

Speedy Jim Landau asks how, in the 1992 baseball season, did

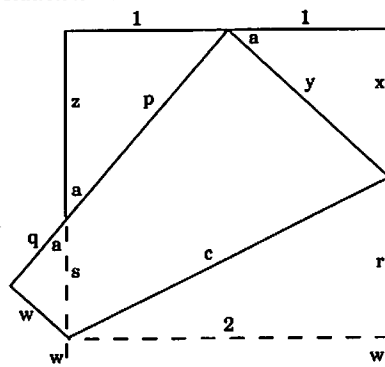
- (1) Tom Glavine have a 13-game winning streak, yet lose a game in the middle of it?
- (2) Bip Roberts have a 10-for-10 hitting streak, yet make an out in the middle of it?
- (3) Dan Gladden make five consecutive outs—in one inning?
- (4) The Red Sox make a double play without a ball being hit?

## Solutions

**APR 1.** As mentioned above this problem was misprinted and a correct version is given as the first problem this issue. Kudos to Tom Harriman for "Taps" and to Edward Sheldon for "What Kind of Fool Am I."

**APR 2.** Eugene Sard has a square sheet with side 2, which he has folded so that a vertex falls on the midpoint of an opposite side. How long is the fold line?

The following beautifully drawn geometrical solution is from Frederick Furland.



With the fold,  $x+y=2$  and with the triangle shown,  $y^2=x^2+1$ . Solving,  $x=3/4$ . The three similar triangles have identical angles,  $a$ , as shown. By similar triangles  $z=4/3$ . Then, solving that right triangle gives us  $p=5/3$ . Taking  $p$  from the length of a side, 2, gives us  $q=1/3$ . Again by similar triangles  $w=qx=1/4$ .

Now, since we know  $w$  and  $x$ ,  $r$  is seen to be equal

to 1. Then solving the right triangle  $c^2=r^2+2^2$ , we find that the length of the crease,  $c$ , is  $\sqrt{5}$ .

**APR 3.** Albert Mullin writes that real-number constants abound in mathematics, physics, chemistry, and engineering. They provide a "firmament" for computational activities. Here is a *new* real-number constant that you may find amusing. Define  $f_n$  as follows

$$f_1 = \pi$$

$$e^{f_2} = \pi^\pi$$

$$e^{e^{f_3}} = \pi^{\pi^\pi}$$

and so on. Put

$$F = \lim_{n \rightarrow \infty} f_n$$

Surely this limit exists. Further, convergence is *super* fast. The problem is to compute  $F$  to several decimal places using just a hand-held calculator.

Larry Kells shows us why the convergence is *super* fast. He writes: If your "hand-held calculator" has scientific functions, I easily get  $f_2=3.59627500$ ,  $f_3=3.731443701$ ,  $f_4=3.734676871$ ,  $f_5=3.734676871$  so I have already converged. Convergence is expected to be this fast because some algebraic and logarithmic manipulations show that (all logs are base  $e$ )

$$f_4 = \log(\log(\pi^{\pi^\pi} \log(\pi)))$$

while

$$f_5 = \log(\log(\pi^{\pi^\pi} \log(\pi) + \log(\log(\pi))))$$

Since

$$\pi^{\pi^\pi} \log(\pi) = 1.53412599 e18$$

while

$$\log(\log(\pi)) = 1.351687016$$

19 orders of magnitude smaller,  $f_4$  and  $f_5$  would be computed differently in only about the 19th decimal place. If you generalize this problem by replacing  $\pi$  with  $x$ , as  $x$  becomes large the solution asymptotically approaches

$$F(x) \sim x \ln(x) + \log(\log(x))$$

## Other Responders

Responses have also been received from G. Blondin, F. Carbin, J. Chandler, J. Cote, W. Dickinson, M. Fountain, D. Garcia, M. Gennert B. Geyer, J. Grossman, T. Harriman, W. Hartford, C. Helin, A. Hendrickson, R. Hess, R. Hoffman, M. Junker, M. Lindenberg, G. Marks, D. McMahon, R. Ovellette, J. Parks, K. Rosato, M. Seidel, J. Shelley, A. Silva, L. Steffens, H. Stern, A. Taylor, D. Wagger, N. Wickstrand, and K. Woods.

## Proposer's Solution to Speed Problem

Tom Glavine lost the All-Star Game in the middle of his streak. Bip Roberts made an out during a rainout in the middle of his streak. Dan Gladden first produced all three outs for his team with a double play and a fly ball and then he made the first two outs in the next half-inning, by catching a fly ball and throwing out a runner. The Red Sox's double play started with a

*Continued on Page MIT 40*



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# MIT LIFE INCOME FUNDS

## MR. CLAUDE W. BRENNER

HOME: Lexington, Massachusetts

**CAREER:** With his bachelor's ('47) and master's ('48) degrees in aeronautical engineering, Mr. Brenner went to England where he joined de Havilland Aircraft as an aerodynamicist working on early jet aircraft. MIT drew him back to Cambridge, however, and he joined the Aero-Elastic and Structures Research Laboratory as a research engineer. He then entered the aerospace and defense electronics industry, and rose to the position of chief engineer and later general manager of a division of EG&G.

In the 1970s, he went into several start-up ventures, serving first as vice president and general manager of Laser Graphic Systems Corporation and then as vice president of operations of the Northeast Solar Energy Center. He is now president of his own firm, Commonwealth Energy Group, and consults for companies throughout the country.

Mr. Brenner has served MIT as president of the Alumni/ae Association and member of the corporation, and is now a member of two visiting committees, president of his class, and a member of the MIT Club of Boston's Board of Governors.

**MIT LIFE INCOME FUND:** The Claude W. Brenner Fund in the Maclaurin Pooled Income Fund.

**QUOTE:** MIT has been woven into the fabric of my life since my freshman days. To continue to be a part of the vitality, the excitement, the unremitting success of our remarkable enterprise is enormously satisfying. To be able to invest to secure its future and at the same time to benefit financially is enormously rewarding. What better way to sustain a life-long connection — and to say "thank you."

For more information about MIT Life Income Funds, write or call D. Hugh Darden, W. Kevin Larkin or Frank H. McGrory at MIT, Room 4-234, 77 Massachusetts Avenue, Cambridge, Massachusetts 02139-4307; (617) 253-3827.

Photo: Richard Howard



D O N O R F I L E



**TURKEY, ANCIENT AND JUST A LITTLE LESS ANCIENT:** Below, Joe Padanilam, '92, stands before the Amphitheatre in Ephesus, where Saint Paul delivered one of his epistles to the Christian congregation.



Above, the Aya Sophia, originally built as a Christian church and later converted to a Moslem mosque, serves as the backdrop for (from left) Marisa Hendren, Umit Kumcuoglu, '94, and Joe.

'90. He also saw his best friend, Partha Seshiah, who has been working as a research technician at Johns Hopkins and is planning to start graduate school this fall in molecular biology. Last August, Joe saw Kavita Aggarwal, who recently finished her second year at Cornell medical school, before he flew off to Turkey where he spent time with Asli Sozen, Umit Kumcuoglu, '94, and Gun Kerestici, who is now at the Sloan School. Joe says that he thoroughly enjoyed Turkey with its many mosques and minarets, bazaars, ancient cathedrals, and cafes. He spent two weeks in Istanbul and a week in southern Turkey in the Biblical city of Ephesus. After Turkey, Joe went to San Francisco and met up with Partha again and Wendy Yee. Wendy just finished her second year in the neuroscience PhD program at Johns Hopkins. While in San Francisco, Joe saw a few other alums including Michael Feldman, '89, and Zandra Cheng, '93. Lastly, Joe spent last New Year's with Dave Towner, Sue Raisty, Lucy Tancredi, '94, and Mike Geer, '88.

That's all for now folks! Write to me, your faithful secretary, Leslie Barnett, 42575 E. Hwy. 82, Aspen, CO 81611, or call (303) 920-1988.

**93**

Recent issues of the *Review* have been devoid of information on our class, and I hope to change that in the future. . . . James Hayde, Celia Fleming, and Lisa Vandermark

are all in the Edison Engineering Program. The program allows them to work while taking classes towards a master's at RPI. Celia and her fiancé have a new puppy named Rocket. . . . Suzelle Tardif has just finished her first year at BU Medical School. . . . Also attending medical schools in the Boston area are Mary Tsoi and Otway Louie. They are both going to

Tufts. . . Brooks Mendel couldn't get away from MIT and is going to MIT grad school in political sciences. He's living on Beacon Street with Dan Meghan. In the same building is Jason Hunter. Jason is working at Government Center in Boston and can frequently be seen working out at MIT.

In Connecticut, Avik Roy has finished his first year at Yale Medical School. . . . Patty Birgeneau is also at Yale, doing research on the ubiquitin pathway. In February Patty became engaged to Christopher Prince, '92. They plan to get married in July 1995. . . . Also in Connecticut, Thad Johnson and Maria Kilos both work for Mars and Co. doing strategic management consulting. . . . Across the country, Gwen Watanabe is going to graduate school at Stanford. . . . Andy Cassidy is also back in sunny California and having a good time. . . . Susan Scruggs married Alex Vergillio, '92, and she is currently teaching. . . . Yvonne Romero was working as a substitute teacher, but will be moving to Boston where she will be working in 10-100 on the MIT admissions staff.

Ivana Markovich has been doing a lot of travel lately. She often comes up to Boston to visit her sister Anna at Harvard. Recently she returned from a trip to Puerto Rico with Christina Boyle, '92, where they hiked in a rain forest, snorkeled, and ate coconuts. Ivana has also been to visit Chay Kuo, who is attending University of Chicago Medical School. He is reportedly working hard. . . . Karl Koschnitzke was complaining about all the snow he's shoveled in Phoenix, Ariz., where he is working for Allied Signal Aerospace in Tempe. . . . Michael Cabot is working in Japan for Fuji Silysia Chemical. . . . Edwin J. Adlerman is attending the University of Oklahoma where he is earning a PhD in the Department of Meteorology. He is researching a mesoscale numerical model that he plans to apply to the study of tornado genesis.

Erin Luckner, Jean Kim, Christine Guarino, and Amy Chiang are living together in New York City. They all journeyed to Mardi Gras this past March with Colleen Johnson. Colleen is continuing her studies at MIT. . . . Wendy Sanders has also recently moved to New York. She is working as a production assistant at the Childrens Television Workshop on Sesame Street CD-ROMs. . . . Kathleen Evanco is attending MIT for a graduate degree in the media arts and sciences. She and Brian Brown are engaged and are planning to be married in July 1995. He is currently working in Golden, Colo., for TI systems. His roommate is Lorin Jurow, who is also working for TI systems.—Mari Madsen, secretary, 12-16 Ellery St., #405, Cambridge, MA 02138, (617) 497-8602

## Puzzle

Continued from Page MIT 55

pickoff at first, included rundowns between every base, and was scored 1-3-6-9-5.

### CORRECTION:

Due to a printer's error in the solution for Jan 2 (*TR* May/June, p. MIT 55), the second 51-star arrangement for the U.S. flag was scrambled and lost a number of its stars. Below is the intended arrangement:

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ences as a science teacher at Chicago's DuSable High School. The article walked the reader through one of Bennett's days at school and noted that his motivational tools include handing out tickets for fruit or food to any student who answers questions correctly "or gets close or just shows some enthusiasm." One paragraph described Bennett's reaction to his discovery that one student did not know how many seconds were in a minute. Bennett responded casually, "OK, 60 seconds in a minute. Don't ever forget that anybody."

Adelina Yen works in the Management Consulting Services group of EDS. She lives just outside Washington, D.C., but spent three months this spring living in China Lake, Calif. Adelina attended the wedding of Leslie Fan to Kelvin Hao in Potomac, Md., in June 1993. Leslie just finished her third year of medical school at Columbia, where she and Kelvin met.

Belinda Schmolke returned to Zimbabwe after graduation to work for IBM there for two years. Since last fall, she has worked for IBM in South Africa, and now lives in Johannesburg. She writes that she interviewed with Bull Computers at MIT: "now three of my clients are from Bull Computers in South Africa!" In her letter, Belinda describes the "mindless violence" in South Africa in anticipation of the April elections. Belinda also comments on the importance of e-mail: "I am finally a real person; I have e-mail. I suffered for too long at IBM Zimbabwe without."

Andrei Saunders is a bond trader with Goldman Sachs in New York City. He says he recently saw *Wall Street* for the first time and noted that Hollywood had taken several liberties with the reality of the financial workplace. Says Andrei, "There are no Gordon Geckos."

Alfred Tom graduated from Stanford a year ago with a master's in electrical engineering. He currently works for Apple Computer in the Newton software group. . . . Scott Davie still works for Medtronic, Inc., but he has now returned home to Los Angeles. Scott spent nine months in Minneapolis and a summer at the Mid-America Heart Institute in Kansas City. Scott writes, "I'm working with physicians at Cedars-Sinai Hospital on defibrillation research and supporting pacemaker and defibrillator implants and patient follow-ups." He encourages classmates in the LA area to reach him at (310) 390-7763.

Janae and Andrew Frazier recently bought a house in Montclair, N.J. Andrew, a Navy lieutenant, junior grade, was stationed in Norfolk, Va., until June. Janae sends news about several classmates: John Grooms works with Proctor & Gamble packaging in Cincinnati, and recruited at MIT during the job fair sponsored by the National Society of Black Engineers. William Buckner married Candice Jennings, '90, in Jackson, Miss., in September 1992, and now works for GE in Pennsylvania. Ed Delpino lives in Texas, where he, too, is married. Wisdom Coleman is training at the Naval Flight Training School in Pensacola, Fla. Virginia John works for Hewlett-Packard in Palo Alto, Calif., and is preparing to go back to graduate school. Victoria Boyd and Tonia Hampton work for Mobil in Houston, Tex.

Thank you for the news! Please send in your letters and postcards reporting on your summer adventures!—Andrew Strehle, secretary, 566 Commonwealth Ave., #406, Boston, MA 02215, (617) 262-3495

# 92

Hey everyone! Hope your summer was good. Some of you will be heading back to school this fall for more fun and games and hardcore studying while others are continuing

with the jobs they've been at for a year or two. Whatever the case may be, we are all going on with relatively new adventures in our lives.

William Jimerson is currently managing director and equity partner in a small telecommunications company in Rochester, N.Y. The company is very new. Just started in December 1992, it has grown to a staff of six people and is poised to become a new player in the wireless communications industry. Good luck with its success.

Hui-Lin Lai is working in Taiwan at Esso Eastern, Inc., as a business development engineer. . . . Nikki Delaney is at CU/Boulder working towards a PhD in chemical physics. . . . Navy Ensigns Kurt Steltenpohl, Tim Salter, and Gus Gutierrez graduated from the Submarine Officer Basic Course last January. . . . Seth Cohen, whom I saw at a wedding of a mutual friend in July in Maryland, finished his second year at GW law school. He is an RA in one of GW's residence halls and is interning at the U.S. Attorney's office in Washington, D.C. . . . Kimberly Williams finished a master's in mechanical engineering at University of Illinois and is working for Motorola in Ft. Lauderdale, Fla.

In March I had the good fortune to visit Miguel Del Rio in Puerto Rico. Miguel is doing well working for an architect in Puerto Rico and planning to attend architecture graduate school this fall on the East Coast or maybe the West Coast. I saw him race in the Heineken International Cup Sailing Regatta while I was visiting. He got me on a friend's boat, so I could see the action up close. Miguel told me that Annie Kerr visited with him shortly before I did. He also informed me that

# ClassNotes

Raul Vila-Ramirez recently finished his second year of medical school at the University of Puerto Rico. Miguel left me with one special request—he wants to see the "Red-Head Demon" soon!

Kortney Leabourne graduated this spring from MIT with a master's in aero/astro and will be starting in the PhD program at Stanford this fall. She tells me Alpha Phi just celebrated its tenth year anniversary and 12 members from the Class of '92 showed up in Boston for the celebration. Amongst them were: Denise Purdie Andrews with her son Tyler, Erica Lane Van Dyke with her daughter Jasmine, Lisa Primiano, Barb Sigmund, Christy Kwon, Cyndi Evanko, Colleen Schwingel, Aileen Lee, Christine Ma, Roopa Mehendale, and Debbie Min, who will be at Stanford this fall as well.

Joe Padanilam finished a master's in mechanical engineering at MIT this spring. During his last two years at MIT, he has been rooming with fellow classmate and Burton Third Bomber alum, David Towner. Dave is in graduate school at Emerson College working towards an MFA in creative writing and is also working at the Cabot Science Library at Harvard. In the fall of '92, Joe was a groomsman at the wedding of Tony Thompson, '91, in Los Angeles. Deniz Yuret was a groomsman, too. Deniz is currently working on a PhD in computer science at MIT and is a floor tutor at Baker House.

Joe has seen a number of other MIT alums from various classes during the past couple of years. Last year, he got surprise visits from Pablo Pasteris, '90, and Chung "Donny" Ma,



*Just the MIT side of the wedding party (the groom was apparently banished from the photo for not attending MIT)—from left: Anand Mehta, '88, Mary Hou, '91, Tony Pangan, '89, Brian Lu, '91, Hugh Fuller, '89, Leslie (Fan) Hao, '91 (the bride), Adelina Yen, '91, Irene Chow, '92, Ellen Shen, '91, and Mike Fan, '92. Groom Kelvin Hao is not shown.*

# PuzzleCorner

Since this is the first issue of a new academic year, I once more review the ground rules under which this department is conducted.

In each issue I present three regular problems (the first of which is chess, bridge, go, or computer-related) and one "speed" problem. Readers are invited to submit solutions to the regular problems, and three issues later, one submitted solution is printed for each problem; I also list other readers who responded. For example, solutions to the problems you see below will appear in the February/March issue and this issue contains solutions to the problems posed in May/June. Since I must submit the February/March column in November, you should send your solutions to me during the next few weeks. Late solutions, as well as comments on published solutions, are acknowledged in subsequent issues in the "Other Respondents" section. Major corrections or additions to published solutions are sometimes printed in the "Better Late than Never" section as are solutions to previously unsolved problems.

For speed problems the procedure is quite different. Often whimsical, these problems should not be taken too seriously. If the proposer submits a solution with the problem, that solution appears at the end of the same column in which the problem is published. For example, the solution to this issue's speed problem is given below. Only rarely are comments on speed problems published.

There is also an annual problem, published in the January issue of each year; and sometimes I go back into history to republish problems that remained unsolved after their first appearance.

## Problems

OCT 1. We begin with a Bridge problem from Jorgen Harmse:



SEND PROBLEMS, SOLUTIONS, AND COMMENTS TO: ALLAN GOTTLIEB  
NEW YORK UNIVERSITY  
715 BROADWAY, 10TH FLOOR  
NEW YORK, N.Y. 10012,  
OR TO: GOTTLIEB@NYU.EDU

♠ A K 3 2  
♥ 9 8 3  
♦ A Q 10 T 6  
♣ 4 3

♠ 9 8 7  
♥ 10 7 x 2  
♦ 4 3 2  
♣ 7 6 2

You lead the deuce of hearts against 3NT, and your partner's ace brings down Declarer's king. Your partner leads the queen and Declarer discards. Explain the importance of your third heart (marked x).

OCT 2. Nob Yoshigahara has a color-based crypt-arithmetic problem. As usual, you are to substitute digits for letters to validate the following equations.  
YELLOW + YELLOW + RED = ORANGE  
RED x BLUE = YELLOW  
RED x RED = WHITE

OCT 3. Winslow Hartford writes that his misspent youth at conventions infested with salesmen convinced him to write the following in a column about cancer clusters for the *Charlotte Observer*: "Dollar-bill poker": This is a friendly scam practiced at conventions. As there are eight numbers on the bill and 10 digits in all, you'd think multiple digits would be rare. But of 10 bills drawn from my wallet, nine showed "clusters" (two full-houses, four two-pair, three one-pair). (The "operator" of this scam, having changed a \$50 bill in advance, is almost sure to have five of a kind). This report suggests a question for Puzzle Corner: How many random \$1 bills does the operator need to:

- have a 50% chance of 5 of a kind?
- have a 90% chance of 5 of a kind?

## Speed Department

George Blondin wishes to tell "Speedy Jim" [Landau] that there is an English word [kinda sorta] with SIX consecutive double letters. What is it?

## Solutions

M/J 1. Jorgen Harmse, inspired by a previous Bridge column asking how well you could do

with a lousy hand, has a reverse question basically asking how bad can things get when you have a great hand. Specifically Harmse writes: You hold the AKQ of spades, hearts, and diamonds and the AKQJ of clubs (I told you it was a great hand!). What is the highest contract the opponents can make against best defense?

Joseph Keilin shows us that things can really go bad even when "you've got the goods."

In no trump the opponents make zero tricks regardless of who is on lead and how the hand is played. In a trump contract the defense must take at least three trump tricks, so the best the opponents can make is 10 tricks, which is possible with the following layout in spades. (Four hearts or diamonds can be made with analogous layouts.)

		North (Vul)	
		♠ X X X	
		♥ X X X X X	
		♦	
		♣ X X X X X	
West			East
♠			♠ A K Q
♥	X X X X X	Contract: 4	♥ A K Q
♦	X X X X	spades by	♦ A K Q
♣	X X X X	South	♣ A K Q J
		South (Vul)	
		♠ X X X X X X X	
		♥	
		♦ X X X X X X	
		♣	

West's best lead is a club. Southruffs. South crossruffs diamonds and clubs three times ending in the South hand. At this point South and East each have three trumps. South keeps leading diamonds until East ruffs in. At this point South has three trumps and East only two. If East draws trump South can trump whatever East returns and make his remaining diamonds. If East returns a heart, South ruffs and continues diamonds, putting East in the same position as before. South ends up making three ruffs in the North hand and four ruffs and three diamonds in the South hand. If West had lead either a diamond or heart, the play is similar. South ends up in his own hand after ruffing three diamonds in the North hand and three hearts or clubs in the South hand. At this point he has four spades to East's three, although that hardly matters. He continues leading diamonds as before with the same result.

Although you asked for a maximum contract and not maximum score, the maximum score can be achieved with a contract of one spade (or heart) doubled and redoubled for a score of 770 plus game bonus in contract bridge and 1270 in duplicate.

M/J 2. Mark Oshin notes that, given a regular tetrahedron, there is a plane that is equidistant from the four vertices; in fact there are several such planes. How many?

The following solution is from Charles Wampler:

Continued on Page MIT 60

# MIT LIFE INCOME FUND

## MRS. CONCORDIA CHEN

HOME: Hong Kong and  
Hopewell Junction, New York

CAREER: While working as a systems engineer for Honeywell, Concordia Chen enrolled in a Ph.D. program in mathematics at MIT. In 1968, she joined IBM, where she was a manager of systems programming and architecture, a marketing consultant and a senior planner developing IBM's markets in South America, Europe and Asia.

In 1992, Concordia started a new career as program manager for the Chiang Industrial Charity Foundation in Hong Kong, which is devoted to elevating the living standard of the Chinese people through the development of machinery and manufacturing industries in China.

Concordia has been active with the Association of MIT Alumnae, has chaired the Educational Council, and was president of the MIT Club of Hudson Valley. In 1993, she was awarded the Harold E. Lobdell '17 Distinguished Service Award in recognition of her special efforts for MIT. Concordia's husband, Chin, is a professor of oceanography at Western Connecticut State University. They have three children, two of whom have MIT degrees.

MIT LIFE INCOME FUND:  
Concordia Chen Charitable Trust.

QUOTE: There is a Chinese phrase,

取諸社會，用諸社會  
which means, "taken from the society and given back to the society." All of my good fortunes — my parents' love and teaching, my family, my education, my career, my friends — are given by society in a sense. Therefore, I want to return the favor. For me, the best way is through an MIT Life Income Fund trust, which pays income to me for my life, and then supports a scholarship fund I have named in memory of my parents.

For more information about MIT Life Income Funds, write or call D. Hugh Darden, W. Kevin Larkin or Frank H. McGrory at MIT, 77 Massachusetts Avenue, Room 4-234, Cambridge, MA 02139-4307; (617) 253-3827.

Photo: Mary Beth Camp

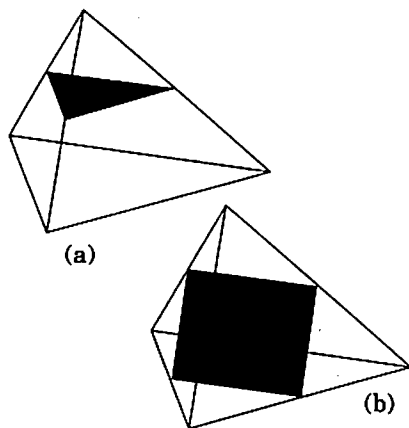


# DONOR'S PROFIT

# Puzzle

Continued from Page MIT 71

Since all four vertices cannot lie on the same side of the plane, the plane must either pass between a vertex and the opposing face or between two opposing edges. For each of the four vertices, the plane passing through the midpoints of the three adjacent edges is equidistant from all vertices (a). For each of the three pairs of opposing edges, the plane passing through the midpoints of the four edges joining them is equidistant (b). Hence the total number of equidistant planes is seven.



**M/J 3.** The late Bob High was "behind the eight ball": A billiard ball with a small black dot on the exact top is rolled around a circle of radius equal that of the ball. Assume no slippage or twisting. Where is the black dot when the ball returns to its original position?

I will admit to some trepidation on this one. It is a problem from Bob High so an easy solution is not expected. Moreover, some of our regular contributors submitted moderately difficult solutions, but it seems

to me that the following simple solution from Eugene Sard is correct.

The intuitive answer is that the black dot is back on the top of the billiard ball when the ball returns to its original position. Surprisingly, however, the ball makes two complete revolutions in achieving this result. This can be seen by comparing the described situation with the cycloid generated by the black dot, if the ball were rolling on a flat surface. When the ball is halfway through its travels, the dot touches the fixed surface, which is at the top of the ball for the actual circular surface. Hence, one complete revolution has occurred when the bottom of the circle is reached, and the second revolution occurs in the remaining travel back to the top of the circle.

Kasner and Newman in *Mathematics and the Imagination* (chapter on paradoxes) describe a similar situation with one coin rolling halfway around a second identical coin.

I discussed this problem with my assistant, Maria Katsouras, and we agree that the "arc of contact" traversed on the ball must at all times be of the same length as the "arc of contact" traversed on the circle. Thus when the ball comes back on top of the circle, the ball's "arc of contact" is a complete (great) circle.

## Other Responders

Responses have also been received from M. Fountain, D. Garcia, T. Godfrey, T. Harriman, W. Hartford, R. Hess, M. Lindenberg, N. Markovitz, A. Ornstein, G. Perry, K. Rosato, L. Steffens, and N. Wickstrand.

## Proposer's Solution to Speed Problem

Raccoonnookkeeper.

# 93

I hope I haven't shocked anyone by having two entries in a row. For starters, I'd like to thank all the people who contacted me. Also, I'd like to try something new. Each issue I

will ask several people from our class to write and tell me what they and their friends have been doing lately. The first lucky few are Natalya Eliashberg, John Gonzales, Karl Yen, Julia Stowell, Rebecca Witry, and Parag Shah. So, here's your excuse to call these people and make sure they have a lot to tell everyone. Now, on to the news!

Reshma Patel is in New York living with Mia Sakata. Mia is working at JP Morgan and

Mergers and Acquisitions. Karen Kaplan was living with them while studying journalism at Columbia. She spent the summer working for the *LA Times* in the business section and should be working for the *Miami Herald* when this comes out. . . Helen Chang is in Phoenix, working as a process engineer. She just got two puppies—Biscuit and Muffin. . . Sophia Yen and Steve Ko are in San Francisco. Sophia is at University of California San Francisco medical school. Steve is working at Apple Computers on systems software for the power PC chip. They were married June 8. In the wedding party were Mia Sakata, Mark Lee, Helen Chang, Mike Yu, Lisa Chow, and Liz Leung. Pictures have been promised.

Tim Wilson and Julie Lyren were also married recently, in Acron, Ohio. I should be getting some pictures from Scott Shiamberg, who is getting a graduate degree in architecture. In the past few months, he has traveled to Florida, Bangkok, Thailand, and Taiwan for his job. . . Mark Lee was working at Intel in Phoenix, then returned to MIT to finish an SB degree. In his spare time he managed to enter the 10K competition with some other MITers to produce a diet/nutrition/exercise program. . . Shen-yi Sieh is working for Procter and Gamble in Japan and spends half of her time flying around Asia helping out the local P&G with its products.

In other news, Pascal R. Lewis is pursuing a master's in manufacturing systems at Georgia Tech. . . Hooman Davoudiasl is starting his second year as a grad student in physics at Caltech. . . Diane Hern is at the University of Texas at Austin, working on a graduate degree in biochemical engineering. . . Kristine W. Ma is attending the University of California at Berkeley graduate school. . . Greg Best is in San Francisco working for Trimble. . . And Chay Kuo got into the MD/PhD program at the University of Chicago. . . Krista Holland writes, "I'm moving again!" The Department of Energy transferred her to the Rocky Flats in Colo., for the summer; now she's in Las Vegas working at Yucca Mountain, and in December she'll be off to study geotechnical engineering at the University of Minnesota.

Jeremy Yung just finished his first year in grad school at MIT. He hopes to finish a master's degree in aero/astro in about a year. After that, he'll probably stay on for another degree. . . Masahiro Arakawa is currently a graduate student at the University of Southern California. He's busy working on a master's in computer engineering and his jump-serve on the volleyball court. Earlier in the year, he ran into Dan Kim taking a break from medical school to play volleyball on the beach.

Ken Ricci is finishing his first year in the physics PhD program at Stanford University. He is supported by an Office of Naval Research Fellowship and was doing research with Stanford's Free Electron Laser facility this summer. . . Stacy Reeves is working for Intel in Portland, Oreg. This spring she was in Boston visiting Carrie Allen, who is going to Oxford grad school, and Marlo Torres, who is working for 3M in North Dakota. In July she'll be going to Israel on business and is hoping to stop in Oxford to see Carrie.

Terry Tsai is now working at Sapient, a small consulting firm in Cambridge. . . Jim Hansen is still working at the Microsoft Graphics Product Unit testing Power Point, while his wife, Cathy Lachapelle, '92, is attending grad school at Stanford. Their son, Colin, is now 4 and "getting more clever every month." A second child was born around July 11. After Jim's loans are paid off, he plans to return to school for a PhD so he can do work in his real field of interest, water resources.

That's all for now. Make sure to get in touch with the people named at the start of the letter. If you want to get on the MIT Class of 1993 mailing list, you can subscribe by sending mail to <listserv@mitvma.mit.edu>. In the e-mail write: SUBSCRIBE MIT1993. Make sure there is a space between "subscribe" and "MIT1993." Of course I can always be reached by writing Mari Madsen, secretary, 12-16 Ellery St. #405, Cambridge, MA 02138

Okamoto develops computer animation and image processing tools, including CAPS (computer animation production system), for Walt Disney. Dave Toback married Meg Lobitz (Univ. of Chicago '93) in January. Attendees included Marianne and Robert Fleischman and Donna Khodarahmi, Roberto Estrada, '92, John Ragland, '92, Mark Smith, '92, Chris Wren, '92, Doug Walker, '94, Chris Stroup, '94, and Greg Powell, '94.

Heidi Miracle and Dan McMahon were married during the summer of 1993, with several MIT alums in attendance. Members of the class of 1991 included Aaron Sodickson, who is in the MIT/Harvard MD/PhD program studying medicine and physics; Karlin (Anderson) McIntyre, who works for the Navy as a civil engineer; Raoul Acevedo, who works for GCC Technologies outside of Boston; Gina (Thompson) Jarvis, who recently gave birth to a second daughter; Dean Miller, who is an editor for computer books in Indianapolis; and Bennett Brown, who is teaching in Chicago. Others at the wedding included Helen Ko, '89; Jay Damask, '90, who is doing graduate studies at MIT; Julia Kent, '92; Sean McIntyre, '89, who is working in computers outside Washington, D.C.; John Travis, '90, who is a writer for *Science* magazine's Boston division; Song Min Kim, '85; Bob Jarvis, '89; and Lisa and Sean Beausoleil, '88. Dan also sends news that Jenny Lemberg is studying at Columbia Law School, and that her husband, Bill Greenberg, '89, is doing post-doctorate work in Philadelphia. Heidi is still working full time for the American Cancer Society and plans to finish her thesis at Emory soon. Dan recently completed his satellite modulator project at work. Dan says that a satellite modulator is the device that sends signals from earth to the satellite, so I imagine his work is a very important project for those of us who live in cities without underground cables to bring us television signals. When Dan spoke with me in May, he said he was trying to get all his running in before it got too hot in Atlanta, where Heidi and Dan live. Dan and Heidi visited Disneyworld for the first time during their honeymoon, where Dan says his favorite ride was Space Mountain.

Chantal Moore and Mark Naugle became engaged in February. Both work in London—Chantal works for Gemini Consulting and Mark works for the Wilkerson Group in health care consulting. . . . Lieutenant j.g. Bill Moliski might be spending some time near London, sort of, since his submarine, the USS *San Juan*, spent the summer underneath the North Atlantic ocean. The Navy reports that Bill is one of 130 crewmembers on the 360-foot nuclear sub. . . . Brian Quinn also plans to spend some time surrounded by a cold, frothy liquid—he is “looking forward to brewing my own beer and drinking it.” Brian graduated with a master's in aeronautics and astronautics from Purdue in December 1993, and now lives in Baltimore.

The *Buffalo News* reports that Joseph Sorci married Stacy Ann Slagor in April and that they now live in Boston. . . . Tim Hazen is working towards a PhD in electrical engineering at MIT. With the new school year, Tim is a graduate resident tutor living in East Campus 2W. . . . John Chen is also at MIT, studying for a PhD in materials science and engineering. In March, John went to Pittsburgh for the 1994 APS meeting. “To my great sur-

prise,” says John, “I also met Mark Wisnudel, Susanne Perutz, Trisha Wilson, '90, Ellen O'Connell, '89, and Leo Balentz, '89, who were attending the meeting. We had a great time eating dinner at Houlihans.”

The legal world can look forward to welcoming a new crop of MIT alums to its midst. Arlene Yang graduated from New York University Law this spring and is clerking for a judge in federal district court in the fall in Reading, Pa. She says, “I am looking forward to finding out what lawyers really do.” Pete Stewart, Jane Williamson, and I all graduated from Boston University Law, after listening to Ross Perot's commencement speech, in which he made no less than half a dozen references to MIT (favorable ones, too!). Pete will associate in New York with the law firm of Skadden, Arps, Slate, Meagher and Flom, and I will associate in Boston with the law firm of Brown, Rudnick, Freed, and Gesmer.

Please send all your favorite news to Andrew Strehle, secretary, 59 Commonwealth Ave., Apt. 4R, Boston, MA 02215, (617) 262-3495. Send e-mail to Renee Mong: <miller-rl@post7.laafb.af.mil>.

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Just missed this in the last column. Albert Cheng received an Outstanding Alumni Award from A Presidential Classroom for Young Americans, Inc. It's an organization that offers programs which help prepare outstanding high school juniors and seniors for future roles as civic leaders by providing first hand exposure to government in action. Albert attended their Presidential Classroom program in the summer of 1987. Albert is currently working for the Boston Consulting Group and will be attending Harvard Business School in the fall of '95.

Sean Dougherty finished a master's degree in International Relations at Rice University in August. He and his wife, Yan Sima, hope to work in the far East for a few years before returning to the states for more grad school. Sean spent six months studying in Beijing, China, after graduation where he studied Chinese and courted Yan whom he met four years earlier in a summer program. Sean and Yan were married last summer in a Chinese garden in Houston; their reception was held in a log cabin to give it a distinctive “Texas” feel. They spent their honeymoon in the mountains of Yunnan in southern China near Vietnam. Yan, an aspiring writer, currently teaches and translates in Houston. My direct and sincere apologies to Sean who called me last year with all of his news. I could have sworn I reported it already. Please forgive the oversight.

Pete Wainman got in touch with me a few times to see if I could help him with some addresses or phone numbers of other alums that he could speak with about his potential job choices. Anyway, after all of his research, interviewing, and deliberation, Pete accept-

# ClassNotes

ed an offer in L.A. with Donaldson, Lutkin, and Jenrette. He will be working mostly with former Drexel people.

Valarie Thomas received a master's in chemical engineering from Univ. of Michigan in December '93 and she is now pursuing a doctoral degree in chemical engineering. Valarie is a secretary as well—like me. She is corresponding secretary for the executive board of BAMIT. . . . Elizabeth Booth was married on August 6 to Stewart Taub, BS chemical engineering from Cornell '92. . . . Brad Layton is still training in northern Virginia for the U.S. sculling team. Go Brad! . . . Rahul Shah is still at Monitor Co. in Cambridge. Rahul says that Riz Virk and Mitch Liu have started a company called Brainstorm Technologies, which develops applications for the groupware market.

Jennifer Hill West writes that she was in Boston in April and saw Theresa Derderian who is now working in Bethlehem, Pa. Jennifer received a master's in biomedical engineering on May 21 from UTexas at Austin. She is continuing on for a PhD, probably at CalTech. Jennifer recently filed a patent on local delivery of fibrinolytic agents for the prevention of postoperative adhesions, and she had a paper published in the June issue of *Proceedings of the National Academy of Sciences*.

To get news to me, write to me in New York. I'll be moving back there some time this month. Thanks. Way more news to come in November, couldn't get everyone in this time.—Leslie Barnett, secretary, 56 Brown St., Mineola, NY 11501, (303) 925-1961



“Here I am in front of the White House with the Outstanding Alumni Award from the Presidential Classroom program and a corny signed picture of the Prez.”

—Albert Cheng, '92

# PuzzleCorner

**W**ell, I survived another vacation! Each August, we go for two weeks to Sandy Island in Lake Winnepesaukee, a family camp run by the Boston YMCA. My main goal is to avoid embarrassing myself in either of the Sunday camper/staff softball games (i.e., not striking out or making too many errors). This is getting more important each year as my Little League sons are waiting to pounce. Well I did all right the first week and had to drive my wife, Alice, to the airport on the second Sunday so was relieved—until I returned from the airport to find that my 12-year-old (one year shy of the minimum age for participation) was “famous.” He was somehow playing third in the game and a bad hop hit him just below the eye. Fortunately, he just had a bad swelling and, even more fortunately, it was almost gone when we arrived home six days later.

## Problems

**N/D 1.** Larry Kells writes that while kibitzing a high-stakes game, he saw declarer bid and make 7 no-trump redoubled and vulnerable. In the aftermath, the defenders, a married couple, were arguing heatedly:

*Wife:* How many times do I have to tell you to stop making those risky speculative doubles? You've cost us thousands of dollars that way!

*Husband:* But I had 26 points. I thought I could beat 7 no-trump.

*Wife:* You see perfectly well that we had no defense. Next time don't double 7NT in that position unless you have all 4 suits completely stopped!

Assuming they were both telling the truth, reconstruct the deal.

**N/D 2.** Nob Yoshigahara wants you to solve the following criptarithmic problem.



SEND PROBLEMS, SOLUTIONS, AND COMMENTS TO: ALLAN GOTTLIEB  
NEW YORK UNIVERSITY  
715 BROADWAY, 10TH FLOOR  
NEW YORK, N.Y. 10012.  
OR TO: GOTTLIEB@NYU.EDU

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BCDEFGHI

**N/D 3.** Martin Kalinski, a former Baker House colleague, asks a common question about palindromes. Kalinski reminds us that a palindrome is a positive integer that reads the same right to left as left to right. For example, 121 and 1331 are palindromes. Take a non-palindrome like 57 and add to its reverse:  $57 + 75 = 132$ . Keep going and get  $132 + 231 = 363$ , which is a palindrome. Will this procedure always yield a palindrome? Note that it is easy to find numbers that do not yield a palindrome after two applications of “adding the number to its reverse.” The question: are there any numbers that never yield a palindrome?

## Speed Department

Larry Kells wonders if you know an English word with a quadruple letter?

## Solutions

**Jul 1.** Jorgen Harmse is greedy. He wants South to make a bid of 1NT redoubled with 6 overtricks (for the highest possible declare score) against best defense after a reasonable auction. Your editor is not a Bridge guru but when I become omnipotent you will get more points for bidding and making 7NT redoubled than for bidding 1NT redoubled and making 7.

The following solution is from Robert Holt: North-South are playing weak no trumps, so South (assume South deals with both vulnerable) opens 1 no trump. A popular way of dealing with weak no trumps is to double with the top of the no trump range. Say East-West have agreed to double with 13+ high card points, so West doubles. Now N-S play Brozel runous, so North passes. If East-West remain silent, this forces South to redouble, and then North either passes with a strong hand or bids his long suit with a one-suited hand. (Two-suiters by North are shown with two-level bids or an immediate redouble.) East has nowhere to go, so East passes. South redoubles, and West, who thinks

his or her kings are well placed and has a natural diamond lead against no trump, also passes. Now North decides that his hand is strong enough to sit for the redouble, and passes. East knows that E-W have half the high card points and doesn't have a decent suit to run to, East passes as well. Now South makes all 13 tricks by finessing as deeply as possible whenever clubs and spades are played.

	North	
	♠ A Q T 6 5 4	
	♥ A 6 5	
	♦ 7 6	
	♣ 5 4	
West		East
♠ K J		♥ 9 8 7
♥ K 9 8 7		♦ Q J T
♦ K Q J T		♣ 5 4 3 2
♣ 8 7 6		♠ K J 9
	South	
	♠ 3 2	
	♥ 4 3 2	
	♦ A 9 8	
	♣ A Q T 3 2	

**Jul 2.** Nob Yoshigahara wants you to find three positive integers. 1) The smallest integer having the property that the first 10 digits of its square root are unique. 2) The smallest integer whose square consists of 10 digits all unique. 3) The smallest integer having the property that the first 10 digits of its reciprocal are unique.

I agree with the proposer's solutions, namely 1362, 32043, and 38. Robert Holt obtained the same solutions but adds that if leading zeros are not permitted for #3, the answer is 648. Holt also notes correctly that I should have said “distinct” rather than “unique.”

**Jul 3.** Timothy Maloney is not at all afraid of sunburns.

Just before a business trip to Manila (14 degrees N latitude) around the end of April, I calculated that the sun should be directly overhead around noon, and indeed it was. For a spherical earth in a circular orbit around the sun with the earth's axis tilted at 23 degrees with respect to its orbital plane, find an exact trigonometric expression to give the latitude at which the sun is directly overhead (around noon) as a function of time of year.

James Abbott sent us the following fine carefully drawn solution (see page MIT 40):

It can be shown by geometry that if a point on the earth's surface has the sun directly overhead, the latitude of the point is equal to the sun's declination. This quantity varies throughout the year and, for the real Earth, is tabulated in various almanacs. Our job then becomes one of deriving an expression for this same quantity for the fictitious earth described in the problem.

Continued on Page MIT 40

## Deceased

The following deaths have been reported to the Alumni/ae Association since the *Review* last went to press:

James S. Munro, '22; March 1994; Newton Center, Mass.  
Walter J. Bagby, '24; April 7, 1994; Phoenix, Ariz.  
Hartselle D. Kinsey, SM '24; July 9, 1994; Scarsdale, N.Y.  
Malcolm S. MacNaught, '24; May 30, 1994; Manchester, Conn.  
George P. Edmonds, '26; January 16, 1994; Wilmington, Del.  
Lathrop B. Merrick, SM '27; June 16, 1994; Durham, N.H.  
Milton Bearg, '27; July 16, 1994; Torrance, Calif.  
Edward R. Stevens, '28; June 9, 1994; Trenton, N.J.  
Willard J. Slagle, '29; SM '29; August 13, 1994; Plymouth, Mass.  
Robert K. Mueller, '32, SM '34, ScD '36; August 4, 1994; Paradox, N.Y.  
Charles P. Britton, '33; July 6, 1994; Needham, Mass.  
Benjamin Liberfarb, '33; June 13, 1994; Waltham, Mass.  
Joseph S. Chenette, '36; June 23, 1994; Ridge-wood, N.J.  
Frederick Philips Pike, SM '36; 1993; Raleigh, N.C.  
Polly Povey Thompson, '38; June 26, 1994; Portland, Ore.  
Antonio W. Diokno, SM '39; July 15, 1993; Makati, Philippines  
Richard D. Martin, '39; July 8, 1994; Marblehead, Mass.  
Theodore H. Talbot, Jr., '40; May 30, 1994; Chatham, Mass.

Robert S. Lundberg, '41; December 29, 1992; Bronxville, N.Y.  
Harold F. Ring, '42; 1980; Rockland, Del.  
Gustavo A. Calleja, '43; January 1993  
Kenneth R. Wadleigh, '43, SM '43, ScD '53; July 21, 1994; Swansea, Mass.  
Edgar P. Eaton, Jr., '44; July 19, 1994; Convent Station, N.J.  
Edgar J. Moor, '44; July 1, 1994; Cambridge, Mass.  
John Mitchell, '45; August 10, 1994; Cambridge, Mass.  
John C. Martin, '47, '48; July 15, 1994; Mercer Island, Wash.  
Charles H. Neuhardt, MAR '47; 1994; Midland, Tex.  
Samuel Nairn Karrick, Jr., '48; April 23, 1994; Arlington, Va.  
Benjamin F. Lohr, '48; October 18, 1993; Silver Spring, Md.  
John F. Riordan, Jr., '48; May 19, 1994; Ann Arbor, Mich.  
John Clymer, MAR '49; 1993; Natick, Mass.  
John P. Regan, '49; 1993; Houston, Tex.  
James A. Daley, '50; June 17, 1994; Simsbury, Conn.  
George Kirby Dawson, '50; June 27, 1994; Menlo Park, Calif.  
Jack R. Martin, '50; June 18, 1994; Bedford, Mass.  
George W. Hughes, '51, SM '52, EE '55, ScD '60; December 10, 1993; Brookline, Mass.  
William B. Pohlman, Jr., PhD '51; January 1993; Northridge, Calif.  
James A. Klupar, '53; 1994; Sun City, Ariz.  
Yohay Ben Nun, '54; June 6, 1994  
Gordon N. Smith, '54; August 3, 1994; Wolcott, Conn.

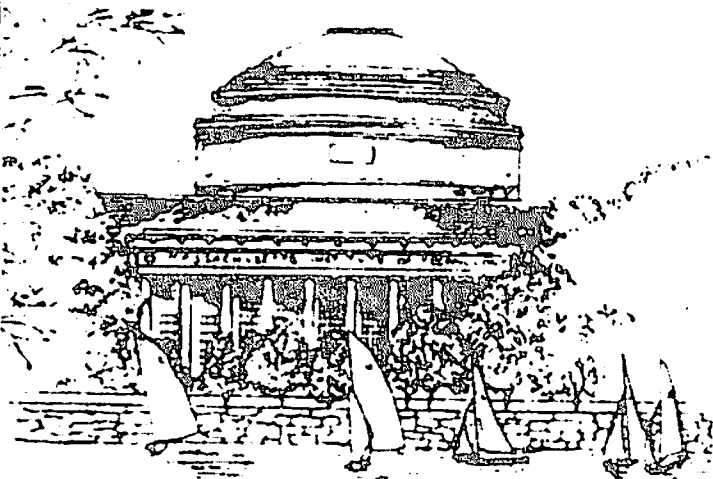
Ronald R. Marston, '56; 1993; Kennewick, Wash.  
John T. Hughes, Jr., '57; July 27, 1994; Wellesley, Mass.  
Peter R. Metz, SM '58; June 10, 1994  
William G. Lewis, '64; May 15, 1994; Kennett Square, Pa.  
Bassima A. Saleh, SM '64; July 2, 1994  
Theodore E. Hlavac, Jr., SM '66; 1993; Oakmont, Pa.  
Edward C. Wert, '66, SM '69; April 22, 1994; Downingtown, Pa.  
David G. Lyons, '68; February 12, 1994; Elsay, Ill.  
Albert J. Booth, Jr., '69; 1994; Richmond, Va.  
John D. Stubbs, SM '71; June 7, 1994; Paget, Bermuda  
Robert A. Lentz, '72; April 1993; Encinitas, Calif.  
Mark Lane Radtke, '73; July 24, 1994; Wellesley, Mass.  
Jeffrey L. Star, '75; June 20, 1994; Goleta, Calif.  
George A. Divers, III, SM '76; September 1993  
Mark B. Fefferman, '77; June 25, 1994  
David G. Biron, PhD '81; June 24, 1994; Chelmsford, Mass.  
Rush H. Record, '82; October 16, 1993; Houston, Tex.  
Jens T. Jensen, SM '83; April 14, 1994; Perkinsville, Vt.

**CORRECTION:** *Howard M. Schwartz, SM '82, PhD '87, was erroneously listed as deceased on page MIT 54 of the Aug/Sept 1994 Technology Review. Mr. Schwartz has notified us that he is alive and well in Ottawa, Ont., and is a professor at Carleton University. We apologize for the error.—Ed.*

*Where might a name best live?*

The name of a deceased MIT alumna or alumnus can be linked to the Institute through gifts made by classmates, colleagues or family. Memorial gifts can be unrestricted as to purpose or directed toward scholarships, research or any program of the Institute. The Institute notifies bereaved families of the name of each donor and each gift becomes a part of MIT's permanent record.

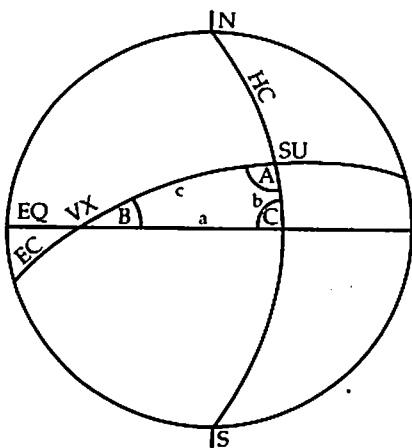
Named endowed funds whose income support the work of the Institute in perpetuity can be established with larger gifts. If you would like information on ways of expressing sympathy through a memorial contribution, or on establishing a named endowment fund, please contact Betsy Millard, MIT Room E38-202, Cambridge, MA 02139 or call (617) 253-8059.





# Puzzle

Continued from Page MIT 62



The above figure represents an imaginary sphere with the Earth at its center and having projected upon it the earth's equator EQ, the poles N, S, the Sun SU, and the ecliptic EC.

The vernal equinox VX marks the transition of the Sun from south to north along the ecliptic and is a convenient reference point for locating the Sun at any time of year. The calendar date of the vernal equinox varies from year to year and must be obtained from an almanac or similar source for the year desired.

The great circle HC (hour circle) passes through the images of the Sun and the poles. Together with EQ and EC this circle forms a spherical triangle with sides a, b, and c and corresponding angles A, B, and C. For a circular orbit we may assume that the orbital speed is uniform and therefore the length of side c is directly proportional to the time elapsed since the sun's transit of VX.

It can be shown that angle B is equal to the tilt of the earth's axis. Angle C is by definition a right angle. Side b is the measure of the Sun's declination, which is the quantity to be determined.

According to the law of sines for a spherical triangle,

$$\sin b/\sin B = \sin c/\sin C$$

Since angle C is by definition a right angle,

the expression reduces to:

$$\sin b = \sin B * \sin c.$$

To determine side c, we subtract the time of VX (taken from an almanac for the given year) from the desired time of year and multiply the result by the rate of change of side c per unit time.

Let T = time of year†  
TVX = time of equinox transit†  
Y = length of a full year†  
P = angular units in a full circle (e.g., degrees)

$$\text{Then } c = (T - TVX) * P/Y$$

Since B is given as 23 degrees,  
 $b = \arcsin(\sin 23 \text{ deg.} * \sin((T - TVX) * P/Y))$

Example:

Let T = noon GMT, April 30, 1994  
This converts to 119.50 days from 0:00 GMT 1/1/94.

From the *World Almanac*:  
TVX = 20:28 GMT, March 20, 1994  
This converts to 78.853 days from 0:00 GMT 1/1/94.

Letting angles be expressed in degrees,  
P = 360  
Y = 365.25 days  
B = 23

Solving for b by the formula  
 $b = \arcsin(0.3907 * \sin((119.50 - 78.853) * 360/365.25))$   
= 14 deg. 34 min.

Again from the *World Almanac* (for the real earth):  
Sun's declination for time T = 14 deg. 38 min.

†consistent units

## Other Responders

Responses have also been received from F. Carbin, D. Detlefs, S. Feldman, M. Fountain, W. Hartford, R. Hess, M. Lindenberg, R. Moeser, K. Rosato, J. Spalding, A. Taylor, and D. Wachsmann.

## Proposer's Solution to Speed Problem

Glowworm, 4 u's in a row!

which he describes as "a research firm dedicated to progress in automated fabrication technologies and applications." His company produced the first of the so-called PC clones. He received a PhD in physics at the University of Texas at Austin in 1991. He has published extensively and has also been a keynote speaker at conferences around the world. . . . Another entrepreneur, Bengt Mutén, has founded Mutén and Associates, which "provides strategic consulting to the railroad indus-

try, evaluating and predicting the effects of major changes such as mergers, acquisitions, divestitures, and facilities restructuring, as well as providing the software tools for these projects." Bengt spent 14 years with DNS Associates developing transportation analysis models, eventually becoming VP in charge of their consulting practice. Bengt has an MS from the University of California/Berkeley School of Engineering.

Robert Hone is the co-author of a book

called *Making Movies with Your PC*. He also was producer, director, and writer of two hour-long installments of the international PBS-BBC documentary *The Machine that Changed the World*. . . David Band is an astrophysicist at UCSD studying gamma ray bursts. His wife, Debbie, is an artist and they have two sons, ages 10 and 7. . . John Kowalik and his wife, Michele, are the proud parents of Grant, born in October 1993. Older brother Ross is 5 years old and "is looking forward to reaching his brother everything about Power Rangers." John still manages institutional bond portfolios for Prudential Fixed Income Advisors in Short Hills, N.J.

Andrew Weiner and his wife, Brenda, have a new daughter, Roberta Alyssa, who was born last December. Since October 1992, Andrew has been a professor of EE at Purdue, working to establish a research program in ultrafast optics and high-speed optical communications. Last fall, he canoed the Tippecanoe River in northern Indiana with Jeff Dugal. . . Shahriar Negahdaripour has received tenure in the department of Electrical Computer Engineering at the University of Miami. . . Peter Bunin has become the VP and general manager of Outokumpu Copper Kenosha in Kenosha, Wisc.

Some classmates were mentioned recently in the MIT Alumni/ae Association newsletter. Stephanie Littell is the president of the MIT Club of Northern California. Back at the "Tute, Reggie Van Lee organized a panel entitled "Succeeding at MIT and Afterwards" as part of a Black Student/Alumni/ae Day in March. Meanwhile, David C. Lee set up a fax-on-demand service and a voice bulletin board to enable CAMIT members to find out about that group's activities. (For those of you who are rusty on your acronyms, CAMIT is Chinese Alumni/ae of MIT).

Some news about your Faithful Secretary. Back in 1770, Samuel Johnson referred to a second marriage as "the triumph of hope over experience." I am apparently among the hopeful, and was recently engaged to be married! More news about the event itself in future columns. Until then, keep those cards and letters coming.—Sharon Lowenheim, secretary, 98-30 67 Avenue, Apt. 6E, Forest Hills, NY 11374

## 80 15th Reunion

Just a few notes this month: Sai B. Long has been quiet for a few years but wrote to let us know what he's been up to. Sai has been crunching away at Exxon for eight years; the last six in Houston (where it is HOT!). He and his wife, Wendy, have two beautiful girls, Deanna (6) and Tiffany (3). "The girls keep Daddy straight and busy!" according to Sai.

. . . Charles Wilson writes he is "surviving the bad press of *Tech Review* and other publications and Congressional budgets to move the F-22 Advanced Tactical Fighter closer to operational status." Testing starts in two years and Charles can't wait. "This plane will assure superiority over the hundreds of new planes being sold by our 'allies' around the world every year."

Through a news release we get news of James Scutti. James has joined Massachusetts

"Marilyn is still the department manager of music at Princeton University. Recently she was selected to chair two committees established by the central administration at Princeton to find ways to help the university work more efficiently."

From Stephanie Orellana: "I think that the last time I wrote was when I was in graduate school at UCSD. I got a PhD in physiology and pharmacology there in 1987, then moved to Seattle to do a post-doc, and am now on the University of Washington faculty in pediatric nephrology. I do basic research in renal development and disease. I married Al Malouf, also UW faculty, in 1987. The first addition to our family was Burton, a Chesapeake Bay Retriever. We now also have two daughters, Alison (almost 4 years) and Kalin (5 months). Our lives are busier than ever (whose isn't?), but we're having a great time."

Ben Szaro: "I've been an assistant professor in neurobiology at the State University of New York in Albany for the past three years now. Despite budget cuts, I have an NIH grant, and several graduate students who are turning out data. Things look stable enough that I've recently bought a house, so life looks good."

Tom Downey is "now at LightStream Corp. LightStream was formed last October by merging the Ungerman-Bass and BBN engineering projects that were working on a new data communications product (based on Asynchronous Transfer Mode technology, which is not the same ATM as used by banks...). Currently I am VP for strategic business development, responsible for establishing partnerships with other companies to distribute and enhance our product. The two deals I'm most actively involved in at the moment are with Tellabs (a vendor to the Bell operating companies and other telecommunications carriers) and NEC (a large Japanese electronics company).

I'm still working on my old house, but work has made progress slow. We've been working on plaster repair and painting on one room since December (1993)!"

From Wendy Peikes: "The short scoop is that I am a software engineer at Gain Technology, a multimedia company providing development tools for creating sensory-rich applications. Our primary markets are computer-based training, information kiosks, and database front-ends for financial, medical, and aerospace applications. We are starting to contribute to such exciting areas as Interactive TV and the Information Superhighway. The company was acquired by Sybase in '92. We are also creating products that play well with Sybase's leading-edge client-server database technology."

"Yes, the work is exciting. I do manage other activities besides work! I live in a large house in the Cupertino foothills with three roommates, two dogs, and a cat. I love the Bay Area; it's great for hiking, bicycling, and running in the hills. It's also close to culture (even San Jose has good theatre now!) and a little further from skiing."

"I see fellow MIT-ers Jeslie Chermak, Diane Braken, '75, Alwin Okuna, '75, and Gary Wade, '71. Jeslie is at Mitsubishi managing the compiler group; Diane is managing an integration group at HP, and Alwin is a software engineer at HP. Gary is at Intel coordinating chip manufacturing between Santa Clara and Phoenix. Amos Oshrin, '74, lives in Cleveland and is creating expert systems for

an insurance company."

In obtaining e-mail addresses, your secretary learned that David Stork is the chief scientist at Ricoh CRC.

As for your secretary, I remain extremely busy between trading for my own account and continuing to develop my computer business. Quantalytics is a VAR and Systems Integrator. We cover a lot of territory: telecommunications, enhanced fax technology, large scale database design (we are running one database project now, for example, with 31 gigabytes of data), imaging, and of course, networking. But the computer business has a virtue that trading and brokerage do not have—it is possible to make a client very happy with very little risk, relatively speaking.

Please continue to send news. Any news is welcome, regardless of the medium. And please send e-mail addresses!—Arthur J. Carp, secretary, Quantalytics, Inc., 220 Henley Rd., Woodmere, NY 11598-2523; tel. and fax: (516) 295-3230 (auto-switched); e-mail: <quantalyt@aol.com>

# 77

Please send news for this column to: Ninamarie Maragioglio, secretary P.O. Box 10315 Burke, VA 22009

# 78

We received a few notes from the Alumni/ae Fund tear-offs this issue. . . . Jose Flores writes that he is practicing internal medicine and endocrinology. He is doing research on bone/mineral metabolism and positional gene mapping. . . . Paul Haines writes, "I moved back to Houston from Caracas, Venezuela, in January. I'm working for Geoquest—a division of Schlumberger (still). I am currently project leader for Geoshare, working on a methodology to share data between various geoscience application programs." . . . In other news, Ed Nadler is on the move. "My wife and daughter and I are moving to Israel, where I'll be working in CAD software development."

Finally, it is my sad duty to report the death of Mark Altbush in May from AIDS-related causes. Mark was a native of New York City, but remained in Boston after graduating from the 'Tute. He worked in the Boston area as a chemical engineer and was also pursuing a career as a freelance photographer. Mark is survived by his partner, Bill, and his parents Jack and Hannah Altbush of Hartford, Conn. A memorial service was held at MIT in June. Your class secretary had the pleasure of walking across the Harvard Bridge many times with Mark while at the 'Tute. He was a good man.—Jim Bidigare, secretary, 9095 North Street Rd. NW, Newark, OH 43055-9538, (614) 745-2676, fax: (614) 745-5648

# 79

Lots of news this month, so sit back and relax. Steven Holzn-er wrote to me for the first time in 15 years! Steven lives in Ithaca, N.Y., to which he first moved in 1979 to get a PhD in particle physics. While a grad student, he became a columnist for *PC Magazine*, and

# ClassNotes

subsequently wrote a programming book while living in the Austrian Alps. After getting the PhD, he went to work for Epson America in Los Angeles, writing computer manuals, but he hated it so he went back to writing computer books and moved to Santa Cruz. Eventually the earthquakes wore him down and he returned to Ithaca. He is now on the physics faculty at Cornell (in addition to Physics 101 and 102, he teaches Introduction to Asian Religions, having acquired a passion for Zen along the way). He makes his real living, however, from his hobby, and now has 21 computer books to his credit. They have been translated into eight languages, have been sold abroad, and have appeared on bestseller lists and with book-of-the-month clubs. He has also written a historical novel, which he expects to be published this year. His e-mail address is <sdh7@cornell.edu>, if anyone wants to drop him a line.

Steven Feldman spent the last two years with Phoenix Technologies Ltd. in Norwood, Mass., as the manager of application development in MIS. However, a company reorganization resulted in his position being relocated to Monterey, Calif., so Steve bid the company a fond adios and at press time was looking for another job. His wife, Debbie, is still a soft-



**HAVE YOU WRITTEN TO THIS WOMAN LATELY?**

Sharon Lowenheim, '79  
Class Secretary

ware engineer at Stratus Computer. Their son and daughter are 5 and 3, respectively. If you want to reach Steve on CompuServe, his account is <73773,1305> (or <73773.1305@compuserve.com> on the Internet). . . . Marshall Burns sent me some entertaining promotional material for him and his company, including an article about him which appeared in the *New York Times* business section last year. After graduating from MIT, Marshall founded his own company (now called Ennex Fabrication Technologies),