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. Freydberg, '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

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	
West	♣ K	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: $P(m) = 1-(5/6)^{6-m}$. A the beginning of the game n=0. Thus the desired probability is $1-(5/6)^6$.

If the regular die is replaced with an unbiased k-sided die, the above procedure leads to the probability $1-([k-1]/k)^k$. This expression is relatively insensitive to k, varying from a high of 0.75 (for k=2) to a low of $1-1/e \approx 0.63$ (for $k=\infty$).

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. Steffens, A. Tayor, 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.