PUZZLE CORNER

ALLAN J. GOTTLIEB, '67

Dot's Entertainment

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 previ ously appeared. I also favor solutions that are neatly written, typed, or sent via e-mail, since these produce fewer typesetting errors.

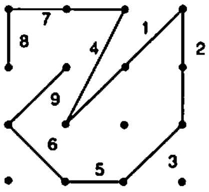
Problems

JUL 1. We begin with a bridge problem from Richard Hess, who (I guess) always seems to get low point count hands and likes to see how far they can go. Inspired by the 1991 Jan 1 problem, Hess asks for the lowest number of high card points that North and South can have (combined) and still make 7NT against best defense.

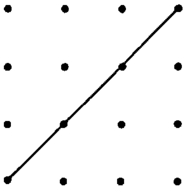
JUL 2. Matthew Fountain suggests we tackle the "hold that line" problem devised by Sid Sackson and appearing in his book *A Gamet of Games.*

"Hold That Line" is a game in which two players alternate drawing straight lines between dots on a 4 x 4 dot field. The player to draw the last line loses. The first diagram shows a game in which the lines are numbered in the order they were drawn. Restrictions are that lines after the first shall only be drawn from the free end of a previously drawn line. All lines must be straight and start and end at a dot. A line may connect more than two dots if all are in a straight line. No line shall be drawn to a previously connected dot or cross another line.

The second diagram shows a game in progress where the first player has drawn his first line along a long diagonal of the field. Is this a winning or a losing move? There can be no ties.



GAME LOST BY FIRST PLAYER

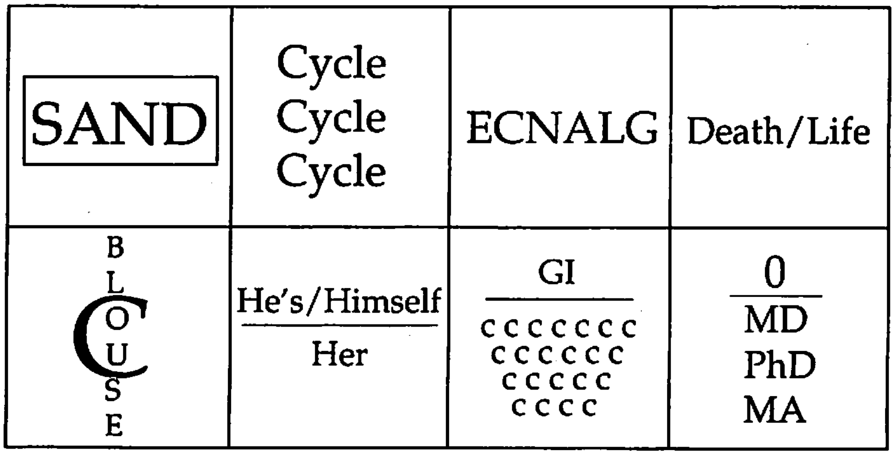


GAME IN PROGRESS

JUL 3. Geoffrey Landis has found our previous cryptarithmetic problems (where you are given an arithmetic equation such as XXX + Y = YZZZ and must find which digits to assign to each letter, in this trivial case X=9, Y=1, Z=0) "rather uninteresting." So he offers a challenge. Find a cryptarithmetic problem with (precisely) two solutions based on two (completely) different keys, i.e., no letter is assigned the same digit in both solutions. I would not be surprised to find that Nob. Yoshigahara has a few dozen of these sitting under his socks in his bureau.

Speed Department

Pete Chandler wants you to figure out each of these eight brain teasers.



Solutions

F/M 1. Dave Wachsman sent us a hand he played (as South) with his wife that was reported in Truscott's Column in The New York Times.

North
♠ 8 2
♥ A 7 2
♦ Q 7 5
♣ K Q 9 4 2

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

South
♠ A K Q J 10 4
♥ K Q 9 3
♦ A 6
♣ 7

Both sides were vulnerable. The bidding:

South	West	North	East
1 ♠	Pass	2 ♣	Pass
3 ♠	Pass	3 N.T.	Pass
4 ♥	Pass	4 N.T.	Pass
6 ♠	Pass	Pass	Pass

How does Mr. Wachsman bring home the slam after West leads the club jack?

Larry Shiller sent us the following solution. If East lets club K win, declarer draws trumps and leads to dummy's diamond Q for 12th trick. Otherwise, declarer wins East's return in hand (ruffing high if a club), draws trumps, cashes diamond A, crosses to dummy with the heart A, and leads the club Q, discarding a diamond from the closed hand, squeezing West.

F/M 2. John Prussing believes that the following puzzle, which was actually on the 1989 Putnam exam, seems about right for Puz zle Corner.

A dart hits a square dartboard. If any two points on the dartboard have the same probability of

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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

Alessandro Morelli, '44; November 18, 1991; Cohasset, Mass.
Paoli E.C. Massaglia, '45; January 14, 1992; Stuart, Fla.
Theodore E. Gerber, '46; February 7, 1992; Guilford, Conn.
Emerson H. Newton, '46; March 14, 1992; Arlington, Mass.
Norman I. Gold, '47; March 5, 1987; Newton Highlands, Mass.
Thomas K. Hughes, '47; April 10, 1991; Dickinson, Tex.
William M. Hunt, '47; January 15, 1992; Lambertville, N.J.
Robert L. Kamm, '47; January 27, 1992; Birmingham, Mich.
Vance A. Myers, '47; February 9, 1992; Fairfax, Va.
James P. Storm, '47; 1991; Menlo Park, Calif.
Donald S. Floyd, '48; May 2, 1991; Alexandria, Va.
William Nicholson, '48; 1992; Easton, Md.
Edward T. Podufaly, '48; January 20, 1992; Sherwood, Md.
Roger L. Sisson, '48; January 22, 1992; Lafayette Hill, Pa.
Edward N. Strait, Jr., '48; November 12, 1991; St. Paul, Minn.
William S. Hutchinson, Jr., '49; February 2, 1992; Jacksonville, Fla.
Willem E. Lower, '49; 1990; Holton, The Netherlands
Ferdinand G. Mikel, '49; March 3, 1992; Silver Spring, Md.
Chien-Hou Chang, '50; January 14, 1991; Tianjin, China
Theodore S. Huang, Jr., '50; November 2, 1991; Alexandria, Va.
Charles W. Ellis, 3rd, '51; January 25, 1992; Newton Square, Pa.
Matthew Goodwin, '52; July 26, 1990; Culver City, Calif.
Roger E. Ladd, '52; January 9, 1992; Manchester, Mass.
Malcolm C. McQuarrie, '52; January 3, 1992; Oakland, Calif.
Gabriel Palmero, '52; 1991; Washingtonville, N.Y.
Francis B. Van Wyk, '52; 1991; Wallingford, Pa.
Morris B. Carter, '53; November 29, 1991; Columbia, Tenn.
William T. Wootton, '53; June 1, 1991; Santee, Calif.
Richard F. Merrill, '56; February 17, 1992; Baltimore, Md.
Harold H. Rothstein, '56; 1991
Lester Y. Sen, '56; 1991
Robert K. Boese, '57; August 6, 1991; Glen Cove, N.Y.
Lovett R. Smith, Jr., '57; April 17, 1991; Danbury, Conn.
Rene E. Unson, '57; February, 1991; Manadaluyong, Philippines
Edwin R. Rose, '58; January 1, 1992; Houston, Tex.
Gabriel T. Kerekes, '60; 1991
Alan M. Edwards, '61; February 11, 1992; Crownsville, Md.
Keihachiro Moriyasu, '62; January 4, 1992; Hermiston, Ore.
Albert O. Riordan, Jr., '62; January 23, 1992; Hornell, N.Y.
Leonard H. Edwards, '64; March 26, 1991; Cincinnati, Ohio
Freeman K. Keyte, '66; February 19, 1992; Nepean, Ontario
Willard J. Basner, Jr., '69; January 24, 1992; Franklin, Mass.
Edward A. Parks, '69; 1991; Big Flats, N.Y.
Richard E. Brackeen, '75; February 5, 1992; Great Falls, Va.
Osvaldo A. Jaeggli, '80; August 20, 1990
Michael H. Bulat, '81; 1985
Clinton C. Bourdon, '83; February 2, 1992; Ipswich, Mass.

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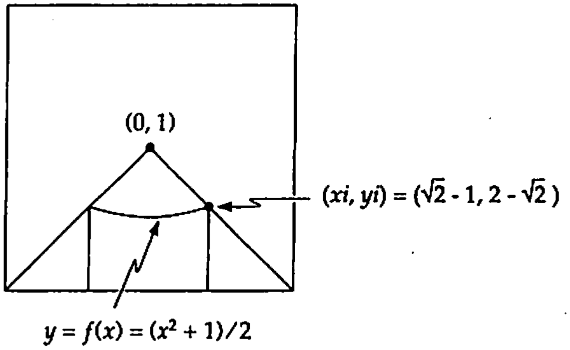
being hit, what is the probability that the dart will land nearer to the center of the board than it does to an edge.

George Blondin chararacterizes the solution

(4√2 -5)/3

as "a really neat answer." Blondin writes: For a 2 by 2 square with center at (0,1), equating the squared distance from the center, $x^2+(1-y)^2$, to the squared distance from the bottom edge y^2 gives a parabola: $y=(x^2+1)/2$ which intersects the lower right diagonal (y=1-x) at Xi, Yi where Xi=√2 -1, Yi=2-√2. The area nearer the edge in this quarter square (whose gross area is 1.0) is the area under this parabola plus the two triangles with sides = Yi.



Integrating ^y . dx gives (x3+3x)/6. Evaluating between -Xi and +Xi then adding Yi2 for the triangles gives (8-4\/2)/3 as the chance of hitting nearer the edge. 1-(8-4\/2)/3=(4\/2-5)/3 is the chance of hitting nearer the center.

F/M 3. Our last problem is from my NYU Colleague, Dennis Shasha, and can be found in his book, *The Puzzling Adventures of Dr. Ecco.*

You are given 20 coins. Some are fake and some are real. If a coin is real, it weighs between 11 and 11.1 grams. If it is fake, it weighs between 10.6 and 10.7 grams. You are allowed 15 weighings on a scale (not a balance). You are to determine which coins are real and which are fake.

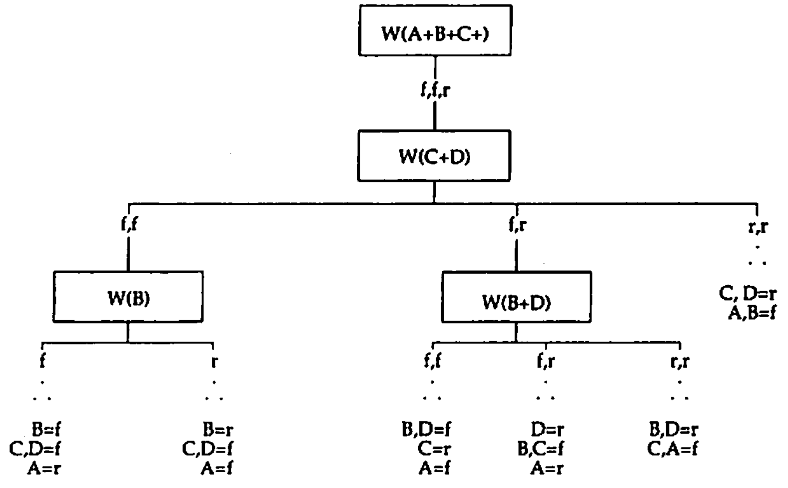
Our last solution is from Edgar Rose:

1.Divide the coins into five groups of four. We must determine, in three weighings or less, the nature of each coin in a given quartet.

Let's take one group of four and mark the coins A, B, C, and D respectively. Also we will use "f" and "r" when referring to fakes and real coins. As the last preparatory step, we set up a table of weight ranges for the three possible pairs (f,f; f,r; and r,r) and the four possible trios (f,f,f; f,f,r; f,r,r; and r,r,r); i.e., W(f,f) = 21.2–21.4 grams, W(f,r) = 21.6–21.8 grams, etc. There are no overlaps between the ranges, therefore each weighing will identify how many f's and r's there are in the weighed group.

2.Weigh A+B+C

2.1 If f,f,f or r,r,r—weigh D for identification.
2.2 If f,f,r—use chart below.
2.3 If f,r,r—use chart below but change all "r's" in the chart to "f's," and vice versa.



Other Responders

Responses have also been received from J. Abbott, J. Bitsky, C. Brooks, F. Carbin, W. Cluett, N. Cook, D. Detlefs, D. Eckhardt, S. Feldman, E. Field, E. Freudenthal, E. Friedman, J. Grossman, B. Huntington, J. Landau, M. Lindenberg, E. Lund, D. McMahon, G. Parks, R. Record, S. Root, K. Rosato, J. Rudy, E. Sard, L. Saunders, C. Taubman, D. VanPatter, W. Woods, H. Zaremba.

Proposer's Solution to Speed Problem

Sand box, tricycle, backwards glance, life after death, see-through blouse, he's beside himself over her, GI overseas, 3 degrees below zero.