Getting One's Bearings

Not much to report this time (I guess you can't have a 25th anniversary each month). I have just returned from a delightful two-week vacation at Lake Winnipesaukee, N.H. Now it seems that global warming is taking a short vacation as well (at least around here). I am trying to enjoy it while it lasts.

Problems

N/D 1. We begin with a bridge problem from Winslow Hartford in which South is in an impossible contract of 6NT. However, West leads the spade 4, which East wins with the ace and returns the spade queen. How can South now make his contract assuming best defense from this point onward?

North
♠ 5
♥ A K 8
♦ A 8 3
♣ A J 10 7 5 4

West
♠ 10 8 7 4 3
♥ 7
♦ Q 10 9
♣ Q 8 3 2

East
♠ A Q 9
♥ J 6 5 4 2
♦ J 6 5 2
♣ 6

South
♠ K J 6 2
♥ Q 10 9 3
♦ K 7 4
♣ K 9

N/D 2. Matthew Fountain wants to know how large is the volume that lies within two inches of all the corners of a two-inch cube. All the volume must lie within two inches of all the corners.

N/D 3. Robert Sackheim notes that all readers know that if a man leaves home, walks a mile south, then walks a mile west, shoots a bear, then walks a mile north and finds himself back home, that the bear is white because the man's home is at the North Pole and the bear is a polar bear. Sackheim wonders if there is any other place on earth where a person can go a mile south, then a mile west, then a mile north and be back at the starting point?

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

Speed Department

My NYU colleague, Ron Bianchini, sent me a series of problems called the "Mental Creativity Challenge" in which 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 "26 = L. of the A.," "7 = W. of the A. W.," "1001 = A. N.," "12 = S. of the Z.," "54 = C. in a D. (with the J.)."

Solutions

JUL 1. Several readers noticed an unfortunate typo in APR 1: Both North and South were given the jack and six of hearts. Fortunately, reading the solution that Robert Bart supplied with the problem, I was able to deduce that South should have diamonds, not hearts. The corrected problem is South is on lead with spades trump and is to make 5 of the 6 tricks against best defense.

North
♠ A J 4
♥ J 6 2
♦ –
♣ –

West
♠ Q 8 7
♥ –
♦ –
♣ Q 8 7

East
♠ –
♥ Q 8 7
♦ Q 8 7
♣ –

South
♠ K 9 6 5
♥ –
♦ J 6
♣ –

David Gross was impressed by the complexity of this six-card problem. He considers it unusual to find so many possible lines of play with so few tricks. His solution follows.

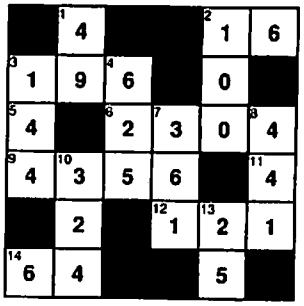
Lead a low spade to the ace. Then play dummy's heart 2 and ruff with the spade 9. West's best play at this point is to over-ruff with the queen and return his/her last spade. Play dummy's spade jack on this trick and observe East's discard: East must come down to 3 cards. If East retains 1 heart and 2 diamonds, South plays a small spade under the jack, then ruffs a heart with the spade king, returns to dummy with a diamond ruff, and cashes the established heart jack. If East retains 2 hearts and 1 diamond, South plays the spade king on top of the jack, then ruffs a diamond with dummy's last trump, returns to hand with a heart ruff, and cashes the established heart jack.

Variation 1: when on lead with the spade queen, West might switch to clubs instead of spades. Declarer must ruff the club in the South hand and lead a diamond. Declarer wins the remaining tricks on the cross-ruff, over-ruffing West's last trump whenever s/he chooses to play it.

Variation 2: West might choose to discard a club at trick 2 rather than overruff. Declarer must now switch to diamonds. No matter how West defends, s/he cannot prevent declarer from collecting the spade king and jack separately and a ruff with a low spade. For example, West might ruff the diamond with the spade 8. Declarer over-ruffs with the jack, returns to hand by ruffing a heart with the spade king, then leads the last diamond, making one of the last 2 tricks.

JUL 2. Nob. Yoshigahara sent a crossword-like problem where the eight Down "words" are two or three digit perfect squares and the six Across words are two, three, or four digit perfect squares with no perfect square used more than once. Unlike normal crossword puzzles, single character words have no restrictions. For example, the lower left corner can be any digit (except that the two-digit Across word it begins must be a perfect square).

Martin Cobern sent the following full solution explaining all steps in detail.



JUL 3. When Avi Ornstein was an artist, he found that he could get extra mileage by overlaying one ink with another. For example, if a yellow run was silk-screened over purple, brown would result. Nonetheless he proposes the following cryptarithmetic problem that directly contradicts his artistic experiences.

YELLOW + BROWN = PURPLE

Our final solution is from Ken Kiesel who writes:

My wife, who is also an artist, would argue that this puzzle is evidence that mathematics has nothing whatever to do with the real world. Be that as it may, mathematics is certainly as amusing and illuminating as is art.

Since the maximum carry in the addition of two numbers is 1,

Y + 1 = P.

From the thousands column, L must be 0 or 9. If it is 0, the tens column produced a carry. Thus from the hundreds column, O + 1 = P and O = Y. This is illegal, therefore

L = 9.

Continued on Page MIT 44

Product Development for IBM's Advanced Workstation Division in Austin, Tex. The division is responsible for developing all of IBM's UNIX-based workstations and software.

Sloan Fellows

W. Frank Blount, SM '71, is president of The New American Schools Development Corp. in Arlington, Va. Previously he was group executive for Communication Products at the AT&T in Basking Ridge, N.J. . . . **Roger W. Hale**, SM '79, chair of the Louisville Gas & Electric Co., in Louisville, Ky., is a new member of the board of trustees at Centre College in Danville, Ky. . . . **James T. Johnson**, SM '77, VP & general manager of the Boeing Co.'s Everett division, was profiled in *The Seattle Times* on June 17, 1991. In the article Johnson discusses the challenge he faces in keeping continuous quality improvement going while getting ready for production of the 777 twinjet, which will require about 10,000 more workers. It is his plan to accomplish this without jeopardizing efficiency in production of the 767 and 747 which are also assembled in the Everett plant.

The Alumni/ae Association has been notified of the deaths of **Richard Bell Hutchinson**, SM '42, of Roswell, Ga., on March 15, 1991, and **Walter Daniel Howell**, SM '41, on June 9, 1991. There was no further information provided.

Senior Executives

William T. O'Shea, '87, is now senior VP for NCR Network Products Group in Dayton, Ohio. Previously he was VP for product management & development at AT&T Data Systems Group in Morristown, N.J.

Management of Technology Program

Ken Miller, SM '83, is VP for Estimate Services at Zacks Investment Research in Chicago. . . . **K-C Tran**, SM '86, has been promoted to managing director of Environmental & Radiation Instrumentation at Gamma-Metrics in San Diego, Calif. He was in Boston recently and stopped by the program office to visit. He was married two years ago to Judy Heinitsch. . . . **Kozo Arao**, SM '90, has been transferred to United Solar Systems Corp. in Troy, Mich. . . . **Geoffrey Gill**, SM '89, has a new job with Arthur D. Little in Cambridge. He is now a consultant in Technology Management. . . . **Akio Mitsufuji**, SM '89, was on his way to visit at the Fuji Photo plant in Greenville, S.C., when, due to an unexpected stopover, he found himself in the Boston area and stopped by the Executive Education offices to see Jennifer Mapes and Peter Gil. Akio's son, who is now in junior high school and taller than Akio, is on the school basketball team. His daughter travels to Tokyo every Sunday to pursue ballet training at a studio there. His wife, Kyoko, teaches English at the Sahi Culture Center and the YMCA. . . . **Wenlan Hu**, SM '91, is a consultant with Management Strategies in Boston.

Joe Pine, SM '91, had an expanded version of his thesis, *Paradigm Shift: From Mass Production to Mass Customization*, published by Harvard Business School Press this past September. He is now a programming consultant on the Worldwide Development staff at IBM in Purchase, N.Y. . . . **Soo Wong**, SM '91, is engaged to Sloan PhD candidate Hauke Kite-Powell, whom she met in Jim Utterback's (PhD '69) fall class entitled "Management of Technology." They have set a wedding date of May 31, 1992. . . . **Dave Wright**, SM '91, is now a staff engineer with Delco Electronics Corp. He and **Kip Stevely**, SM '91, are planning to give a talk to the current MOT class this fall. . . . **Steve J. Siegel**, SM '91, is engaged to Leslie Oaklander. They are planning a wedding for May of 1992. . . . **Danny J. Dolron**, SM '91 is engaged to Heather Fifield and they are planned a September 7, 1991, wedding date as of this writing. . . . **Todd M. Moore**, SM '91, married Leighann on June 22, 1991. The ceremony took place in upstate N.Y. near Kingston. . . . **Julie M. Fernane**, SM '91, and Stephen A. Joyce, PhD '87 (V), were planning an October 12, 1991, wedding at this writing. . . . **Tom M. Heller**, SM '91, is engaged to Ann Czerwonka and they plan a May 23, 1992 wedding.

XVI AERONAUTICS AND ASTRONAUTICS

John Kenneth Haviland, PhD '61, sends word from Earlysville, Va.: "I retired from the University of Virginia's Department of Mechanical and Aerospace Engineering as professor emeritus on June 1, 1969." . . . **Martin C. Jischke**, SM '64, PhD '68, has been selected as the 13th president of Iowa State University. During his five-year tenure as chancellor of the University of Missouri at Rolla, enrollment decline was reversed, sponsored research was increased by 50 percent, the number of private donors doubled, and a major program of manufacturing research and technology transfer was initiated. Jischke also spent 17 years at the University of Oklahoma at Norman, serving as dean of the College of Engineering from 1981–1986, interim president in 1985, and director and professor of the School of Aerospace, Mechanical, and Nuclear Engineering from 1977–1981. From 1975–1976, he was a White House Fellow and special assistant to the Secretary of Transportation in the U.S. Department of Transportation. A trained fluid dynamicist, Jischke is an expert in heat transfer, fluid mechanics, aerodynamics, and problems related to high-speed aircraft and spacecraft. **Donald Spangenberg**, SM '55, of Lansdale, Pa., died on June 21, 1991. He had worked as an engineer at the Johnsville Naval Air Development Center in Philadelphia for 35 years. He was a U.S. Army Reserves veteran of the Korean War. Spangenberg served as a short-term missionary in the African Inland Mission in Kenya, to which he traveled several times.

XX APPLIED BIOLOGICAL SCIENCES

Joseph John Licciardello, PhD '60, of Reading, Mass., died on June 22, 1991. He was a research supervisor at the National Oceanic and Atmospheric Administration in Gloucester, Mass., for 16 years. He served on the International Atomic Energy Agency Committees and was author and co-author of many publications relating to microbiology, food science, and technology. Licciardello was in the Army Air Corps during World War II, serving in the European and North African theaters, and was awarded the distinguished flying cross as well as several other commendations.

XXI HUMANITIES

Paul G. Chapin, PhD '67, sends word from Washington, D.C.: "I have received the National Science Foundation Director's Award for Program Officer Excellence. This is the first time this award has been given. I am Program Director for Linguistics as NSF."

XXII NUCLEAR ENGINEERING

Colonel Michael H. Fellows, SM '74, PhD '86, writes: "My current Army assignment is as chief of the Environmental Restoration Division for the U.S. Army Corps of Engineers in Washington, D.C."

TPP TECHNOLOGY AND POLICY PROGRAM

Seth Hulkower, SM '86, and Lisa Perlman were married on June 16, 1991. **Chris Barnett**, '77 (II), SM '80, **Mark McCabe**, SM '86, and **John Wasson**, SM '86, attended the celebration. . . . **Carolyn Wong**, SM '87, is joining a PhD program at UCLA in political science on a four-year fellowship. . . . **Sylvia Marin-von Koller**, SM '88, recipient of the 1988 TPP Best Thesis Award, is now working as assistant regional coordinator in San Jose, Costa Rica, for PACA, which is funded by CARE, the Nature Conservancy, and Conservation International. . . . **Madhu Nott**, SM '91, is currently working at Arthur D. Little in Cambridge. . . . **Aaron Curtis**, SM '90, SM '91 (XV & TPP), has joined the staff of Boeing Renton Plant in Seattle, Wash., as a safety systems engineer.—Rene Smith for Richard de Neufville '60, Technology & Policy Program, MIT, Rm. E40-252, Cambridge, MA 02139.

STS PROGRAM IN SCIENCE, TECHNOLOGY & SOCIETY

Please send your news to Phyllis Klein, STS Program, MIT, E51-128, Cambridge, MA 02139.

PUZZLE CORNER

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The tens column cannot produce a carry, because the total for that column would have to be 19, forcing both O and W to be 9. Therefore, from the hundreds column, 9 + O = 10 + P, and

P + 1 = O.

Y, P, and O are consecutive ascending digits. Therefore, Y must be between 1 and 6 inclusive. It is relatively easy to try all possibilities. O + W must equal 8 or 9, and which it equals dictates whether or not W + N must generate a carry. B must be at least 9 - E to generate a carry for Y. R is the catch-all letter; any digit will work, so it gets what's left. Murphy prevailed, as I started with Y = 1 and the correct value is 6. The code is:

0 = U	1 = W	2 = R	3 = N	4 = E
5 = B	6 = Y	7 = P	8 = O	9 = L

649981 + 52813 = 702794

Better Late Than Never

Jan 2. Nob. Yoshigahara notes that a Japanese reader of his column solved this large cryptarithmetic division problem by hand, working for 11 hours, a mighty feat. Recall that last issue we reported that a 386SX solved it in 49 hours.

Apr 2. Mary Lindenberg notes that we misprinted her definition of of C_5; the correct definition is "the number of nuts each thief gets in the morning".

Other Responders

Responses have also been received from I. Shalom, M. Auerbach, A. Ornstein, M. Gilman, S. Feldman, N. Spenser, H. Garber, Y. Zussman, J. Grossman, J. Chandler, T. LeCompte, S. Barr, F. Furland, H. Garber, R. High, K. Rosato, A. Cangahuala, C. Whittle, E. Dawson, G. Rice, R. Shapiro, J. Mohr, N. Yoshigahara, and A. Silva.

Proposer's Solution to Speed Problem

"Letters of the Alphabet," "Wonders of the Ancient World," "Arabian Nights," "Signs of the Zodiac," "Cards in a Deck (with the Jokers)."