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## MARTIN GARDNER: A CELEBRATION OF HIS $(12 + 3 - 4 + 5 + 67 + 8 + 9)^{TH}$ Year

#### By Tom Ewing



he above title reflects just one aspect of Martin Gardner's multifaceted life - mathematical puzzles. As you will read below, Gardner was fascinated by (and wrote about) a plethora of subjects. He was a quiet and reticent genius, whose published works have inspired generations in many fields of study.

[The numbers in parenthesis in the title are the answer to this puzzle: Make the number 100 by inserting "+" or "-" signs between the digits 123456789 in order. There are other solutions; you might enjoy trying to discover them. You can find some answers on page 69 of this magazine.]

On October 21, it will be one hundred years since the birth of the mastermind, Martin Gardner, a man so well known for his original thoughts, creations, and writings, that he hardly needs introduction. He was interested in many areas - mathematics, puzzles, philosophy, physics, logic, skeptical inquiry, and pseudoscience. But throughout his very productive life magic remained his constant star. He once told an interviewer, "My main interest in magic is because it arouses a sense of wonder about the universe. It's like life is a big magic trick and scientists are trying to figure out how it does what it does." He certainly tried to figure it out himself, taking generations of admirers along with him on the fascinating journey.

Born in Tulsa, Oklahoma, in 1914, his lifelong interest in magic as his primary hobby continued unabated until his death

on May 22, 2010. Awards, accolades, and accomplishments aside, the best way to define the impact Gardner had during his lifetime is through the eyes of those who admired him most. You will hear from a number of these and learn how many of them keep his memory and love of curiosity alive. But first, here's a peek at his past, drawn from an article written by Richard Hatch, then associate editor of M-U-M, in January

Martin Gardner's father showed

him his first trick, in which three small

pieces of paper stuck to both sides of a butter knife were openly removed, but which appeared magically back on the knife. Gardner's name first appeared in The Sphinx in the February 1930 issue, where the fifteen-year-old was listed as second prize winner in a contest sponsored by magic dealer Blair Gilbert. The May 1930 issue contained his first published trick, New Color Divination, a variation on the crayon color divination trick, substituting colored gumballs for crayons and a moistened fingertip for the fingernail. Regular contributions followed in that and other magical publications.

Gardner moved to Chicago in the early 1930s to study at the University of Chicago, where he majored in philosophy, graduating in 1936. He was a regular at the Chicago Magic Roundtable presided over by "Dorny," who became the sixth dean of The Society of American Magicians in 1973. During this period, Gardner wrote his first books on magic: Match-ic (1935), Joe Berg's Here's New Magic, ghostwritten by Gardner (1937), 12 Tricks with a Borrowed Deck (1940), After the Dessert (1940), and Cut the Cards (1942).

He served four years in the Navy during World War II, nearly two of them hunting German submarines, and then returned to Chicago. He worked in the public relations department of the University of Chicago until he sold his first short story in Esquire. Titled "The Horse on the Escalator," the tale was inspired by Gardner's friendship with Dorny; it appeared in the October 1946 issue. Its acceptance for publication gave Gardner the confidence to pursue a full-time career as a freelance writer. While still in Chicago, he tracked down and interviewed Marshall D. Smith, illustrator of S.W. Erdnase's Expert at the Card Table, in an effort to identify the anonymous author.

His writing career took him to New York City in the late 1940s, where he edited a children's magazine, Humpty Dumpty, for eight years; he then originated and wrote the "Mathematical Games" column for Scientific American for twenty-five years, from 1957 through 1982. In an interview with the Canadian Broadcasting System in 1994 he explained, "I didn't take any math in college and I don't consider myself a mathematician in any real creative sense. I'm just a journalist who writes about what the real mathematicians say." His lack of mathematical sophistication proved

> an advantage, forcing him to express complex ideas in laymen's terms. The column was widely read and remains highly regarded in mathematical and scientific circles.

> One of Gardner's best known magic projects began with a column in the March 1951 issue of Hugard's Magic Monthly. Titled "Encyclopedia of Impromptu Magic," the column ran for seven years and featured magic performed with all manner of commonly available objects, with the exception of card tricks and rope tricks.



Martin with his wife Charlotte and sons lim and Tom (standing)



The columns were collated into a book in 1978, published by Magic, Inc. It remains a valuable resource for any magician who wants to perform tricks on the spur of the moment. In 1994, Kaufman and Greenberg published *Martin Gardner Presents*, a large collection of Martin's published and previously unpublished conjuring material.

His first book for the general public, *In the Name of Science* (1952), was based on an article on pseudoscience he'd written for *The Antioch Review*. But the book was quickly remaindered and did not become successful until purchased for \$500 and reprinted by Dover in 1957 under the expanded title, *Fads and Fallacies in the Name of Science*. It has never been out of print since and much of it – such as the chapters on Scientology, known then as Dianetics – remains topical today.



In 1976, Martin was one of the founding members of the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP), becoming widely regarded as the "dean" of American skeptics. Speaking of his interest in pseudoscience he said, "I cannot recall when or why I first became interested in pseudoscience. Not being a scientist, but only a science journalist, I have always been intrigued by fringe science, perhaps for the same reason that I enjoy freak shows at carnivals and circuses. Pseudoscientists, especially the extreme cranks, are fascinating creatures for psychological study. Moreover, I have found that one of the best ways to learn something about any branch of science is to find out where its crackpots go wrong."

For magicians, Martin authored two books under the pseudonym, Uriah Fuller. Titled *Confessions of a Psychic* (1975) and *Further Confessions of a Psychic* (1980), these books were "a factual account of how fake psychics perform seeming incredible paranormal feats." In particular, the books explained methods for duplicating effects made popular by Uri Geller, including bending silverware and keys, starting broken watches, duplicating drawings, and much more.

Gardner's long relationship with Dover Publications began with the publisher's release of his second book for the general public, *Mathematics, Magic and Mystery*, in 1956. This title also has never been out of print and remains an engaging and useful compendium of many of the mathematical principles used by magicians. It explains the math behind many of the top card Just a few of Martin Gardner's publications

magicians of the day. It was also designed as a force book; the fifteenth word of each chapter is "of."

In the early 1990s, Gardner moved to Hendersonville, North Carolina, where he continued to write books, columns, and articles. His most successful book has been *The Annotated Alice*, first published in 1960 and reprinted many times. There are currently over a half million copies in print of that title alone.

After the death of his wife, Gardner moved back to his native Oklahoma in 2002, where his son James is a professor of education at the University of Oklahoma in Norman. He continued writing articles for different magazines, including a column for *The Skeptical Inquirer*. His works in the first half of this decade include *Smart Science Tricks* (2004), *The Annotated Night before Christmas* (2005), and an updated paperback edition of his *New Ambidextrous Universe* (2005). Just for good measure, he co-wrote *The Colossal Book of Short Puzzles and Problems*, edited by his official biographer, Dana Richards. His twenty-five years of "Mathematical Games" columns had already been anthologized in fifteen books, but were reissued in digital form in May 2005.

#### **THE G4G FOUNDATION**

Being widely admired by so many people, a non-profit organization, The G4G Foundation, was formed in the early 1990s to honor Gardner and "promote the lucid exposition and discussion of new ideas in recreational mathematics, magic, puzzles, and philosophy." Tom Rodgers conceived the idea of hosting a weekend "Gathering 4 Gardner" to honor him and bring some of his friends together. The first G4G1 was held in January 1993. Elwyn Berlekamp publicized the idea to mathematicians. Mark Setteducati took the lead in reaching the magicians, and Tom Rodgers contacted the puzzle community. Since that time, ten more biennial conferences have been held; the most recent was in March 2014, when hundreds of people met in Atlanta to communicate in the lingua franca of Martin Gardner.

An article in *Scientific American* noted that a feature of all the G4Gs has been magic. Gardner was an inventor of magic effects for eight decades, but shied away from performance. He admitted as much during an interview with the CBC: "Magic is strictly a hobby with me. I've never been a performer. The closest I ever came to getting paid for magic was when I was at the University of Chicago; during the Christmas season I demonstrated magic sets at Marshall Fields." Still, well-known magicians owe a debt to Gardner for finding, sharing, and, in some cases, creating the principles they use today.

In conclusion, one must wonder what Gardner thought of his life's work, upon which he labored day in and day out. Was it work or a labor of love? With a twinkle in his eyes he summed it up saying, "I just play all the time and am fortunate enough to get paid for it." •

Tom Ewing is the S.A.M. National Historian and writes The Nielsen Gallery column each month in *M-U-M*.

#### MARK SETTEDUCATI

Setteducati was a close friend of Martin Gardner and a cofounder and organizer of G4G. In March 2012, he was appointed president of the G4G Foundation. He is a magician and inventor of magic, illusions, games, and puzzles and one of the most successful artists in the world to integrate magic and illusion into commercial products.

Tom Ewing: When did you first meet Martin?

MS: I first met him in 1990 and visited with him often over the years. I was first introduced to him through his friend Mel Stover. I went to Martin's house in Henderson, North Carolina, and, like everyone, was impressed with his file cabinets. He had files on everything. Plus he corresponded with everyone and those files were filled with newspaper clippings, flyers, letters, and reference materials. This is how he could write so broadly on so many subjects.

TE: How did the G4G conference come about?

MS: The G4G was meant to be a one-off thing just for his friends and people who had direct contact with him. It quickly developed into a major event. Tom Rodgers drove him to the first conference and he attended one more. Eventually, it got so big we decided not to do it every year, but every two years. Martin didn't fly, and his health also kept him away, but his heart was in every convention. And finally, he was a very shy man. He didn't want to be idolized.

TE: Give our readers your sense of the man.

MS: Martin was one of the kindest, nicest human beings you ever met. Forget about whatever he accomplished. That's nothing compared to the most important thing about Martin. He was a genuinely nice human being. No ego, just kind and very inquisitive. Even in his last days, you'd show him a trick and he'd be like a little kid. He never lost his childlike sense of curiosity and wonder.

TE: Do you have a favorite book of his?

MS: My favorite is *Mathematics, Magic and Mystery*. I love principles; it's filled with many of these, but it's easy to read. It's very accessible. Martin wrote simply and the principles were so fascinating that no matter how many times you looked at the book you could find something new or be reminded of something you forgot.

TE: What makes him special?

MS: He never lost his curiosity or enthusiasm. He never got bored with the topics he was interested in. He loved ideas and interacting with people – that's why he loved magic. Even though he was interested in many areas – math, magic, puzzles, and skeptical inquiry – he was very kind and truly open minded. Even though he was a skeptic, if you gave him proof of something that he didn't agree with, he would actually change his position, unlike others who can't admit they were wrong.

TE: What's your favorite anecdote about Martin?

MS: It happened at the G4G event two years ago. I organized the magicians and Elwyn Burlecamp organized the mathematicians. So Elwyn and I had to give a few announcements. I told attendees that Martin loved magic more than anything. But Elwin said, "No, no, math was what he loved more than anything." I suddenly realized that when you're with him as a magician you think that's his main interest. But when a mathematician is with him, he gets the impression that math is the only thing he's interested in. He was a chameleon who went into all these different areas and had just as much enthusiasm for the math as he did for magic.

#### DANA RICHARDS

Dana Richards is Gardner's official biographer. Richards is a professor of computer science at George Mason University and a noted author. He was the driving force and editor of Gardner's last book.

TE: How did you come to help Martin write the *Colossal Book of Short Puzzles and Problems*?

DR: It happened by default. Gardner's wife had died, and he wasn't handling it very well. He became listless and disinterested. I had an idea for him to have a project and told him, "Look, if you're not feeling particularly creative, why don't you just put a book together of all the puzzles that appeared in your *Scientific American* column over the years." He didn't think he could get around to it, so I copied all of the puzzles, pasted them up, and sent them to him saying, "Something like this." He still wasn't sure, so I organized it more, put the puzzles in categories, sent it to him, and said, "See, this would be a really fun project for you to do." Finally he said, "Why don't you just put your name on it," and that's what we did.

TE: How did you first meet him?

DR: We got to know each other because I stumbled on a paper he'd written in 1950 called "Mathematics and the Folkways" in the *Journal of Philosophy*. I wrote him asking for a bibliography of his works. He sent me a Xerox list of his books, but I told him that I wanted to know about everything he wrote. That began a give and take; I visited him over the years and he'd show me things in his files and his library and we became really good friends. The first time I actually saw him was 1979; he did an effect called Card Warp. He gave me those cards. One of the proudest moments for me was that I figured out how the trick was done by studying the tears in the card. I came back the next day and told him how it was done. He'd use tricks to break the ice.

TE: What were his most striking attributes?

DR: He was a very humble person. Except for demonstrating magic sets at Marshall Fields, he never performed in public. This humility kept from doing that, but it also kept him from doing other things like accepting honorary doctorates and speaking engagements. In fact, I've never found a single example of when he spoke in public. He was always in the mix and liked being in the room when things were discussed, but never set himself up as an expert.

TE: Which do you think Gardner liked most, math or magic?

DR: He definitely liked magic best. He published in magic journals for over eighty years. He didn't do that with math. He was a latecomer to math, but had an early appreciation for it. Initially, the math was in service to magic. His only degree was in philosophy; I guess I could say that his first love was philosophy and not magic or math. But the reason I put magic before math is because magic was closer to philosophy for him. What made magic interesting to him was that it was a vehicle to opening people's eyes to the wonders of our world. He was a "Mysterian," someone whose philosophy is that we should study life but we will never understand everything – there will always be mysteries. Magic primed people's minds for the awe he felt when he appreciated nature.

#### MAX MAVEN

Orson Welles wrote that Max Maven has "the most original mind in magic." He's published over 1,700 creations in the conjuring literature, and has been an advisor to over a hundred television shows. As a consultant he has worked with David Copperfield, Siegfried & Roy, Doug Henning, Penn & Teller, Lance Burton, and many others. *MAGIC* magazine included Max among the one hundred most influential people in the field of theatrical magic during the twentieth century.

TE: When did you first encounter Martin Gardner?

MM: I can't remember exactly when I began reading Martin Gardner's "Mathematical Games" columns; it's simpler to say that I can't remember a time when I wasn't reading those columns. My father was a physicist, so from my earliest childhood, *Scientific American* had a presence in our household, and somewhere in the late 1950s I became a fan, eagerly awaiting the arrival of each month's issue for the express purpose of devouring whatever odd and wonderful ideas Martin had chosen to share.

TE: How did you come to know each other?

MM: I corresponded with him beginning in the early 1970s, mostly about mathematical puzzles. But I was also interested, of course, in mentalism and underlying principles, and that was another subject of mutual interest. It wasn't until the first Gathering for Gardner that I actually met him. However, he was a big part of my life – almost like family. Of all the people I have encountered during my life, precious few have informed and inspired me as much as Martin. One shelf of my library is devoted to Gardneriana, and I revisit his pages frequently.

TE: What made him special from your standpoint?

MM: Gardner is at the center of this huge collection of intersecting sets – mathematics, magic, puzzles, logic, linguistics, philosophy, theology, physics, and I'm certain I'm leaving out a lot of things, but they all intersected in this one fascinating guy. This is evident in the people who attend the Gatherings. There are scientists, mathematicians, magicians, puzzle enthusiasts, physicists, skeptics, all interested in exploring these areas and sharing their wonder and fascination.

M: Which of his books is your favorite?

MM: My favorite is *Mathematics, Magic and Mystery* because it was the first. In fact, I may have read it before reading any of his columns. It all happened around the same time. It's worth noting that Martin's own favorite among his books was *Whys of a Philosophical Scrivener*. My guess is that very few people actually read that book all the way through. I did, but didn't tackle it until about fifteen years ago.

#### JOHN RAILING

One of the country's top close-up magicians, Railing is based in Chicago and performs regularly for an impressive roster of celebrities, entertainers, presidents, foreign dignitaries, and heads-of-state from around the world. He is actively involved with the Gathering 4 Gardner Foundation and serves on its Magic Advisory Council. He is a member of the organizing committee of the annual, worldwide Celebration of Mind event, focusing on Gardner's life and work, including his playful and fun approach to mathematics, science, art, magic, and puzzles.

TE: How did Martin Gardner come to your attention?

JR: I spoke with him on a number of occasions, but never met him personally. Like most admirers, I was exposed to him through his columns in *Scientific American*. In fact, when I was in high school in the late '60s, my twin brother and I used to rush to the local library in Scottsburg, Indiana, to read each new issue. To us, the rest of the magazine was simply a wrapper around Martin's column. This was long before I ever became interested in magic.

TE: What was it about his *Scientific American* articles that interested you?

JR: Several things. It was a wide-ranging series of articles about curious things that, for the most part, had some wonderful math and underlying principles; they were presented simply at first, but when they finally opened up to you, they created an "Aha!" moment. He put together these columns in a natural way, written like a student and not a professor. He would pose a puzzle or a problem and you'd have to wait until next month to learn the solution. People would write him and he'd direct them to other experts. Long before the Internet, he was a one-man social media resource, connecting people behind the scenes, which became the genesis of the Gatherings.

TE: Gardner made it to the first several Gatherings. Do you think he wanted them to continue after his death?

JR: Absolutely. He didn't want any memorials. He didn't want anyone to do anything special for him. He was cremated and just wanted his ashes thrown away. He didn't want any idolatry. Even with his autobiography he simply told a friend, "Do whatever you want with it."

TE: What fascinated you about him?

JR: He seemed to somehow be connected with so many interesting super minds in fields unrelated to what people thought he was interested in. We're talking great poets, inventors, and writers like Isaac Asimov and even some of those working on The Manhattan Project. During World War II, he was in the Navy; when the commander of the ship talked about a special bomb that had been dropped that would change the course of the war, Gardner said he knew exactly what it was because of his connection with the University of Chicago. He and the commander were the only ones who knew what was going on and what the bomb was.

TE: How do you think he'll be remembered?

JR: I think he'll be remembered for how he touched so many people in so many different fields. I'm talking life-changing encounters. And it's these people, the founders and attendees at the Gatherings, who are working to ensure Martin is remembered by future generations. They all nurse Martin's celebration of mind. No matter where people are in the world, they should take time during this centennial of his birth and get together and have a party. It could be two people in a bar in Tokyo or 1,500 people in Omaha, Nebraska. It doesn't matter. Come together to share a puzzle, a magic trick, a toy, a mathematical diversion. Just give a toast to Martin and the Celebration of Mind. In describing the essence of Gardner, one word comes to mind – "wonder!" Throughout his life, he wrote articles, books, and essays on a range of topics driven by that sense of wonder or surprise.

#### JAMES RANDI



James Randi and Martin

Retired stage magician and author James Randi is best known for his challenges and investigations into paranormal claims and pseudoscience. He founded the James Randi Educational Foundation. His comments are excerpted from the afterword of a new book, *Undiluted Hocus-Pocus: The* 

#### Autobiography of Martin Gardner.

JR: I've really no idea where – or exactly when – I first met Martin Gardner. I believe that moment may have occurred in the offices of *Scientific American* magazine almost seven decades ago, but it seems I have always known him. He became such a fixture in my life, such a dependable part of my world; I was so very accustomed to picking up the telephone to call him, or answering a call from him that would always result in an improvement of my knowledge of the universe.

He always expressed delight at something he had just stumbled upon or that had occurred to his agile mind as he applied it to a problem at hand. Indeed, "delight" was a major characteristic of this man's makeup. That enthusiasm certainly carried over into his books and *SA* column. He was constantly celebrating discoveries, expanding on them, and looking for new ways to communicate them to the public – and especially young people. He was never happier than when in the company of kids to whom he would present a brainteaser, followed by the "Aha!" phase in which he would provide the answer – usually totally unexpected – that made everything quite clear.



#### RICHARD HATCH

Richard Hatch is known as the translator from German into English of works about Johann Nepomuk Hofzinser (1806 – 1875), Paul Potassy, and the first four volumes of Roberto Giobbi's acclaimed *Card College*. He is the author of the illustrated bilingual (English and Japanese) children's book, *Taro-san the Fisherman and the Weeping Willow Tree* published in December 2012.

RH: I had never cared much for Erdnase. But I cared a great deal for Martin Gardner.

It seems I had known about him almost since I began to read. I had borrowed his *Mathematics, Magic and Mystery* from an older neighbor boy in Ames, Iowa, when I was about twelve and soon thereafter began reading his columns in my father's copies of *Scientific American*. The Dr. Matrix columns particularly fueled my imagination. I became obsessed by magic, then abandoned it for a time and studied theoretical physics, and then became re-obsessed by magic and abandoned physics to pursue it. But all the while I continued to read and admire the works of Martin Gardner.

Then Charlie Randall and I started to sell magic books, both new and used, and even to publish a few ourselves. At some point Martin got in touch with us. He had a few books to sell, ones he no longer needed, would we be interested? Of course we were interested! Anything Martin had handled had to be interesting, even if he no longer wanted it.

Then one day, in the summer of 1999, I went to the mailbox and found an uninsured book-rate box from Martin Gardner. Inside was his first edition copy of Erdnase, signed on the title page by illustrator Marshall D. Smith. Although not in good condition, I knew it was a valuable book. Charlie and I decided to sell Martin's first edition on eBay, which was relatively new at the time and something we had no experience with. We discussed it with Martin; he seemed intrigued with the notion of an online auction and suggested that it might be made more interesting by the addition of his research materials on Erdnase, including his correspondence with Edgar Pratt, Marshall Smith, and others. We agreed and in due course another box arrived with those things. We were all surprised when his first edition and research materials sold on eBay for over \$10,000 in February 2000, leading to a frontpage story on Erdnase in The Wall Street Journal!

Charlie and I visited Martin several times in North Carolina (once to pick up his library of magic) and then a few more times after he moved to a retirement home in Norman, Oklahoma. Others who knew him better and who were more familiar with his incredible output have elsewhere ably described this remarkable man. To me, he was a modest genius, a generous friend, an unpretentious intellectual, and a real magician. I am grateful that our mutual interest in magic brought me for a brief time into the orbit of this uniquely gifted individual.

[Excerpted from MAGICOL with permission.]

What you're about to read is a very interesting trick. I've not seen anything exactly like it in the literature; no one that I've shown it to has seen anything similar (and I've shown it to some very knowledgeable people). The reason it's a fresh plot is that the inspiration for this trick comes from outside the world of conjuring. This trick has also surprised and fooled everyone who watched it. The ending is completely unexpected. It is relatively easy to do, demanding only very low level sleight of hand. All it requires is that you take the time to print up the cards and practice the patter and the handling.

The tone of this routine is a bit dark; you'll have to choose your audiences with discretion. However, the life-and-death premise of the patter is compelling and engrossing; it invokes a "how is he going to solve this problem?" response in the viewer. The presentation and the final payoff can be altered, but try it my way in front of an audience first before you change it.

I never met Martin Gardner, but I think he would have enjoyed this trick. It has a genuine "Aha!" moment.

In an effort to dissuade as many people as possible from actually doing this trick, I'm going to explain the effect as I explain the handling. You'll have to read through the whole thing to understand what's going on.

Preparation: You'll need to print out some cards using the templates provided in the YouBetYourLife.pdf file (which you will find in the members section of the magicsam.com website). These are standard-size business cards, so you can use any blank, perforated business card stock. It is good if the edges of the cards are relatively smooth, so you may want to use a high quality stock.

Page one of the PDF file shows what will eventually be the backs of the business cards (Photo 1). You'll want to print up at least three of these to try out the effect. Page two of the PDF file shows the faces of the business cards that will not be destroyed during the trick (Photo 2). When printed onto a sheet that already has the backs printed on it, you will end up with two square cards, two circle cards, one





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#### By Michael Close

each of crescent moon, plus-sign, triangle, squiggly lines, control-key symbol, and one double-backed card that shows "You Bet Your Life" on each side.

Page three will print two pairs of gaffed cards plus an extra two cards (Photo 3). Page four will print two pairs of gaffed cards plus an extra two cards that pair up with the extra set from page three (Photo 4). So, print three of page one and print one each of pages two, three, and four on the backs. (Make sure you orient the paper properly when you print pages two, three, and four.)

Before you tear out all the cards, take a look at how page three printed out. At the upper left of the page is a business card with the upper half of the word "YOU" at the left edge, a circle that is bisected by the perforation of the cardboard, and the upper half of the word "DIE" at the upper right edge. Below this you'll find the lower half of the word "YOU" at the left edge, a square that is bisected by the perforation of the cardboard, and the lower half of the word "DIE" at the right edge. Remove these four cards; together they make up what I'll refer to as one complete gaffed set. Orient these four cards so the half-words are at the top, and place them aside in a pile with the half-word/half-design side up.

Now punch out all the cards from page two. Find the double-backer and place it onto the four gaffed cards with the "You" of "You Bet Your Life" at the top (Photo 5). Arrange the other nine cards face up, from bottom to top as follows: control-key, square, crescent moon, circle, squiggly lines, square, plus-sign, circle, and triangle (Photo 6). Turn this packet face down. Place the other five cards on top of this packet. (Don't turn over the second packet; the gaffed cards will be face up in a face-down packet.)

That's the preparation. I snap a rubber band around the cards to keep them together in my pocket. Once you understand the setup, it is very easy to reset. To perform, you'll also need a very small (but sharp) pair of scissors. These should be out of sight, so the spectators do not suspect that scissors will be used.

Handling and Presentation: As I







begin the story, I bring out the packet of business cards and I remove the rubber band. "One of the popular theories of quantum mechanics is the concept of alternate universes. This idea is the basis for what you're about to see.

"Once upon a time, in an alternate universe, there was a very popular television show called You Bet Your Life. This show had no resemblance whatsoever to the TV show that aired on our planet in the 1950s: no Groucho Marx, no secret word, and no duck that came down and gave you a hundred dollars. The show on this alternate Earth was more somber; but even so, it was the most-watched program on the entire planet.

"The show was basically a guessing game; it used cards like this – cards with symbols on them. To show you how it worked, I'll use four cards: two cards with a square on them and two cards with a circle on them."

As I talk, I casually spread the cards between my hands, showing the various symbols. (I make sure not to spread past the card with the control-sign.) I then roughly square the cards and I spread through them again; as I do this, I up-jog the two cards with squares on them and the two cards with circles on them (Photo 7). As I up-jog these cards I tilt the cards so the spectators cannot see the faces.

As I up-jog the second square card, the control-sign card will be under my left thumb. I move my thumb down slightly, injogging the control-card (Photo 8). When this is done, I roughly square the cards and flip them face down into my left hand.

The situation at this point is that there are four cards out-jogged from the front of the packet; these are two circle cards and two square cards. There is one card slightly in-jogged; this is the control-sign card. My right thumb presses down on the in-jog and squares the control-sign card into the packet. As this happens, I get a left little-finger break above this card. In the same action, the right hand grabs the out-jogged cards and strips them out from the packet. I flip them over onto the packet; they do not fall square but extend off the right-hand side of the packet. I spread out the cards using both hands; the spectators can see two circles and two squares. All this happens during the preliminary three paragraphs of patter.

"The game worked like this. A contestant came on the show. The four cards were mixed around, face down. The contestant would make a choice. If he chose a circle and a square, he won a billion dollars, tax free. That's a substantial amount of money."

From the spread of four cards, I remove a circle and a square and I display them. Then I replace them onto the other two spread cards.

"But, if the spectator got two squares or two circles, he was put to death – which explains the name of the show, You Bet Your Life."

I remove either two squares or two circles and I display them. I place them back onto the other two spread cards. As I say, "he was put to death," (a line that always gets a reaction) I look up at the spectators. My right hand squares up the spread cards and in a continuing action I turn over all the cards above the little-finger break (Photo 9). I immediately spread off the top four cards (these are now the gaffed cards) and I call attention to the backs and the words "You Bet Your Life." These four cards are dropped onto the table and the other cards are placed aside.



[The audience management and the use of the double-backed card make this switch unsuspected and undetectable. The trick has not started, yet I am way ahead of the spectators. Because of the story they are about to hear, they will never catch up.]

"When the television network announced this game show and explained the rules, there was a lot of discussion about it. The first question was, 'What are the odds?' At first glance, it seems to be a fifty-fifty proposition. You have two winning combinations: square-circle or circle-square; and you have two losing combinations: square-square or circlecircle. It seemed reckless to risk your life on what was essentially a coin-toss, so nobody wanted to be on the show to play the game.

"Then some smart math guy wrote a blog saying that the actual odds were better than that, and here's why. The first card you pick has no bearing on your chances. So let's suppose you pick a square. Of the three cards that remain, two are winners for you – the two circle cards. Only one card is a loser – the other square card. So the real odds are two to one in the contestant's favor. That got everybody excited, and a lot of people wanted to be on the show."

#### YOU BET YOUR LIFE \_

As I talk about the odds being fiftyfifty. I slide two cards to the right and two to the left. These cards are face down, but I refer to them as if they were face up. I then arrange them back into a face-down row of four. As I discuss the actual odds, I slide one of the four cards toward me. Again, I refer to the card as if we are looking at them face up, but the cards remain face down. This discussion of the odds is correct, but the emphasis on them is simply smoke. Even though I've never shown the faces of the cards, there will be a strong false memory that I did. This will make the ending even more surprising and astonishing.

"But here's what happened. People went on the show, and even though the odds were in the contestant's favor, when they got to the point when they had to choose, they froze. They just couldn't go through with it; the penalty for failure overwhelmed the vast reward. Nobody chose, and nobody won or lost.

"Granted, this did create compelling television, but the producers were frustrated that nobody wanted to play the game to the end. They were going to pull the plug on the show, when they got a call from one guy. This guy had carefully read the rules of the game, and he had discovered something. He told the producers, 'I'll come on the show, and I won't chicken out. I'll play the game to end, and you can promote that fact.'

"The producers were delighted and spent millions of dollars on commercials hyping the fact that someone was going to play You Bet Your Life to the end. The night of the show the Internet almost melted down from the Tweeting and social media posting. It was the largest viewing audience in the history of television. The guy was introduced and the four cards were mixed up. Do me a favor. I'll play the part of the guy and you play the part of the host. I'll turn away. You mix the cards around on the table so I can't know which card is where."

As I tell a spectator that I want him to mix the cards, I demonstrate by sliding around the cards on the table. I don't want the spectator to lift the cards (he might inadvertently turn one over). He should just slide them around. When he announces he has finished mixing them, I turn back.

"Are you done? Is there any way I can know the order of the cards? No? You're right. Any thoughts on what the guy did? No? Then I'll show you. He did this." I bring out the scissors and immediately begin cutting the four cards in half (Photo 10). This cutting is done widthwise; the center of each card lies just above the top of the word "YOUR." As each card is cut I place the lower half (with "YOUR LIFE") in front of me and I push the other half aside. My patter consists of saying, *"T'll take this, and this, and this, and this, one."* After the cards have been cut, I put the scissors away and I focus my attention on the four half-cards that are in front of me.



"The guy had followed the rules; he made a choice and ended up with two complete cards. And because he had taken a half from each of the four cards, he had to end up with one circle and one square. And he won the billion-dollar prize."

I pick up the four halves, keeping the faces of the cards away from the spectators. I shift them around a bit and then I toss them face up on the table. I continue to move them around, and then I arrange them so they form a complete circle and a complete square (Photo 11). (It is necessary to shift the pieces around a bit when they are face up so the spectators will lose track of how they should be oriented. Because of the way the cards are printed, the edges that line up *are not* the cut edges. However, no one notices this.



"The guy deserved to win the prize; his solution was ingenious and completely counterintuitive. But the producers of the show didn't want to give him the prize. They said to him, 'That's not fair. The way you did it there was no risk whatsoever.' The guy said, 'Of course there was a risk. I could have picked these four pieces."

As I say the above patter I push the halves with the square and the circle aside and I reach for the other four pieces. I pick them up, keeping the backs toward the spectators, and I fan them so I can see the faces. Then I put them down on the table, arranging them so they say, "YOU DIE."

This concludes the trick. I pick up all the pieces and pocket them. I snap the rubber band around packet of cards and I pocket them as well.

Please put in the effort to give this a try. The stunned looks that will greet you at the climax of the trick are very satisfying.

#### NOTES

This trick is based on a puzzle. The idea of getting one of each type of thing when you have two each of two items that look identical came from one of the Puzzlers on the NPR program *Car Talk*. It was broadcast as part of the show on February 19, 2000, and was submitted by listener Scott Crass. You can find this Puzzler on the web on the *Car Talk* site. They have an archive of all the Puzzlers, categorized by year.

In the first version of the trick I came up with, the two halves of the word/symbol gaffed cards met at the middle of the card. The problem with this was that if I didn't cut the card right down the middle (or if the printer was a little off when it printed the card) there might be a telltale extra bit of red or black on one or more of the half-cards when I put them together. This, obviously, could tip off the method. Max Maven offered the excellent suggestion of putting the split word/symbol against the ends of the cards. (This ploy comes from an old trick, Albert Spackman's Newspaper Test from The Gen, October 1964. This principle was then used in a trick in which a strip of paper containing symbols was cut at a spot dictated by a spectator. The symbol that was apparently cut matched a prediction.) Using Max's suggestion, it doesn't matter if my cut is off-center, as long as it is a straight cut. •

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