FALL 2018

DIXON BOSS

THE SWEET STORY BEHIND CHOCOLATE

WHAT HAPPENED TO THE PASSENGER PIGEON?

GIANTS OF THE SKIES

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On the Cover:
A Boeing 747—with its distinctive bulbous nose—prepares for takeoff.

FEATURES

DEPARTMENTS

BOSS
FALL 2018

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CHANGE IS GOOD

"If it ain't broke, don't fix it." So goes the old adage, meaning you shouldn't spend your time or energy trying to fix something that isn't broken. While it may be fun to say, I've always believed there is little truth in this statement. Most things not only *can*, but *should* be improved.

At Dixon, we are always looking to improve our products and service. It is a never-ending challenge that we love, and it is embedded in our philosophy of continuous improvement. We seek 'Uncommon Excellence' in every aspect of what we do.

These efforts extend to our redesigned *BOSS* magazine. Our custom publication will still contain the same interesting articles, but more of them in shorter form. Along with an extended version of The Dixon Driller, we've included creative artwork and engaging interviews. We think we've made something great, even better. We hope you like it.

Let us know what you think. Thanks for your business.

R L Goodall

Photo: William Gray

TRIVIAL MATTERS

DID YOU KNOW THAT...

If you need something super fast, ask for it in a yoctosecond, the smallest unit of time.

Twinkies contain 68 percent air.

Thomas Edison preferred to do his reading in Braille, and he proposed to his wife in Morse code.

Disney's Space Mountain roller coaster was the first thrill ride attraction to be operated by a computer.

Parsley is the most popular herb worldwide.

The first instant replay seen on TV was during an Army-Navy football game on Dec. 7, 1963.

Pelicans do not have nostrils.

Candy bars in the early part of the 20th century included Chicken Dinner and Chick-O-Stick (neither of which contained chicken).

The United States has more radio stations playing country music than any other music format.

Tickets for the first Super Bowl went for $12—and that was for the most expensive seat.

Earth is closest to the sun on Jan. 3rd.

The player silhouette in the NBA logo was created from the image of former Los Angeles Laker Jerry West.

The first recorded email was sent in 1972.

Souvenirs from the 2000 Summer Olympics were marked with human DNA in the ink to prevent fraud.

The yo-yo has been used as a weapon for hunting in the Philippines.

Less than 1 percent of the poems written by Emily Dickinson were published during her lifetime.

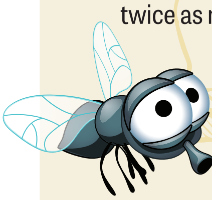
The Book of Bizarre Truths

ON THE LIGHTER SIDE

Why did the physics teacher break up with the biology teacher? There was no chemistry.

Police officer talks to a driver: "Your taillight is broken, your tires must be exchanged and your bumper hangs halfway down. That will be $300."

Driver: "All right, go ahead. They want twice as much as that at the garage."



I asked my daughter if she'd seen my newspaper. She told me that newspapers are old school. She said that people use tablets nowadays and handed me her iPad. That fly didn't stand a chance.

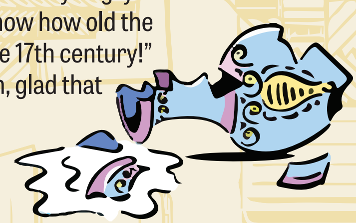
I forgot my cellphone when I went to the bathroom yesterday. We have 245 tiles.

A recent scientific study showed that out of 2,293,618,367 people, 94 percent are too lazy to actually read that number.

She: I have a doctor's appointment today but I really don't want to go...

He: Why don't you just call in sick?

A boy breaks an old vase at a rich uncle's house. The uncle gets extremely angry and yells: "Do you even know how old the vase was? It was from the 17th century!" The boy sags in relief: "Oh, glad that it wasn't new."



I've always thought my neighbors were quite nice people. But then they put a password on their Wi-Fi.

How long did the baseball player spend in the library?
Five minutes. It was a short stop.

Teacher: Where are the Great Plains located?
Tommy: At the great airport!

short-funny.com

Illustrations: Shutterstock

DATES IN HISTORY

1775 The Continental Marines were the marine force of the American colonies during the American Revolutionary War. The Corps was formed by the Continental Congress on Nov. 10, 1775 and was disbanded in 1783. Their mission was multipurpose, but their most important duty was to serve as onboard security forces, protecting the captain of a ship and his officers. During naval engagements Marine sharpshooters were stationed in the fighting tops of the ships' masts, and were supposed to shoot the opponent's officers, naval gunners and helmsmen.

1835 On Nov. 12, 1835, Scottish immigrant Henry Burden patented a horseshoe manufacturing machine. He continued to improve the machine, which took a red-hot iron bar and cut off a correct length before a series of dies pressed the bar into shape, thinning the inner edge and pinching and thickening the heels, while forming the grooves and punching the nail holes.

1859 Jules Léotard was a French acrobatic performer and aerialist who developed the art of trapeze. Léotard performed the first flying trapeze circus act in Paris on Nov. 12, 1859.

1954 The only product Elvis Presley ever promoted was Southern Made Donuts. He made a radio commercial for the snack food that aired during *Louisiana Hayride* on Nov. 6, 1954.

1980 On Nov. 21, 1980, 83 million Americans tuned in to watch the finale to the *Dallas* cliffhanger "Who Shot J.R.?" A few weeks earlier, 85.1 million Americans voted in the Reagan-Carter presidential election.

(farmcollector.com, onthisday.com, The Book of Bizarre Truths)

IN THE FIELD

PRODUCT SPOTLIGHT

DIXON API COUPLERS
5300/5400 SERIES

APPLICATIONS:
- When combined with API adapters, couplers are suitable for tank truck and rail car loading and unloading.

SIZES: 4" per API RP1004:2003 specifications

FEATURES:
- Locking 5 cam design provides easy alignment and tight connection
- Fully interlocked collar — cannot be opened when connected and safeguards against accidental disconnection
- No special tools needed for maintenance

MATERIALS:
- Body: hard-coated anodized 356T6 aluminum
- Shroud: hard-coated 356T6 aluminum with stainless steel insert

FILL 'ER UP!

WHEN A TEXAS FUEL TERMINAL SOUGHT TO UPDATE ITS FACILITIES, OPERATORS TURNED TO DIXON FOR ITS A-FRAME LOADING ARMS.

THE SITUATION: Approximately 30 to 40 tanker trucks a day pull into Arroyo Terminal in Rio Hondo, Texas, to fill with diesel fuel to haul to customers in Mexico. Drivers of the bottom loading trucks would pull into one of four bays, connect the hoses and fill up.

THE PROBLEM: If drivers didn't drag the hoses out of the way, they often would be driven over by other trucks, causing damage. API couplings were also getting dirty from being kept on the ground.

THE SOLUTION: Workers at Arroyo installed four A-frame Dixon loading arms in less than a week, which kept the hoses off the ground and the API couplers clean.

THE OUTCOME: By utilizing the A-frame loading arms, drivers now are able to pull up to each bay and fill their tanks far more quickly and efficiently without causing damage to the equipment. Drivers simply punch in a code and do their own hook-up, without having to lift or put back heavy hoses. "The loading arms made things a lot faster and easier," says Gilbert Perez, vice president for oil field sales, Hose of South Texas. "They had a problem and we were able to solve it. It improved things 100 percent."

- Link, shaft, pin, crank: hardened 17-4PH stainless steel
- Cam: CF8M stainless steel
- Poppet & bearing: Bayloy
- Seals: Buna, FKM-B, FKM-GFLT

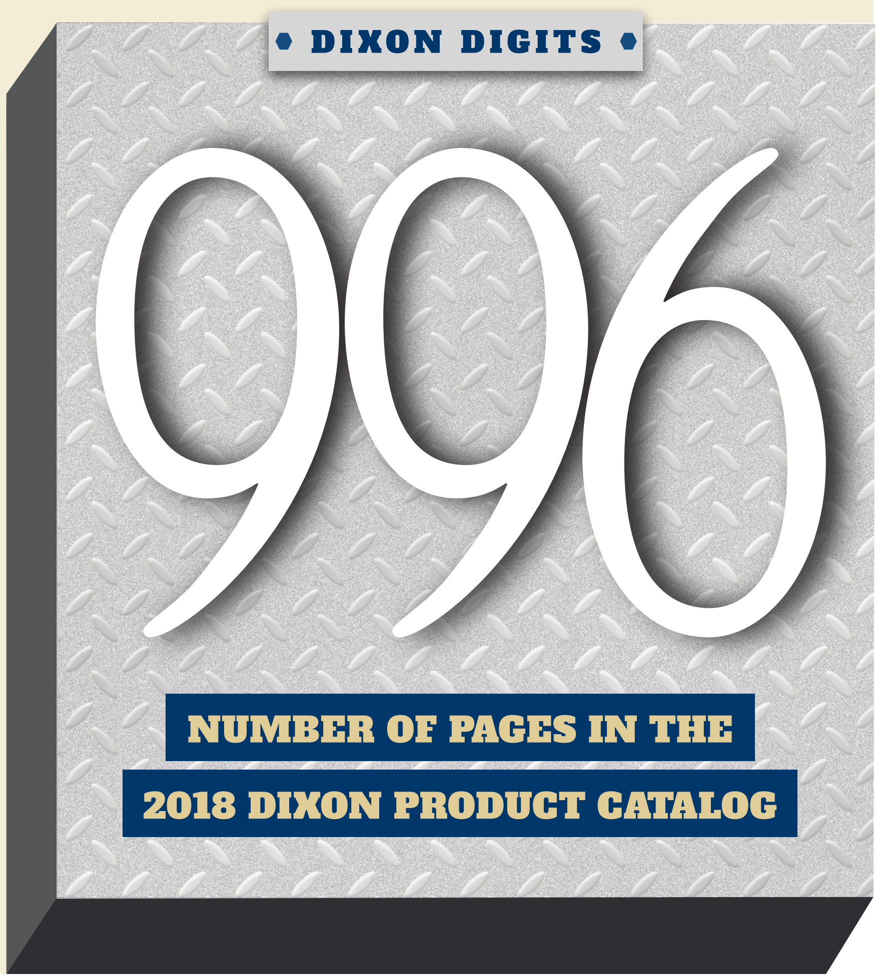
SPECIFICATIONS:

- Operating temperature:
  - Buna: -20°F to 250°F (-28°C to 121°C)
  - FKM-B: -10°F to 400°F (-23°C to 204°C)
  - FKM-GFLT: -20°F to 400°F (-28°C to 204°C)
- Maximum flow rate: 1000 GPM

APPROVAL:

- Fully compliant with API RP1004:2003

For more information, call Dixon at 877.963.4966, or visit dixonvalve.com.



ON THE ROAD TO RECOVERY

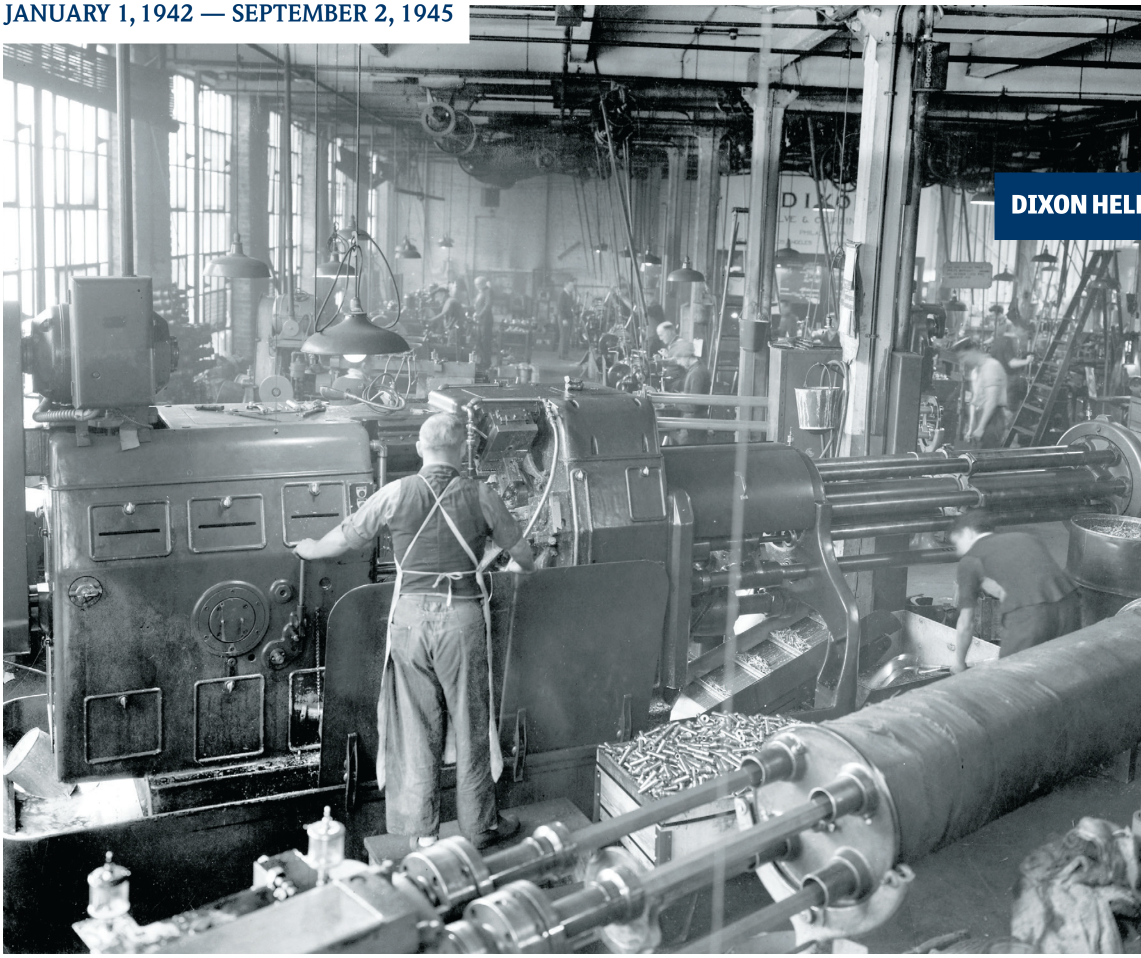
DIXON HELPS TRANSPORT FURNISHINGS TO VETERANS TRANSITIONING OUT OF HOMELESSNESS.

This past summer a tractor-trailer rumbled away from the campus of Washington College in Chestertown, Md., hauling 44 donated bedroom sets—beds, dressers, chairs and desks—which eventually will be distributed to military veterans in need. Dixon donated the use of the truck, which transported the furniture to a Veterans Multi-Service Center Thrift Store in Philadelphia, as part of the Housing and Urban Development-Veterans Affairs Supportive Housing (HUD-VASH) program.

"This is sustainability as it's supposed to be: a triple-bottom-line project that simultaneously addresses environmental, social-justice and financial outcomes," says Greg Farley, the college's director of sustainability, who helped organize the donation. "We're reducing waste and stress on landfills, providing a benefit to a population in need, which has, itself, directly served our nation, and helping reduce our costs and costs to the federal government for veterans' support. I also love the fact that it's a joint effort between the college and Dixon, a community partner with a long history of cooperation with Washington College."

Dixon employees Bryan Matthews and Buddy Hitchens (left), with members of Washington College, ready a truckload of furnishings for donation.

JANUARY 1, 1942 — SEPTEMBER 2, 1945



DIXON HELPS THE WAR EFFORT

Many Dixon products fell under the federal government priority system and were used by industry and the military in the war effort. Before long, Dixon manufacturing facilities were used almost entirely for military contracts. The largest produced 380,000 fuse plugs for anti-aircraft shells, which were run on a brand new six-spindle automatic screw machine, the only one in the Philadelphia area at the time.

BUILDING CHARACTER

DUTY CALLS

BY **MICHAEL JOSEPHSON**

You may have heard the story about two fellows hard at work alongside a road. One diligently dug holes while the other waited a short interval and then filled them up.

It all seemed rather foolish, and eventually the workers were confronted by a supervisor who demanded an explanation. The fellow who dug the holes asked what the problem was. He said he had been doing the same job for more than 10 years. His cohort quickly chimed in that he had been filling the holes for the same period.

Upon further questioning, they admitted it made more sense in the past when a third fellow worked with them. His job had been to put a new tree into the hole. But when he retired he was never replaced, so the two just kept on working as before.

"Why didn't you tell somebody?" the supervisor sputtered. "My gosh, you signed Phil's retirement letter. We figured you knew."

The kinds of unproductive, inefficient and even counterproductive practices that go on in most workplaces defy logic and reveal a great deal about character.

You see, the ethical principle of responsibility includes a moral duty to make things better, to pursue excellence and to produce and demand quality. Yet basically good people in virtually every workplace regularly engage in or witness some process or practice that is unhelpful, wasteful or even harmful to the ultimate goals of the organization.

While management is ultimately to blame, people of character shouldn't passively demean the value of their work by becoming part of anything second-rate or stupid. It may take tact and timing, maybe even some courage, but it's our duty to be a force for excellence. The benefit is that the quality of our lives improves dramatically when we take pride in our work.

Illustration: Getty Images

> "In looking for people to hire, you look for three qualities: integrity, intelligence and energy. And if they don't have the first, the other two will kill you." ◆◆◆ Warren Buffett


SEAN ANDERSEN, PRODUCT MANAGER

Sean Andersen has worked at Dixon for more than 27 years, starting his career before graduating from Washington College and a stint in the National Guard. He says he initially worked at Dixon as a "temporary job" until he figured out what he wanted to do with his life. Nearly three decades later, Andersen says, "Either I haven't figured it out yet or it's been a very good ride."

Q So what do you do as a product manager?

A Most of the products I deal with are more on the technical side of things. I do a lot of problem-solving and product development, customizing items to fit solutions.

Q You've been working a lot in the cryogenics field, right?

A Yes, we've developed some brass fittings for the transport of LNG (Liquified Natural Gas). A lot of that is done for over-the-road transports and containers and where they're shipping it.

Q Cryogenics is still a developing field, isn't it?

A It is. We anticipate that LNG will displace larger and larger volumes of diesel fuel going forward. I'm working with a couple of shipping companies and they're using 6-inch cryogenic dry disconnect couplings to fuel ships in a volume of 250,000 to 500,000 gallons a week. We've worked on development of standards for a LNG tender car, which will support the burning and consumption of LNG on locomotives instead of using diesel fuel.

Q Are standards for LNG still developing?

A Yes, actually I assisted with developing two ASTM standards. One was for the development of ISO containers on ships for fuel and the other was for bunkering assemblies—the couplings and hoses and arrangements needed to get LNG on board a ship to be used as fuel.

Q What did that involve?

A The specification details best practice for hoses, dry disconnects, breakaways and other components and how they should be arranged. There's been a lot of work internationally as far as developing specifications for how the ships should handle fuel, but there was nothing that told people how to get it on board. We saw a lot of people doing it differently and there were some key pieces missing, so we decided to work with two hose manufacturers to develop this best practice standard, based around our couplings.

Q Why was it important to set these standards?

A The thing is, a lot of people don't know a lot about cryogenics yet. Although some things are similar to diesel fuel, many are different. You're more limited in the types of materials you can use and there can be some dangerous situations when you trap this cryogenic liquid in a hose or coupling. It's kept at -260 degrees Fahrenheit and as soon as heat starts to get to it, it wants to expand. LNG expands 600 times in volume. So if you have 20 feet of LNG packed in a hose and it starts to heat up, now it wants to be 600 times that size instantly! It can make things interesting.

Q What do you like most about your job?

A I enjoy these new challenges. I really like getting involved in something that hasn't been done or something that's seemingly difficult and finding a way of coming up with a solution or tweaking something. If we can tweak and customize our product, we can limit the impact to our customer in terms of delivery and cost.

Q Sounds like there's no shortage of those challenges.

A I've been here 27 years and they keep on coming!

Photo: William Gray

HEAVY METTLE

LEWIS HINE, "POWERHOUSE MECHANIC,"
CIRCA-1920

Photographer Lewis Hine (1874-1940) captured the power of industry. First in its power to abuse, exposing the atrocities of industrial child labor practices while working for the National Child Labor Committee in the years before World War I and then celebrating the hard, honest work of factory workers in the years leading up to the Depression. In a series of photographs for clients ranging from the American Red Cross to the Works Progress Administration, Hine captured the human condition in an increasingly industrialized world. For Hine, the story was never about the machine but the man or woman behind it.

THE SHIPPING NEWS

HOW AN ORDINARY TRUCK DRIVER INVENTED THE INTERMODAL SHIPPING CONTAINER AND TURNED THE MARITIME INDUSTRY UPSIDE DOWN.

BY **SARAH ACHENBACH**

Containers are a common sight at ports these days. Before McLean's invention, cargo was handled in odd-sized crates. *Photo: Shutterstock*

While working as a trucker in the late 1930s, Malcolm McLean often would watch dockworkers in Hoboken, N.J., unload the cotton bales he had just hauled from Fayetteville, N.C. "I had to wait most of the day to deliver the bales, sitting there in my truck, watching stevedores load other cargo," he recalled. "I watched them take each crate off the truck and slip it into a sling, which would then lift the crate into the hold of the ship."

He knew there had to be a better, faster, cheaper way.

For the next two decades, the dream of a different method of shipping goods stayed with McLean, as he grew his business from a single, secondhand truck to the largest fleet in the South. By the 1950s, the trucking industry had grown, but its way of doing business had not. McLean Trucking, and every other trucking operation, large or small, continued to ferry cargo in odd-sized wooden crates, waiting for hours for freight to be unloaded from the truck and reloaded to a train, ship or warehouse.

Individual states also had added a new hitch: weight restrictions and fees. Now, trucks with heavy loads paid extra when they crossed state lines. For McLean and his competitors, the challenge became how to haul as much as possible without incurring fees.

McLean thought the solution might lie in transporting box trailers by ship along U.S. coastal shipping lanes instead of by truck. As he said, there would be "no tire, no chassis repairs, no drivers, no fuel costs … Just the trailer… free to be lifted unencumbered. And not just one trailer, or two of them, or five, or a dozen, but hundreds, on one ship."

It actually wasn't a new idea. Beginning in 1929, railroad cars were shipped from New York to Cuba, and ships regularly carried random, large boxes, but there was no systematic process for hauling cargo in containers. Knowing the time was right, McLean resigned as president of McLean Trucking in 1955, secured a $42 million loan, and purchased

> MCLEAN WAS CERTAIN THAT A UNIFORM-SIZED CONTAINER WOULD REVOLUTIONIZE THE TRUCKING AND SHIPPING INDUSTRIES. HE WAS RIGHT.

Pan-Atlantic Tanker Co., with its rusty oil tankers and shipping and docking rights in port cities along the U.S. Eastern Seaboard. Renaming it Sea-Land Shipping, McLean was certain that a heavy steel, uniform-sized container that could be easily loaded, unloaded and stored in stacks—in the hull or on the deck of a ship or at a port—would revolutionize the trucking and shipping industries. He was right.

McLean's company included 36 ships doing business in 30 ports worldwide. *Photo: Shutterstock*

By the late 1960s, McLean's company had 27,000 containers and 36 ships doing business in over 30 port cities in the U.S., Europe and Asia. While his was the world's largest shipping company, McLean's commitment to industry standardization meant that other companies could use his design for their own intermodal shipping containers to transport goods.

In 1969, McLean sold his company to R. J. Reynolds for $530 million (the equivalent of $3.6 billion today), but continued to innovate, even inventing a lift to transport a patient from stretcher to hospital bed.

At the time of his death in 2001, intermodal shipping containers based on his original designs were responsible for transporting an estimated 90 percent of the world's goods. Today, McLean is largely unknown, but his ability to think literally "out of the box" has touched every aspect of modern life.

STRONG ATTACHMENT

These gizmos keep things tight and secure to help you get the job done.

RAK MAGNETIC WRISTBAND

Ten strong magnets embedded in each wristband surround your wrist for holding screws, nails, bolts, washers, drill bits. Perfect for home improvement, construction, carpentry, auto repair, sewing and other DIY projects. *rakprotools.com*

THIN OPTICS

Never leave your reading glasses behind again. These go-anywhere specs are shatterproof, lighter than a nickel and as thin as two credit cards. Plus, they come with a case that you can stick on the back of your phone, tablet or any hard surface. *thinoptics.com*

TILE TRACKER

Attach this Bluetooth tracker to your keychain, backpack, briefcase—or anything else that matters—and you'll be able to find it via an app on your phone. *thetileapp.com*

BENCH DOG BENCH COOKIE WORK GRIPPERS

Keep projects from slipping while routing, sanding, carving and more. The handy rubber pads are designed to raise, grip and hold your project secure without clamps. *www.rockler.com*

THE BALD TRUTH

SEPARATING FACT FROM FICTION WHEN IT COMES TO LOSING YOUR HAIR.

BY **JOE SUGARMAN**

Time for a reality check: If you're over the age of 50 and still have a full head of hair, consider yourself lucky. More than 50 percent of men older than a half century have some sort of hair loss. Women aren't immune to the condition either: Hair loss affects nearly 50 percent of women age 65 and above. The most common type of hair loss is called androgenetic alopecia, also known as male- or female-pattern baldness. It tends to run in families and causes hair to fall out gradually. You can't do anything to prevent the onset of androgenetic alopecia, but you can apply medicines to your scalp to slow its progression or seek solutions involving hair transplants—and many people do. All told, consumers spend more than $3.5 billion annually to preserve their delicate locks. Unfortunately, there's a lot of misinformation regarding the causes of baldness and its treatment. So how much do you know about hair loss? Take our quiz and discover the truths—and common misconceptions—of holding on to your precious head of hair.

Illustration: Anne Schulte

YOU INHERIT THE HAIR OF YOUR MOTHER'S FATHER: FICTION
There is a genetic predisposition for hair loss, but the gene could come from either side of your family.

WEARING A HAT TOO MUCH MAKES YOUR HAIR FALL OUT: FICTION
It's a common misconception, but there's no relation. Hair does not need to breathe. Only the root of the hair is alive and gets its oxygen from the blood in the scalp.

STRESS OR SUDDEN TRAGEDY CAN CONTRIBUTE TO HAIR LOSS: FACT (AND FICTION)
If you have severe physical—or less commonly psychological—stress, like a death in the family, it can cause the hair root to shift into a "shedding" phase and you'll suddenly lose a bunch of hair at once. It's not true that common, everyday stress causes hair loss.

EXCESS TESTOSTERONE CAN CAUSE EITHER MEN OR WOMEN TO GO BALD: FICTION
It's not the testosterone itself that is harmful to the hair root. It's a breakdown of testosterone into something called DHT (dihydrotestosterone), which causes damage to the hair follicle. People whose bodies convert testosterone into DHT at a rapid rate lose more hair than those who don't.

OVER-SHAMPOOING OR SHAMPOOING WITH THE "WRONG" SHAMPOO CAUSES HAIR LOSS: FICTION
The reason is that chemicals in shampoo cannot penetrate the skin to get to the hair root, which is where hair loss occurs. You're really just putting something topical on your skin and washing it off.

HAIR LOSS TREATMENTS LIKE PROPECIA AND ROGAINE ACTUALLY WORK: FACT
Propecia blocks the enzyme that converts testosterone to DHT. Rogaine (minoxidil) was initially designed for hypertension. People took it in pill form and noted they had better hair. Both drugs slow down the rate at which you lose your hair, but don't necessarily help with re-growth.

AN IRON DEFICIENCY CAN CAUSE HAIR LOSS: FICTION
At one point this was accepted as true, but has since been proven incorrect.

IF YOU HAVE HAIR PAST AGE 40, YOU LIKELY WON'T GO BALD: FICTION
Your likelihood of experiencing pattern hair loss increases with each decade, but the later you start losing it, the better off you will be. You'll likely end up with more hair if you start losing your hair at 40 than at 20.

MISTREATING YOUR HAIR CAN CAUSE HAIR LOSS: FACT (SORT OF)
It's unlikely to cause permanent hair loss, but overworking your locks can damage hair, making it weak and easily broken. Aggressive brushing, back-combing, straightening and dyeing can damage hair, but the all-important follicle will likely stay safe.

NATURAL SUPPLEMENTS CAN HELP HAIR LOSS: FICTION
Supplements such as saw palmetto, pygeum africanum and stinging nettle have long been marketed as natural remedies to combat hair loss. While these herbal supplements seem to reduce DHT, there has not been enough clinical data to prove that any of these natural supplements actually help with hair loss.

USING A BLOW DRYER WILL CAUSE HAIR LOSS: FICTION
There is no evidence that blow-dryers cause your hair to thin; however, too much heat or too much drying may lead to brittle and breakable hair.

ALL HAIR LOSS IS PERMANENT: FICTION
Some instances of shedding could just be temporary. Many women lose some hair after giving birth, for instance, as their hormones adjust back to their pre-pregnancy levels, but it re-grows within several months.

A Boeing 747 prepares to land over St. Martin island.

GIANTS OF

THE SKIES

IT'S BEEN NEARLY 50 YEARS SINCE THE FIRST FLIGHT OF BOEING'S 747, THE "UNWANTED" JUMBO JET THAT SHOOK UP AVIATION AND CHANGED HOW WE SEE THE WORLD.

BY **BRENNEN JENSEN**

In the 1980s, the 747's payload capabilities were put to the test as the plane regularly transported the 15-ton space shuttle. In 1990, Boeing developed a customized version of the 747 to be flown as Air Force One, replacing a 707 that had been used for years.

Feb. 9, 1969, was cold and overcast in Everett, Wash. But an exuberant crowd ignored the chill to gather at Paine Airfield to witness history: The first flight of the 747, Boeing's massive new jumbo jet whose 195-foot wingspan was longer than the Wright Brothers' first flight. Its quartet of turbofan jet engines roared to life. The 23-ton aircraft sped down the runway and lifted effortlessly into the damp skies. The crowd cheered.

But can they land it? Joe Sutter, the 747's chief engineer, had white knuckles as he watched. His plane was nearly twice the size of any airliner then flying, was composed of some 4.5 million parts and had gone from conceptual drawings to on-the-tarmac aircraft in a mere 28 months. Sure, there had been endless tests and simulations before this moment. But still … his mind whirled with potential mishaps, including a potential piloting problem aviation experts had put in his ear: *How could they judge the landing when the cockpit was three stories off the ground?*

High overhead, Capt. Jack Waddell maneuvered the jet through the leaden skies, successfully conducting a number of tests before banking the leviathan homeward and lining up for the approach. Sutter held his breath. The winged giant got slower and lower. Then, the first of its 16 massive wheels kissed the tarmac. A return to terra firma was achieved with grace and ease. "The dang thing is just ridiculously easy to fly," Waddell said soon afterward. "It almost lands itself." Perhaps only then did Sutter unclench his hands.

The Boeing 747 may well be the single most successful industrial product ever built. The giant jets have enjoyed an estimated $100 billion in sales and have carried over 3.5 billion passengers. That's the equivalent of

To say that Boeing's big bird has had a good run is a jumbo-sized understatement.

more than half of the world's population.

But to think that none of this was supposed to happen. Boeing executives from the 1960s sent time-traveling into the future would be amazed by the plane's commercial triumph and dumbfounded to learn that more than 1,500 of them had rolled out of their Washington state factory.

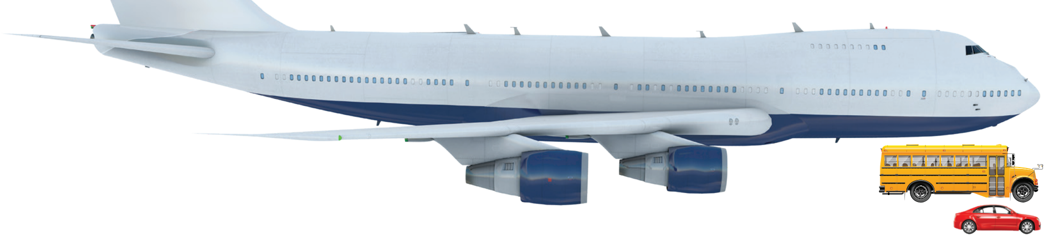
The 747 was a second-fiddle airplane throughout its development—a stopgap plane while the commercial aviation world waited for supersonic jets. Boeing leaders would have been happy to sell 50 of the big jets for passenger use and even Sutter himself referred to his creation as "the company's unwanted stepchild."

But the 747 proved to be the big plane that could. And did.

Boeing first hit the jackpot in 1958 with the 707, its four-engine jetliner that could carry up to 200 people more than 4,000 miles. This winged workhorse birthed the jet age and made Boeing a commercial aviation powerhouse. But even as 707s were just starting to roll off the assembly line, the future of air travel was thought to be in supersonic planes—SSTs flying at up to Mach 3, or more than 2,300 mph. But such planes presented enormous engineering challenges and might not be ready until the early '70s.

Juan Trippe, president of Pan Am, the world's largest airline, couldn't wait. By the mid-'60s he saw massive growth potential in the international air travel business—if he could reduce ticket prices. Long distance air travel was then a pricey proposition largely reserved for a well-heeled "jet set." To get more people in seats, he needed greater efficiency. Wouldn't one big plane carrying as many passengers as a pair of 707s reduce operating costs? Trippe even envisioned such a plane as "a great weapon for peace, competing with intercontinental missiles for mankind's destiny." In 1966, Trippe put this concept before Boeing president Bill Allen while the two old friends were out fishing in a now mythicized exchange. Trippe: "If you build it, I'll buy it." Allen: "If you buy it, I'll build it."

Pan Am ordered 25 such jumbo jets and the 747 was born. Well, in concept. Boeing still had to design and build a jet plane capable of carrying 400 or more passengers. To get that many bodies between two wings, conventional thinking at the time turned toward double decks—stacked levels of single-aisle seating, but double decking proved problematic in a hurry. Such planes weighed a lot more, for one thing. And the Federal Aviation Administration required that all aircraft be able to be evacuated within 90 seconds during emergencies. Double decking meant twice as many escape slides (for which there was little room with the big wings in the way) and upper deck



At 225 feet in length and nearly six stories high at its tail, the 747 dwarfed any other plane in the air, not to mention buses and cars on the road.

slides that were perilously high.

Meanwhile, the 747 also was being designed for freight. Indeed, the thinking was that as soon as armadas of SSTs were available, the 747 would be downgraded to a mere cargo hauler. A truck on wings. While designers worked and reworked double-decker plans with little to show for their efforts, an engineer from the cargo side drew took a different tack. He envisioned a pair of standard 8-by-8 shipping containers arranged side-by-side and figured out how wide a fuselage you'd need to accommodate them. Turns out about 20 feet—nearly twice the width of a 707. When Sutter saw this concept, however, he realized it immediately solved a host of passenger problems. At this width, you could have a single deck with two aisles serving 10 seats per row. The wide-body jet was born.

Cargo needs, too, gave the plane its distinctive bulbous profile. The best way to load a cargo plane is through a hinged nose. But how to handle the cockpit? The designers decided to place it out of the way above the main cabin and wind-tunnel testing showed that aerodynamics improved if this bulge was lengthened some, birthing the mini upper deck.

After its debut flight, this "unwanted stepchild" did some publicity barnstorming around the country,

TOP FIVE LARGEST PASSENGER JETS IN THE WORLD

AIRBUS A380-800
First flight: April 2005
Range: 8,208 nautical miles
Max passengers: 853

BOEING 747-400
First flight: April 1988
Range: 7,260 nautical miles
Max passengers: 624

BOEING 747-8
First flight: February 2010
Range: 8,000 nautical miles
Max passengers: 605

BOEING 777-300
First flight: October 1997
Range: 6,013 nautical miles
Max passengers: 550

AIRBUS A340-600
First flight: April 2001
Range: 7,802 nautical miles
Max passengers: 475

Opposite page: The complexity of the 747's cockpit was nothing like pilots had seen before. *Photo: Alamy* ***This page:*** Stairs led to the plane's upper deck, which initially accommodated a first-class lounge before airlines used the area for seating in order to maximize profits. Engineers designed the plane to fit 10 across in a single row. *Photos: Shuttterstock*

enthralling all who saw the winged beast—231 feet long with a tail nearly as tall as a six-story building. "With all the excitement generated by the big bird at the airport, it was as if a Christmas present had been opened early, a sparkling new toy, giant-sized," the *Chicago Tribune* wrote after the plane's first appearance at O'Hare Airport that December. And it proved no bad omen that its commercial debut—a sold-out Pan Am flight from New York to London in February 1970—was delayed seven hours because of engine trouble. By this time, more than 25 airlines had put in orders for the plane at $24 million a pop, the equivalent of $160 million today.

Beyond their sheer enormity, the public was fascinated by the 747's glamorous touches, particularly the upper deck area reached by a spiral staircase, which most airlines turned into a first-class lounge. Air Canada ads touted this "penthouse" that was home to "a luxurious rendezvous in the skies with private bar." Australia's Qantas went retro, adding wooden detailing and an old ship's wheel to their "Captain Cook First Class Lounge … quietly styled with the gentile atmosphere of a clipper of the 1800s." The 1973 oil crisis put the kibosh on most of this extravagance after soaring fuel prices left airlines pinched for revenue. Most froufrou lounges were torn out and replaced with ticketed seating.

Naturally, other makers soon came out with wide bodies of their own. The McDonnell Douglas DC-10 entered service in 1971 and Lockheed's L-1011 a year later. Over the decades, Boeing rolled out variously tweaked and upgraded variations of its pioneering jumbo. The 747-8 Intercontinental first flew in 2010 and was able to carry as many as 605 passengers for 8,000 miles. The plane's most important single passenger came aboard in 1990 when the 747 Air Force One replaced the 707 version. And the "truck on wings" concept was routinely put to the test in the 1980s when 15-ton space shuttles were strapped atop special 747s for transport.

To say that Boeing's big bird has had a good run is a jumbo-sized understatement. But on the cusp of turning 50, the "Queen of the Skies" is finally heading into retirement, replaced by more fuel-efficient twin-engine, wide-body jets, such as Boeing's own 777. Many 747s will be relegated to cargo duty, but the most recent variants, the 747-8s, will continue to fly passengers for airlines overseas.

But it's not hyperbole to say this seminal aircraft changed the world. So magnificent a technological achievement was the Boeing 747 airliner that cultural historians have called it the "20th-century's cathedral." Or as the editors of Smithsonian's *Air & Space* magazine recently wrote: "It remains, along with the photograph of Buzz Aldrin standing on the moon, the most recognizable symbol of U.S. engineering brilliance."

SWEET SENSATION

BY **MARY K. ZAJAC**

When was the last time you ate chocolate? Was there chocolate in your morning coffee drink or granola bar? Have you recently nibbled a chocolate chip cookie? Did you unwrap a square of bittersweet as your mid-afternoon pick-me-up or before bed treat?

Chances are your last taste of chocolate was not that long ago. Vanilla may be the world's favorite flavor, but the average American consumes around 11.5 pounds of chocolate per year. (The Swiss are the biggest chocolate lovers, devouring a whopping 20 pounds per annum.)

Put that way, it's not surprising that roughly $20 billion worth of chocolate was sold in the U.S. in 2017, with the overall global chocolate industry worth approximately $101 billion. More than 60 percent of all candy sold in the United States is

CHOCOLATE IS ONE OF THE WORLD'S MOST POPULAR TREATS. SO HOW DOES IT GET FROM BEAN TO BAR ANYWAY?

Photo: Shutterstock

chocolate: 50 percent of it is the milk variety, and the country's largest producer of candy—Hershey—manufactures much of that. In the last decade or so, semi- or bittersweet chocolate, generally classified as "dark" chocolate, has made inroads, as tastes change and public perception of it being a healthy choice grows. But whatever your preference, around the world, chocolate is celebrated as something both ordinary and special, to drink and to eat, for the common man and still, as the 18th-century Swedish botanist Linnaeus dubbed it in his classification system, *Theobroma cacao*, "the food of the gods."

CACAO? COCOA? CHOCOLATE?

Perhaps surprisingly, unlike sugar or other large-scale agricultural products, chocolate is a big business supported by many small ones. *Theobroma cacao*, the tree that produces the fruit whose seeds or beans produce what eventually will become chocolate, thrives only in certain subtropical areas that fall between 20 degrees north of the equator and 20 degrees south of it. Cacao farms usually are family-owned and quite small—approximately seven to 10 acres each—and are tended to and harvested by hand. Cacao is native to South America, and at the beginning of the last century, most of these farms were in Latin America. Today, among the roughly 60 countries that produce cacao beans, the majority are in Africa, with Côte d'Ivoire and Ghana leading production.

MANY CLAIMS HAVE BEEN MADE FOR THE HEALTH BENEFITS OF DARK CHOCOLATE—THAT IT LOWERS BLOOD PRESSURE, IS A MOOD ELEVATOR, AN ANTIOXIDANT, AND POSSIBLY AN APHRODISIAC.

Cacao trees typically need two to three years of growth after planting to produce the flower clusters that, when pollinated, will become their fruit or pod. Pods that grow to be roughly the size of a football, in turn, are ready for harvest approximately six months after pollination. After harvesting the pods by hand, workers cut the fruit in two with a machete to release the beans, which are encased in a sticky white pulp. Removing the pulp from the beans requires a process known as fermentation, where the beans are laid out in trays and covered with banana leaves for anywhere from two to seven days. The fermentation process also produces the flavor and aroma that we associate with chocolate. After fermentation, the beans are laid out to dry outdoors for several days where they are turned three to five times daily to maintain an even dryness. When the drying is complete, they are transferred to chocolate factories where the beans are roasted and then winnowed to separate the hulls from the cacao nibs. The nibs are put through several rollers that grind them into paste known as cacao mass or liquor. This is the starting point for both solid chocolate and cocoa powder, which is made from cacao beans that have been roasted when processed. (There is also cacao powder, which is made by cold-pressing the beans.)

For solid chocolate, sugar and cocoa butter plus an emulsifier like lecithin are added to transform the pasty chocolate liquor into a solid that will melt at mouth temperature. If the chocolate is to become milk chocolate, powdered or evaporated milk is added at this point, too. The chocolate mass is then rolled and conched—a process that takes place in a shell-shaped mixer that moves and aerates the chocolate until it is smooth. Inexpensive chocolate may be conched four to 12 hours; premium chocolate for three to seven days. Finally, the chocolate is tempered, a process where chocolate is heated and cooled slowly so that the cocoa butter crystallization remains even and the chocolate appears glossy and

Photo: Shutterstock

without whitish streaks or patches.

BUT IS IT CHOCOLATE?

For Americans coming of age in the first half of the 20th century, chocolate was either milk or dark. Milk chocolate has less chocolate paste than dark chocolate, plus the inclusion of milk—usually condensed milk in Europe and powdered milk in the U.S. Dark chocolate has a higher percentage of chocolate paste, as well as a lower amount of sugar. Today, we see gourmet dark chocolate boasting 60 to 70 percent chocolate, but in the U.S., 35 percent is the minimum required amount of chocolate paste to be labeled dark chocolate. In Europe, it is 43 percent.

White chocolate, on the other hand, contains no chocolate paste. It gets its name—and its creamy color—from cocoa butter, milk solids, sugar and vanilla.

The latest trend in chocolate is ruby, a pink-colored chocolate developed by the Swiss company, Barry Callebaut. Based on a ruby bean grown in Côte d'Ivoire, Ecuador, and Brazil, the resulting chocolate, introduced in 2018, has flavors of "berry-fruitiness" and is "not as sweet as milk chocolate," says the company.

AND IS IT REALLY GOOD FOR ME?

Many claims have been made for the health benefits of dark chocolate—that it lowers blood pressure, is a mood elevator, an antioxidant, and possibly an aphrodisiac. According to the Harvard T.H. Chan School of Public Health, cocoa does present a high percentage of flavanols, which can help reduce both blood pressure and increase insulin sensitivity, which could reduce the chance of diabetes. They also cite observational studies, which suggest that eating one to two small squares of dark chocolate each day may lead to a reduction in heart disease. As for a mood elevator, treat yourself to a piece of chocolate, or better yet, offer one to a friend. The results will be obvious.

GREAT MOMENTS IN CHOCOLATE HISTORY

1847 Englishman Joseph Fry makes the first chocolate bar

1867 Nestle Co. adds chocolate to its dried milk, making the first milk chocolate.

1868 Cadbury becomes the official chocolatier to Queen Victoria, and introduces the first box of chocolates complete with a sentimental rendering of a girl (modeled after Cadbury's daughter) with her kitten on the lid.

1890 A Pennsylvania druggist displays a 5-foot-high chocolate bunny in his shop as an Easter promotion. Sales of chocolate Easter bunnies began to take off.

1903 Milton S. Hershey begins building at the site of what will become the world's largest chocolate manufacturing plant.

1923 Mars Co. invents the Milky Way. In 1930, it launches the Snickers bar. In 1932, it markets the 3 Musketeers bar.

1923 H.B. Reese, a former employee of Hershey, invents Reese's Peanut Butter Cups, acquired by Hershey in 1963.

1926 Godiva, named after Lady Godiva, is established in Brussels, Belgium. The candy is first sold in the U.S. in 1966, exclusively at high-end shopping centers.

1930 Ruth Wakefield, proprietor of Massachusetts' Toll House Inn, mixes broken pieces of Nestle chocolate into her cookie dough, creating chocolate chip cookies. She later sells the recipe to Nestle supposedly in return for $1 and a lifetime supply of chocolate.

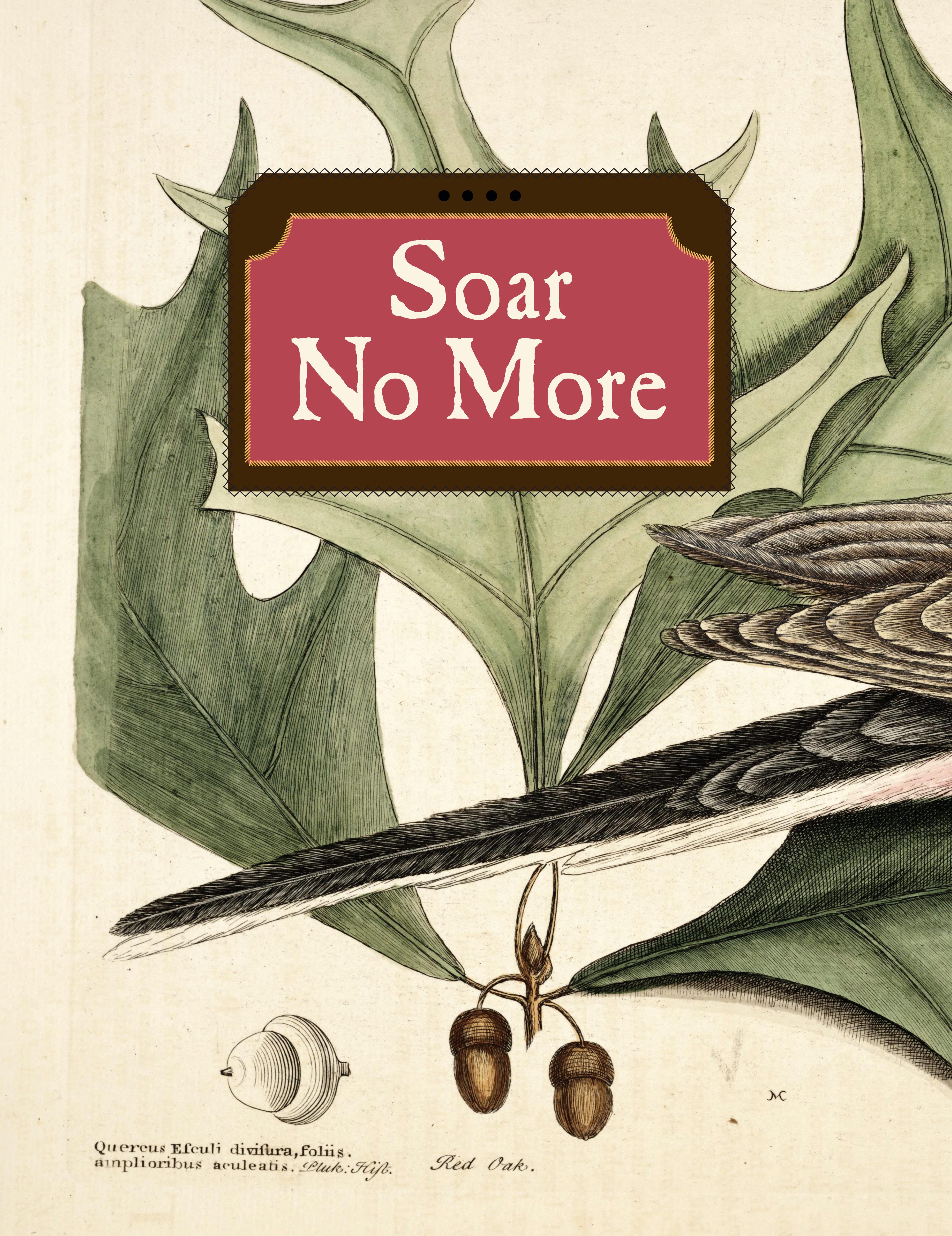
1950 Mars Co. introduces M&M's. The slogan: "Look for the M on every piece."

1963 Cadbury introduces a filled chocolate egg called Fry Creme Eggs. In 1971, the name is changed to Cadbury Creme Eggs and an Easter classic is born.

1990 Hershey sends 144,000 heat-resistant candy bars to soldiers in the Gulf War. The formula is identical to what they sent to soldiers in World War II.

2011 British chocolate company Thorntons creates the world's largest chocolate bar, weighing nearly 13,000 pounds.

Soar No More


MC
Quercus Efculi divifura, foliis.
amplioribus aculeatis. Pluk: Hist.
Red Oak.

Passenger pigeons were once the most plentiful bird in North America but were hunted into extinction more than 100 years ago. What lessons do the birds' demise have for mankind, and through genetic science, could they someday return?

BY **JULIE SCHARPER**

Earliest published illustration of the species (a male), Mark Catesby, 1731

On a fall day in 1813, a 28-year-old John James Audubon left his home in Henderson, Ky., to begin the daylong journey to Louisville. As he followed a road that meandered along the Ohio River, the sight of a flock of passenger pigeons struck Audubon. Jumping down from his horse, Audubon, then a fledgling ornithologist, counted 163 birds passing in 21 minutes. But the great influx of birds had only just begun.

Ever-larger clouds of birds surged through the air as Audubon rode on. “The air was literally filled with Pigeons; the light of noon-day was obscured as by an eclipse, the dung fell in spots, not unlike melting flakes of snow; and the continued buzz of wings had a tendency to lull my senses to repose,” he wrote in *Birds of America*.

The birds streamed along the Ohio River until nightfall, Audubon wrote. In the morning, the birds still covered the sky, and the flow of birds continued for three full days.

The great mass of birds attracted their most ardent predator—humans—who fired round after round as the birds swung low over the river, destroying “multitudes,” Audubon observed. “For a week or more, the population fed on no other flesh than that of Pigeons, and talked of nothing but Pigeons,” he wrote.

But, like most people of his day, Audubon was not concerned that such aggressive hunting would threaten the population of birds. In fact, he believed the number of birds would double each year, and in some years, quadruple.

Unfortunately, he was wrong. Just a little more than a century after Audubon witnessed this great pageant of passenger pigeons, the last of the species—a woebegone bird named Martha—would die in captivity at the Cincinnati Zoo.

It’s hard for us to imagine the ubiquity of the passenger pigeon, the immensity of its colonies and the species’ spectacular downfall. It would be as if all the familiar city pigeons—rock pigeons—traveled in enormous screeching packs, flattening trees with their weight, leaving behind heaps of dung and discarded food.

Yet the world’s population of rock pigeons represents a mere fraction of the passenger pigeons that once lived in this country. Today, there are about 400 million rock pigeons worldwide. In the mid-1800s, 3 to 5 billion passenger pigeons roosted in North America, according to the Passenger Pigeon Project, a campaign organized to mark the centenary of the species’ extinction.

The birds passed through all but the far western reaches of the United States and Canada, ranging from northern Florida to eastern Alberta. As their name suggests, they were migratory birds, moving with the seasons in search of their preferred foods—acorns, beechnuts and the other fruits of forest trees collectively known as “mast.” Although most closely related to the western band-tailed pigeon, passenger pigeons resembled a heftier, flashier mourning dove. The males sported

Hunters fired wildly at the passing flocks, like children at a carnival game.

Opposite page: Nineteenth-century trappers used decoys to capture wild passenger pigeons.
This page: The birds flew in flocks so great in number, they seemed to black out the sun, making them easy targets for eager hunters.

distinctive ruddy chests, bluish back feathers and a patch of iridescent plumage at the neck; the females were similar, but muted.

Massive colonies, such as those spotted by Audubon, were common. The birds' roosts would extend over many acres and, in some cases, hundreds of square miles. *A Feathered River Across the Sky: The Passenger Pigeon's Flight to Extinction*, Joel Greenberg's definitive book about the birds, draws on historical accounts of those who saw trees flattened by the weight of roosting passenger pigeons. One Ohio teenager, Greenberg writes, spotted what appeared to be a series of haystacks in a swamp. As the boy approached, he discovered these haystacks were, in fact, small trees "completely loaded down with live birds."

The immensity of the flocks also made the birds easy to hunt. The birds were tasty—the Seneca tribe called them "big bread"— and they saved many families from starvation in times of famine. Greenberg details the macabre delight that hunters took in killing vast numbers of them. People whacked them out of their roosts with sticks, beat them with clubs or set surrounding trees on fire. Hunters fired wildly at the passing flocks, like children at a carnival game. Professional pigeon trappers erected large nets, snagging tens of thousands of the birds, then shipping them to gun clubs where they would be flung up in the air for members' shooting pleasure, a pastime known as trap shooting. In 1878, pigeon trappers discovered a 200-square-mile passenger pigeon roosting ground in Michigan and killed an average of 5,000 birds a day for three months.

Meanwhile, loggers were clearing the passenger pigeons' habitat. After decades of assuming the pigeon population could regenerate, ornithologists in the 1880s began to realize the birds were in decline. By 1890, only a few thousand passenger pigeons were believed to remain in the wild, Greenberg writes. Even after the wild passenger pigeon population had dwindled to just a few hundred birds, people continued to hunt them with glee.

The last few passenger pigeons lived in captivity at the Cincinnati Zoo, but those began to die off and, after her companion George died in 1910, only Martha was left. Alone and aged, Martha hunkered quietly in her cage, prompting visitors to toss sand at her to see if she would move. On Sept. 1, 1914, she died.

For decades after Martha's death, people thought they spotted the pigeons from time to time. But they were wrong. In just 60 years, humans managed to reduce the population of passenger pigeons from billions to zero.

There is some chance that we might live to see a passenger pigeon.

Martha, the last passenger pigeon, died at the Cincinnati Zoo in 1914. *Photo: Enno Meyer*

A group of scientists in California is attempting to bring back the bird through a sort of genetic Rube Goldberg contraption. The group, Revive & Restore, intends to insert passenger pigeon DNA into the genome of the closely related band-tailed pigeon. The resulting genetic matter would be injected into the reproductive tissue of a rock pigeon embryo. When two rock pigeons with these altered sex cells mate, they would, theoretically at least, produce some eggs containing "de-extinct" passenger pigeon chicks. Revive & Restore plans to begin the gene-editing portion of the project as soon as this year and start captive breeding by the beginning of the next decade.

Of course, if we have learned anything from the demise of the passenger pigeon, it is that human actions have consequences far beyond the limits of our imaginations. As Audubon wrote when describing hunting parties felling trees full of nesting passenger pigeon chicks, "Here again, the tyrant of the creation, man, interferes, disturbing the harmony of this peaceful scene."

MESSY MORSEL

WAS THERE REALLY A REUBEN BEHIND THE REUBEN SANDWICH?

Yes, there was — but he may or may not have invented it himself. There are several stories behind the famed sandwich, typically served pressed on rye bread with corned beef, Swiss cheese, sauerkraut and Russian dressing.

The sandwich was likely first made in the 1920s at the Blackstone Hotel in Omaha, Neb., the site of friendly poker games, which included Bernard Schimmel, the hotel's owner. During the games, his friends, among them, a Lithuanian-born grocer named Reuben Kulakofsky, often got hungry and implored Schimmel to whip up some food.

Here's where the story gets a little murky: One version has Schimmel concocting the special sandwich specifically for Kulakofsky—who loved it—and all agreed the tasty treat should bear his name. Another version has Schimmel simply bringing platters with the ingredients and Kulakofsky assembling the sandwich himself.

But whoever first brainstormed such a sublime creation doesn't really matter. The sloppy sandwich soon joined the menu at the Blackstone Hotel and has been appearing regularly on menus ever since. *—Joe Sugarman*

Photo: Alamy

AN AWE-INSPIRING WONDER

THE GRAND CANYON IS A POPULAR PARK FOR A REASON. HERE'S HOW TO AVOID THE CROWDS AND HAVE THE CANYON'S NATURAL BEAUTY (ALMOST) TO YOURSELF.

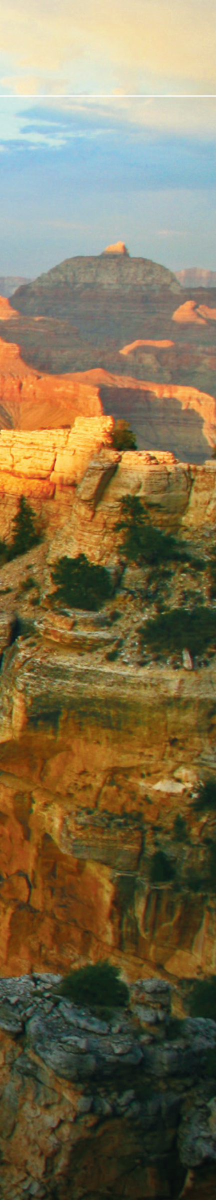
BY **JOE SUGARMAN**

The Grand Canyon may be one of the Seven Wonders of the Natural World, but it's not quite as wonderful when the crowds arrive. With more than 6 million visitors annually, it's one of the most-visited parks in the world. But witnessing the breathtaking majesty of the canyon should be on everyone's bucket list. Here are a few tips to get the most out of your experience.

VISIT NOW: High season at the canyon falls between March and September, so late fall and winter are great times to go, with average daytime temperatures at the South Rim hovering in the 50s and 60s.

VISIT THE NORTH RIM: The northern side of the canyon attracts approximately 10 percent of the number of people who visit the southern side. The viewpoints are nearly as dramatic as those on the south and you won't be jostling other tourists for a selfie. A higher elevation and more trees means it stays cooler on the North Rim—a huge benefit come summer. Just be aware that the North Rim closes during winter months.

IF YOU DO VISIT THE SOUTH RIM, ENTER AT DESERT VIEW: The easternmost entryway to the park receives far fewer tourists than the one closer to Grand Canyon Village, so lines are comparatively light. The Desert View Watchtower, a 70-foot-high Pueblo-style tower built in 1932, is a must first stop. Then head west on Desert View Drive to take in the sights—you'll be contending with far fewer cars than coming the other way.



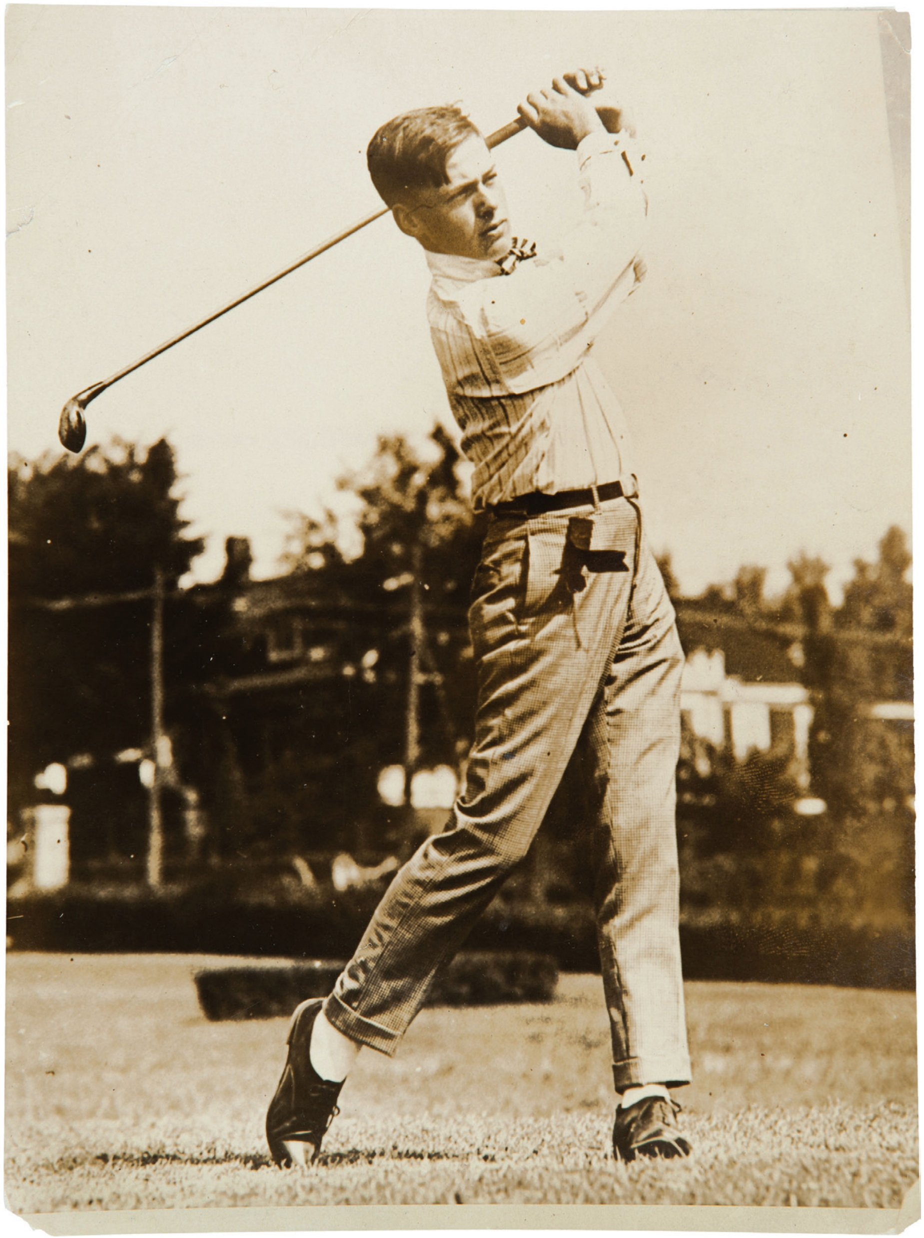
Opposite page: Sunset—or sunrise—are the best times to view the canyon. *This page, top:* Native American art adorns the ceiling of the Desert View Watchtower. *Left:* Lookout Studio was built in 1914 and offers an observation station with telescopes for visitors. *Right:* The endangered California condor has made a significant comeback in the park. *Photo: Chuck Szmurlo*

BUY YOUR PARK PASS IN ADVANCE: You can skip the long lines by purchasing your $35/vehicle park pass either online or at various visitor centers south of the park.

STAY IN FLAGSTAFF: Booking a room at one of the canyon's lodges or in the touristy town of Tusayan, south of the canyon, can be a challenge during busy season. Flagstaff, about 80 miles away, has far more (and less expensive) accommodations, and boasts its own share of tourist-worthy sites, including a historic downtown, Lowell Observatory and ancient pueblos at Wupatki National Monument.

TAKE THE TRAIN: The Grand Canyon Railway departs from Williams, Ariz., about 30 miles west of Flagstaff, daily at 9:30 a.m. and arrives at the South Rim at 11:45. (During busy times, there's also a 10:30 a.m. departure.) The journey features a variety of stunningly different landscapes: from the Ponderosa pine forest surrounding Williams, to wide-open prairie, before climbing back up to pinyon pine forests. You can use the park's myriad free shuttles to explore once you're there.

SPEAKING OF SHUTTLES... During the busy season (March through September) free shuttle buses travel between Grand Canyon Village and the gateway community of Tusayan. (They're a great way to avoid the lines at entrance stations and crowded parking lots.) Within the park, shuttles run on four different routes, covering everything you'd want to see, including the visitors' center, the village and the iconic overlooks of the Rim Trail.



WELL ABOVE PAR

GOLF GREAT BOBBY JONES WAS JUST AS HONORABLE OFF THE COURSE AS HE WAS ON.

BY **ELIZABETH HEUBECK**

During the first round of the 1925 U.S. Open, Bobby Jones was setting up a shot out of the rough on the 11th hole when he felt his iron move the ball ever so slightly. No one saw it—not his caddy, not any other player and no official. Nonetheless, Jones gave himself a one-stroke penalty. It cost him. Jones lost the tournament by one stroke to Scottish pro Willie Macfarlane. Jones was hailed for his sportsmanship but he rebuffed those who applauded him for his honesty: "You might as well praise me for not robbing banks," he said.

Jones' reputation as a good sport was perhaps even more impressive because it represented a complete about-face on the golf course between his teen years and his later playing days. In *The Saturday Evening Post* in 1940, sportswriter Grantland Rice wrote that Jones had the "temper of a timber wolf." During his young club-chucking days, Jones earned a swift rebuke from United States Golf Association president George Walker, who warned him: "You will never play in a USGA event again unless you can control your temper."

"COMPETITIVE GOLF IS PLAYED MAINLY ON A FIVE-AND-A-HALF-INCH COURSE...THE SPACE BETWEEN YOUR EARS." — BOBBY JONES

Not only did Jones learn to check his temper and play with a sense of honesty; he also looked out for other players. One enduring story of Jones' gentlemanly nature occurred during the 1929 U.S. Open, when he requested the USGA start the tournament one hour later than originally scheduled on Sunday morning. The reason for the request? So Jones' opponent, devout Catholic Al Espinosa, could attend Mass.

Sportsmanship notwithstanding, a fierce competitive streak and unwavering focus ultimately made Jones the golf legend he remains today. But his foray into golf started rather ironically.

Frail as a young child, Jones was encouraged to play golf to gain strength. He took to the sport immediately, winning his first golf tournament at age 6 at East Lake Golf Club, his hometown course in Atlanta. His unparalleled "Grand Slam" win, including both the American and British Opens and the American and British Amateurs, was crammed into one year: 1930. Two months after this unprecedented feat, Jones retired at the age of 28.

It was a freak accident the year before Jones' retirement that ultimately led to his physical decline. While waiting out a storm near the clubhouse at East Lake Golf Club, Jones was hit in the neck by a cascade of debris, the result of a lightning strike to the clubhouse's chimney. Subsequently, he developed syringomyelia, a degenerative condition in which fluid fills a cavity in the spinal cord, resulting in pain, loss of feeling and muscle atrophy. The condition eventually led to his death in 1971 at age 69.

But before the disorder took its toll, Jones accomplished a great deal. Post golf career, the trained mechanical engineer helped design and co-found the Augusta National Golf Club, which soon became home to the famed Masters tournament. Jones also earned a degree in English literature from Harvard and practiced law, despite never completing his law degree. Notwithstanding the magnitude of his accomplishments, Jones' character remains in the forefront of his admirers' minds.

Perhaps no one summed up this admiration better than Dwight Eisenhower: "His gift to his friends is the warmth that comes from unselfishness, superb judgment, nobility of character and unwavering loyalty to principle."

OFF-ROAD WARRIOR

THE WILLYS MB HELPED THE ALLIES WIN WORLD WAR II AND SET THE MOLD FOR THE MODERN-DAY JEEP.

BY **JOE SUGARMAN**

Willys produced more than 350,000 MBs for the war effort. *Photo: Lothar Spurzem*

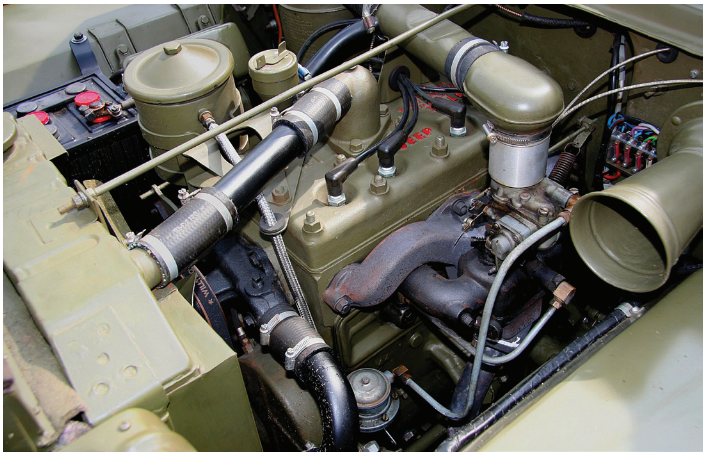
The year was 1940 and the U.S. War Department, sensing imminent military involvement abroad, put out the call for a vehicle that could handle the rough European terrain. The vehicle had to be four-wheel-drive; have a wheelbase of 75 inches or less and be able to carry a 660-pound payload. Oh, and potential bidders had just 49 days to develop a prototype. Not surprisingly, the list of applicants was small.

Just three U.S. auto companies responded—the American Bantam Car Co., Willys-Overland Motors and Ford. It was Bantam, a small auto manufacturer out of Butler, Pa., that initially won the bid—and produced more than 2,500 four-wheel-drive Bantam Reconnaissance Cars, as they were known, but the company couldn't keep up with demand. So in 1941, the U.S. government handed over the Bantam blueprints to Willys-Overland Motors, and an automotive legend was born.

The Willys model was known as the Quad, which later morphed into the MA and the famed MB, and featured a far more powerful engine than the Bantam design. In the 4x4's first public outing, it was driven up the steps of the U.S. Capitol.

American GIs fell in love with the all-purpose vehicle immediately. It was amazingly versatile and could be modified for just about any duty—including, with proper wheels, to run on railway tracks.

Willys went on to produce more than 350,000 MBs for the war effort, with another 270,000 subcontracted to Ford. (The distinctive slotted grill and round headlights were actually based on Ford's original design proposal.)


Willys' vehicle boasted a far more powerful engine than the one originally designed by Bantam. *Photo: Lothar Spurzem*

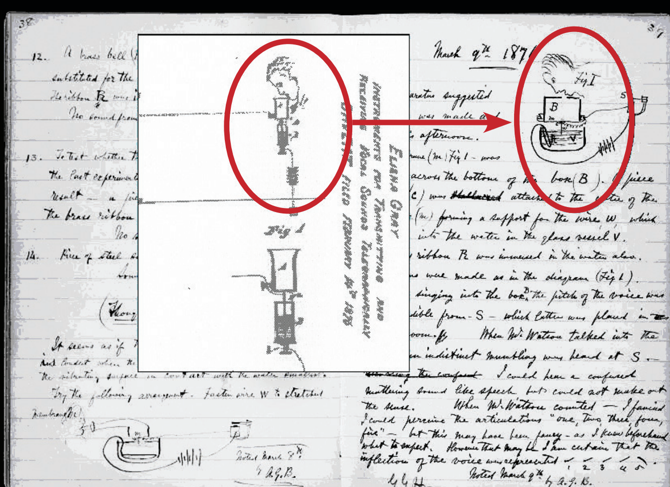
So where did the name "jeep" originate? It's commonly thought that jeep is a truncation of General Purpose (GP) vehicle. Steven J. Zaloga's book, *Jeeps 1941-45*, claims that "jeep" had been around for years "used as casual slang in the Army for anything that was insignificant, awkward, or silly...[and] by Army mechanics during World War I to refer to any new vehicle." Or, possibly, GIs picked up the name from the popular 1930s Popeye comic strip, which featured a character named "Eugene the Jeep," who could go almost anywhere.

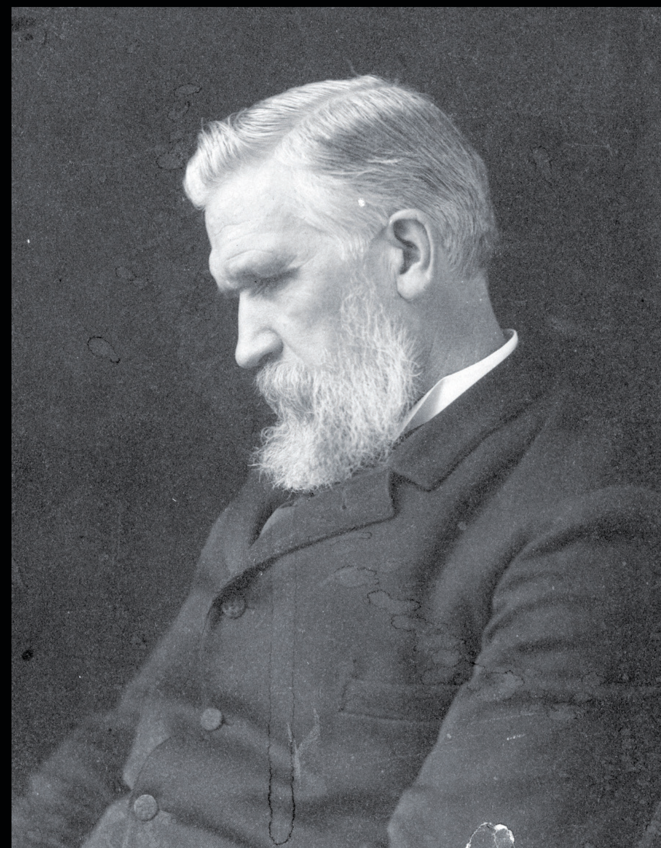
Whatever the origins of its name, the Willys MB, aka jeep, would go down as one of the most important vehicles ever produced. As famed World War II correspondent Ernie Pyle wrote in 1943: "Good Lord, I don't think we could continue the war without the jeep. It does everything. It goes everywhere. It's as faithful as a dog, as strong as a mule, and as agile as a goat. It constantly carries twice what it was designed for, and still keeps on going."

WRONG NUMBER

INVENTOR ELISHA GRAY HOLDS MORE THAN 70 PATENTS, BUT HE MIGHT BE BEST KNOWN FOR THE ONE HE DOESN'T.

BY **SARAH ACHENBACH**





Comparison of the illustration of the telephone in Alexander Graham Bell's diaries and Elisha Gray's patent application.

On the morning of Feb. 14, 1876, an amateur inventor named Alexander Graham Bell filed a patent with the U.S. Patent Office titled "Improvement in Telegraphy."

That same day, a few hours later, another inventor named Elisha Gray submitted his plans to file a patent application for a similar device.

The invention, of course, was the telephone, and the story of how Bell received credit is a narrative of innovation, competition and fortuitous timing.

Several years before, both men had been pursuing a way to transmit multiple transmissions over a single telegraph line. At the time, destiny seemed to favor Gray. As an Oberlin student in 1866, he invented the self-adjusting relay for the telegraph, which automatically compensated for any variation in pulse strength along a line. Western Union Telegraph Co. took notice and soon Gray and his business partner were major suppliers to the telegraph behemoth.

But Gray also was interested in creating electrical musical instruments, including a "musical telegraph" that sent a series of different pitches simultaneously over a single line.

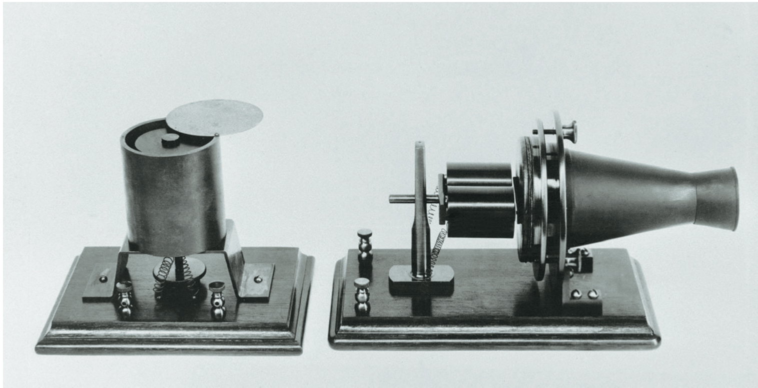
He also created a rudimentary acoustic synthesizing device, which later became the first music synthesizer, and envisioned a system to transmit the human voice. In the year leading up to their same-day filing, Gray and Bell were well aware of each other's progress. While Gray believed the telephone lacked commercial appeal, he knew it would work and wanted to be the one to hold its patent.

The history-making decision of who held the telephone patent came down to filing procedures. Gray filed a caveat, or an announcement to later file an official application, while Bell filed the official application first. Or did he?

There remains some dispute about the circumstances surrounding the patent filing. Some believe that Bell previously stole Gray's designs and added them to his own patent. One conspiracy theory even holds that Bell paid the patent clerk $100 to accept his application first.

Years later, animosity between the inventors continued—as did the lawsuits, which Bell unanimously won. "The whole thing is mine—and I am sure of fame, fortune and success," Bell wrote to his father.

Gray went on to become a professor at Oberlin College and continued his work as an inventor. His 70 patents contributed immensely to the field of modern communications, but the one that got away remains the most famous.



Replicas of the magnetic transmitter and receiver patented by Alexander Graham Bell.
Photo: Alamy/Everett Collection

HOMEGROWN STORIES

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HISTORY AFLOAT

One hundred years ago, single-masted workboats known as skipjacks were a common sight on the Chesapeake Bay. By some estimates, more than 2,000 plied the bay's waters for oysters. These days, less than a few dozen remain, and most of those carry either tourists or school groups, not seafood. Still, several skipjacks remain in active work duty, including the oldest, the circa-1886 *Rebecca T. Ruark* out of Tilghman Island, Md. Every fall, area residents celebrate the skipjack's heritage with a series of races on the Chesapeake, where the faithful old boats once again rule the bay.

Photo: Acroterion - Own Work