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## OUT OF THIS WORLD

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SUMMER 2013

ASIA/PACIFIC – WINTER 2013

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## LEADING WITH INTENT

**This issue's feature article** on Margaret Thatcher quotes a line from a recent movie on her life: "We must stand on principle—or we will not stand at all." It was always very clear to Thatcher's supporters, as well as her detractors, where she stood and what her intent was.

It has been my experience that good leaders have clearly stated intentions—whether they are articulating the values of their organization or providing operational direction.

Recently, I traveled with a group of 25 Dixon employees to spend a day at the Gettysburg battlefields. Under the guidance of a professor from the U.S. Army War College, we studied the leadership lessons learned from the Battle of Gettysburg. Together we discussed and analyzed communication, strategy, tactics, logistics and—perhaps most important—the key role of the commander's intent.

Our day in Gettysburg made two things clear to me: A good leader must take the time to listen and gather all the necessary facts. Then that leader must act decisively, ensuring that employees throughout the organization understand the decision and how best to move forward.

Thanks for reading,

*Dick Goodall*

## BUILDING CHARACTER /

### A Home Run for the History Books

Though Western Oregon senior Sara Tuchlsky often dreamed of what it would be like to hit her first home run, she never imagined it would end with the opposing team carrying her around the bases. Her home run almost didn't become a reality, except for the sportsmanship of Central Washington players Mallory Holtman and Liz Wallace.

Sara's home run came in the second inning of the second game of a double header between the two teams. At stake that weekend was a bid to the NCAA's Division II playoffs. Central Washington needed to win the second game to keep its postseason dreams alive.

When Sara hit the home run, there was a girl on second and third, both

of whom ran home in a celebratory fashion. Sara, in her excitement, overran first base. When she turned quickly to go back, her right knee gave out. Sara went down in agony.

Sara was clearly injured and unable to walk on her own. Her coaches and teammates were trying to decide what to do—if the Western Oregon trainers, coaches or teammates touched Sara or helped her up, she would be out. If they substituted a pinch-runner for Sara, her home run would be counted as a two-run single.

Central Washington player Mallory Holtman was also a senior. She quickly realized that for Sara's home run to count Central was going to have to help



Mallory ran over to the umpires and to Western's coach. "Excuse me," Mallory interrupted, "would it be OK if we carried her around and she touched each bag?" Though surprised, they said yes. Mallory and teammate Liz Wallace promptly picked Sara up, gingerly letting her left foot down to touch each of the bases to get her home run.

This act of sportsmanship contributed to Central's loss. Still, there were no regrets or angry words from Mallory's teammates. They all agreed—helping the opponent was the right thing to do. ◀

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# It's in the Mail

Aaron Montgomery Ward pioneered the mail order catalog, forever changing the way we shop

> Point. Click. Buy.

Online shopping is as easy as it is prevalent. More than 85 percent of the world's online population has used the Internet to make a purchase, and it seems consumers are using their smartphones and tablets to shop wherever they can. A November 2012 Harris Interactive poll found that more than 38 million Americans admit to shopping while on the toilet; some 9 million people said they secretly shopped during a business meeting.

Whether we're talking about Amazon or Zappos, the \$256 billion-a-year e-commerce industry has Aaron Montgomery Ward to thank. With the debut of the Montgomery Ward mail order catalog in 1872, the creator of the world's first large mail order house pioneered the concept that one could shop without setting foot in a store.



Aaron Montgomery Ward was born in Chatham, New Jersey, on February 17, 1843. Ward was 9 years old when his large family moved to Niles, Michigan. Five years later he started working as an apprentice to help support his family. In his memoirs Ward recalls earning a quarter per day at his first job operating a cutting machine at a barrel stave factory. His pay increased to 30 cents a day when he moved on to stacking brick at a kiln.

Ward's career in retail began in St. Joseph, Michigan, where he worked in a shoe store. He soon became a clerk in a general store for a salary of \$6 per month plus board. Within three years his skills as a salesman were recognized with a promotion to head clerk and general manager—and a salary boost to \$100 per month (about \$1,850 today).

In 1865, Ward moved to Chicago, at that time the center of the wholesale dry goods industry, and soon took a job at the dry goods wholesaler Field, Palmer & Leiter, which became Marshall Field & Co. His experiences traveling and listening to the needs of rural customers led him to launch a pioneering new business model: He aimed to sell low-cost goods by mail directly to people in rural areas.

Montgomery Ward's first catalog was a single sheet advertising 163 items. Three years after it debuted, the retailer began promising consumers "satisfaction or your money back"—and business really took off. Within a decade, the number of products



offered in the Montgomery Ward catalog grew to 10,000—everything from clothing and household goods to barbed wire, saddles and even steam engines, according to the Chicago Historical Society.

Ward promised—and delivered—excellent customer service. And his catalog copy, which he wrote or reviewed himself, was clever. A copy of the 1895 Montgomery Ward catalog featured more than 600 pages of items ranging from a \$200 piano to Madame Foy's improved corset to an 18-karat gold wedding band for only \$5. By 1926, the catalog was advertising a kit to build a "splendid home with six bedrooms," for \$3,095.

Other businessmen, notably Richard Sears and Alvah Roebuck, soon created competing mail order catalogs, but Montgomery Ward dominated the mail order business for years. By the time of Ward's death from pulmonary edema, at the age of 69, in 1913, A. Montgomery Ward & Co. was earning \$40 million per year (\$4.9 billion today), according to *The New York Times*. The company

didn't open a retail store until 1926, 13 years after Ward's death. At its height, Montgomery Ward operated 400 department stores in 43 states.

Ward was a private but passionate person. He retired from active management of his company in 1901, and in 1906 he campaigned to save Chicago's Grant Park from development and keep it "forever open, clear and free." Twice Ward successfully sued the city to force the removal of structures from the park and prevent the building of new ones. He became known as the "watchdog of the lakefront."

In Ward's only newspaper interview, in 1909 after the Illinois Supreme Court upheld his argument for the third time that Grant Park should be free of all buildings, the millionaire businessman

told the *Chicago Tribune*, "This is one of the best things I've ever done for the city of Chicago. I fought for the poor people of Chicago, not the millionaires. ... I have nothing at stake in this fight

**A copy of the 1895 Montgomery Ward catalog featured more than 600 pages of items, ranging from a \$200 piano to Madame Foy's improved corset to an 18-karat gold wedding band for only \$5.**

but the good of the people now and for future generations. Perhaps I may see the public appreciate my efforts, but I doubt it."

Sadly, the business Aaron Montgomery Ward founded fell victim to a changing retail market where goods could be purchased more inexpensively

at stores like Wal-Mart and Target. The company discontinued its mail order catalog in 1985, filed for Chapter 11 bankruptcy court protection, and closed its remaining 250 stores by 2001.

But the retailer known affectionately as "Monkey Wards" still endures. Several months after it closed, Montgomery Ward reopened as an online retailer. In February 2009, the company introduced something new, yet familiar: a mail order catalog. ●

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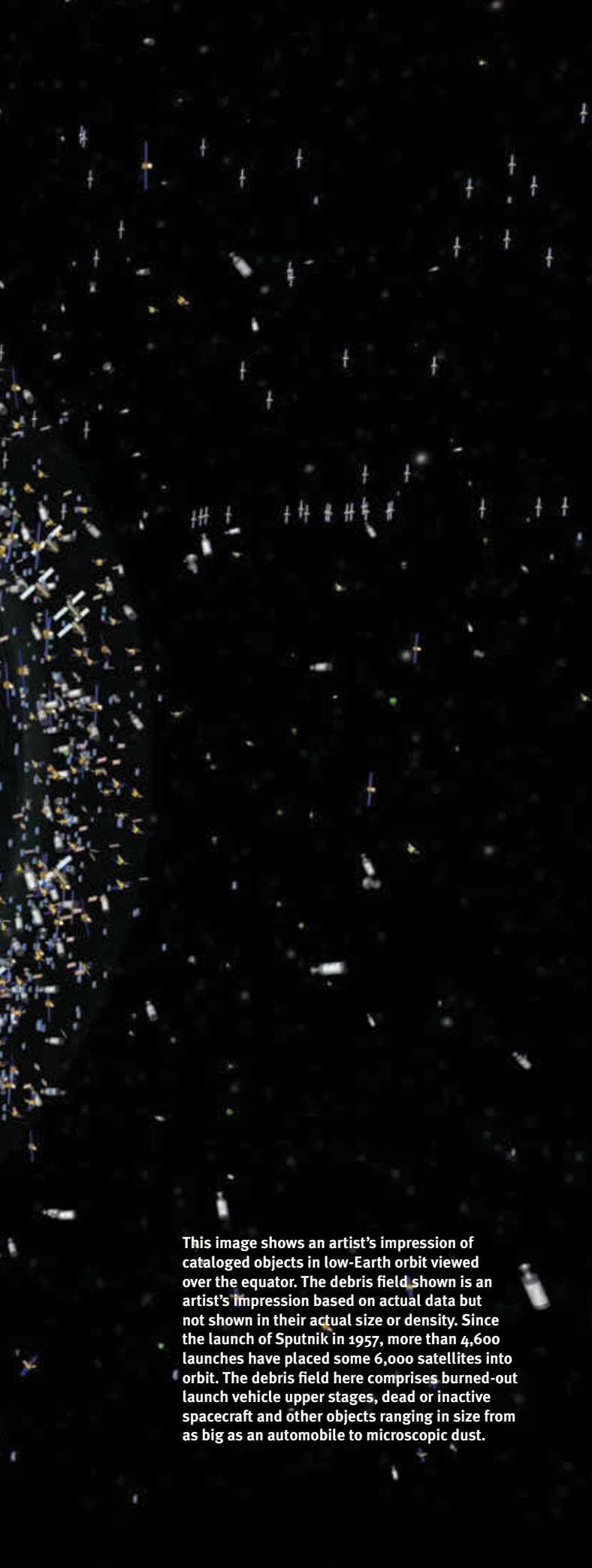
A satellite view of Earth from space, showing the planet's curvature and the surrounding atmosphere. The Earth is the central focus, with a dense field of satellites in orbit around it. The satellites are small, white and blue objects, scattered across the dark background of space. The text is overlaid on the right side of the image.

# OUT OF THIS WORLD

**THE 1,000 OR SO SATELLITES  
CURRENTLY CIRCLING THE EARTH  
ARE VITAL TO COMMUNICATIONS,  
NAVIGATION, WEATHER  
FORECASTING, INTELLIGENCE  
AND DEFENSE**

BY DOUGLAS BIRCH





This image shows an artist's impression of cataloged objects in low-Earth orbit viewed over the equator. The debris field shown is an artist's impression based on actual data but not shown in their actual size or density. Since the launch of Sputnik in 1957, more than 4,600 launches have placed some 6,000 satellites into orbit. The debris field here comprises burned-out launch vehicle upper stages, dead or inactive spacecraft and other objects ranging in size from as big as an automobile to microscopic dust.

**JONATHAN MCDOWELL** isn't a government official but reporters from around the world turned to him in December 2012 for confirmation that the latest North Korean satellite had successfully achieved orbit. Shortly after, the media sought him out again, this time to assess reports that the spacecraft was tumbling out of control and not transmitting signals—signs that it's likely dead.

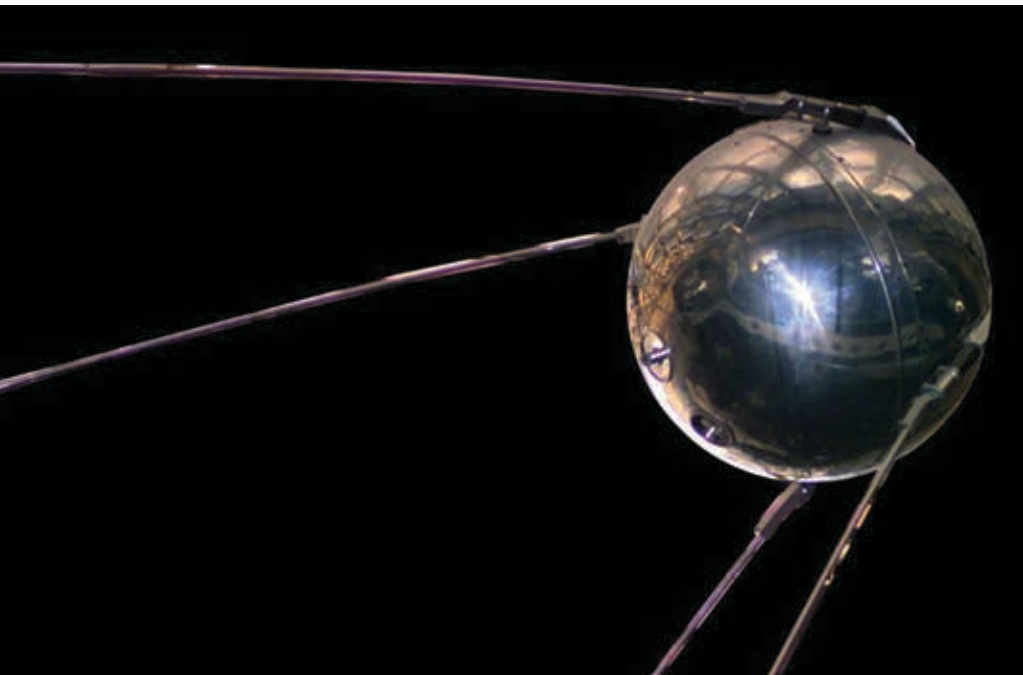
By profession, McDowell is an astrophysicist at the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts, where he studies exotic objects like black holes nestled in galaxies far, far away. But the 52-year-old scientist also spends much of his spare time tracking man-made celestial objects somewhat closer to home.

From his house in Somerville, Massachusetts, McDowell publishes what he calls “the most comprehensive historical list of satellite launch information” on his website, *Jonathan's Space Home Page*. And he periodically fires off an email newsletter, *Jonathan's Space Report*, with the latest in satellite launch news.

His work has helped astronomers distinguish space junk from asteroids and comets. In 1993, the International Astronomical Union named asteroid 4589 McDowell in his honor.

McDowell is fascinated by the hidden history of the role of satellites in space exploration. “To me, it's sort of like a crossword,” he says. “How do these satellites work? What do they do? How do they fit together? This is an incredibly significant era in human history; hundreds of years from now people will look back and want to know what happened in the space age.”

McDowell's satellite chronicles begin with characteristic technical precision, with the Soviet Union's launch of the first satellite, Sputnik, on Oct. 4, 1957, at 19:28:34 Greenwich Mean Time. The 184-pound object, about the size and shape of a beach ball, did little in orbit besides transmitting an electronic beep. But it served as a kind of signal flare marking the start of the space age, inspiring dreams of moon colonies and space stations, and blazing a trail for thousands of spacecraft to follow.



History changed on Oct. 4, 1957, when the Soviet Union successfully launched Sputnik I, the world's first artificial satellite.

Fleets of scientific, commercial and military orbiters today play a vital role in communications, navigation, weather forecasting, intelligence and defense. By McDowell's count, there are currently just more than 1,000 active satellites, and about twice that number of defunct Earth orbiters.

Most represent investments of tens of millions of dollars and perform vital functions, like transmitting television signals, monitoring nuclear tests and transmitting the Global Positioning System data that keep millions of us from getting lost. The largest and most expensive satellite in history, the \$100 billion International Space Station run by an international consortium, has hosted biomedical and materials

science experiments and fostered global cooperation.

Typically these robotic spacecraft have gone about their business efficiently, as they pass silently overhead at speeds that can exceed 17,000 mph.

While the majority of these automatons don't draw much notice, the world would be a very different place without these machines pulling sentry duty.

Consider that most residents of Galveston, Texas, were blindsided by the hurricane that hit on Sept. 8, 1900, with 145-mile-an-hour winds and a 15-foot storm surge. The U.S. Weather Bureau didn't spot the monster until it had swept past Cuba, and even then no one was sure where it was headed.



First U.S. space launch: Explorer 1, Jan. 31, 1958.

About 8,000 lives were lost, making it by far the deadliest hurricane ever to hit the United States.

By contrast, residents in fall 2012 had several days warning that Hurricane Sandy was coming before it struck Atlantic City, New Jersey, with 80-mile-an-hour winds and 11-foot waves of water. Sandy still claimed more than 100 lives in the U.S., and caused an

## SATELLITE MILESTONES

1903

Visionary and rocket scientist Konstantin Tsiolkovsky publishes a paper proposing the idea of a multistage rocket being used to launch a satellite into Earth orbit. He never actually builds a rocket.

1916

U.S. rocket scientist and inventor Robert Goddard writes his groundbreaking *A Method of Reaching Extreme Altitudes*. He later tells a reporter: "Every vision is a joke until the first man accomplishes it; once realized, it becomes commonplace."

1944

A German V2 rocket, developed by a team led by Wernher von Braun, is the first man-made object to reach space.

1957

The Soviet Union launches the first satellites, Sputnik 1 and 2.

1958

The U.S. makes its first successful satellite launch, of Explorer 1. Data from the flight helps lead to the discovery of the Van Allen radiation belts.

**AFTER SPUTNIK THE SPACE BETWEEN THE EARTH AND THE MOON BECAME ONE OF THE MAIN PROPAGANDA, SURVEILLANCE AND INTELLIGENCE BATTLEFIELDS OF THE COLD WAR.**

estimated \$65 billion in damages in New York and New Jersey. But without the help of advanced weather computers, radar systems and satellites, matters would have been far worse.

Of course, space is an arena for international competition as well, and after Sputnik the space between the Earth and the moon became one of the main propaganda, surveillance and intelligence battlegrounds of the Cold War.

Even today, space has its dark side. Satellites have been jammed, rammed and wrecked in a mid-orbit collision. There is still mystery as well. Governments, militaries and corporations often don't release critical details about the satellites they launch out of concern for national security or commercial secrets.

**SPACE SPIES**

Sputnik 1's flight marked the start of a period of intense innovation.

On January 31, 1958, four months after Sputnik 1 and 2, the United States answered with its first successful satellite, Explorer 1. While the German weapons scientist Wernher von Braun

and his Redstone Arsenal team built the rocket, it was the brilliant James Van Allen, an Iowa native and former researcher at the Johns Hopkins Applied Physics Laboratory, who constructed Explorer 1's trailblazing scientific instrument.

Van Allen's decision to put a Geiger counter aboard led to what is arguably the first major scientific discovery using satellites: the existence of the radiation belts that bear his name. He went on to lead a team of University of Iowa rocket scientists who built scientific instruments for the Pioneer, Mariner, Voyager and Galileo spacecraft.

Most critical satellite technology was developed within the first five years of spacefaring, McDowell says: geosynchronous orbits, solar-powered communications and instruments, three-axis satellite stabilization, recoverable payloads and to some extent in-orbit maneuverability.

The year 1960 was a watershed. That's when the U.S. Navy launched the first successful communications satellite, the Courier 1B, and the first of



**William H. Pickering, James Van Allen and Wernher von Braun triumphantly raise a full-size model of the first U.S. satellite, Explorer 1, at a press conference following the craft's launch on Jan. 31, 1958.**

its Transit navigation satellite fleet. That same year, the U.S. completed the successful launch of its first Corona spy satellite, which used cameras and recoverable film canisters to make detailed pictures of Soviet military installations. The launch—which came just three and a half months after the Soviets shot down the U-2 spy plane flown by Francis Gary Powers—eliminated the need for risky overflights.

**1960**

The U.S. successfully launches the first active repeater communications satellite, Courier 1B, and the first weather satellite, Tiros 1.

**1962**

The U.S. launches Telstar 1, which carries the first live trans-Atlantic TV pictures.

**1990**

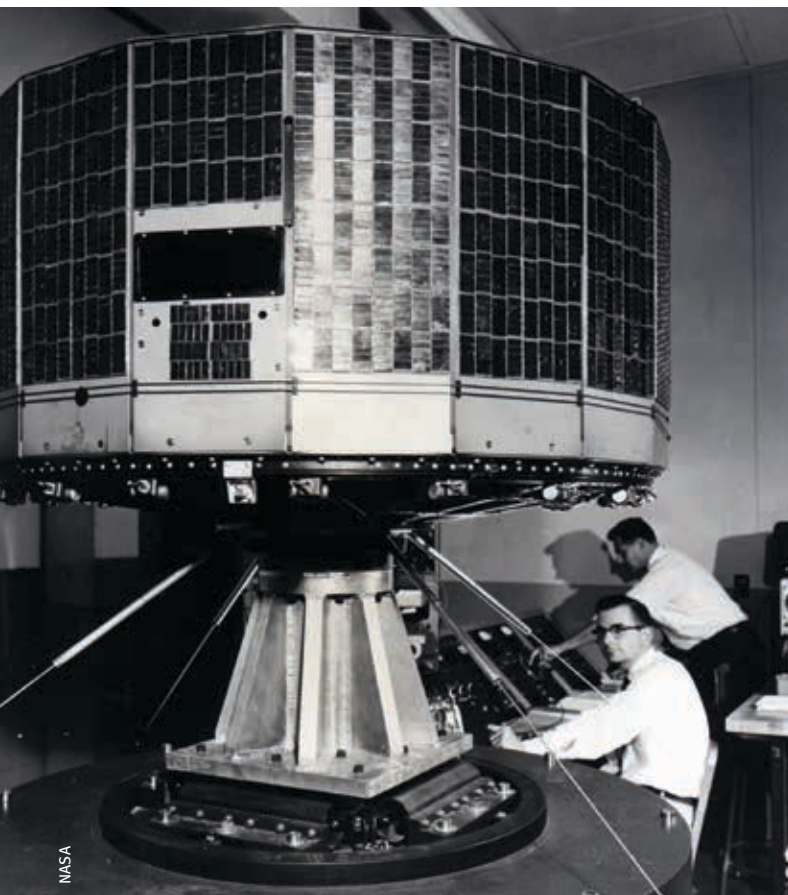
Launch of Hubble Space Telescope.

**2000**

Start of continuous habitation of International Space Station.

**2012**

NASA announces that Voyager 1, launched in 1977, appears to be on the last leg of its journey out of the solar system and into interstellar space. It has traveled almost 11 billion miles from the sun, farther than any other man-made object.



**From left to right: The Tiros satellite, seen here undergoing vibration testing at the Astro-Electronic Products Division of RCA, was the world's first successful weather satellite. A blue and white Earth forms the background for this image (taken by crew aboard the International Space Station), which features the robotic Dragon 2 spacecraft in the grasp of the Space Station Remote Manipulator System. The Dragon spacecraft, which provides supplies, completed the first successful rendezvous with the Space Station in May 2012.**

Today, the U.S. relies on its spy satellites as much as ever, not just to track other nations' nuclear arsenals but to keep an eye on militaries and militants around the globe. The program's current hardware and most other details are still cloaked in secrecy. But according to a 2013 budget document released by the National Reconnaissance Office, which runs the U.S. spy satellite program, "NRO sensors allow users to quickly focus multiple sensors on almost any point on the globe ... and provide persistent, multi-INT [intelligence] coverage."

Starting in the 1960s, U.S. satellites began monitoring the frequencies and pulse periods of Soviet strategic radars. Later, more sophisticated spacecraft intercepted detailed data or "telemetry" from rocket tests. "We often had better data on Russian missile tests than they did, or at least as good," McDowell says.

The United States also led in civilian satellite technology, orbiting the first successful weather satellite, Tiros 1, in 1960. Two Telstar communications satellites, built to relay telephone calls and television pictures across the Atlantic, were launched in 1962 and 1963.

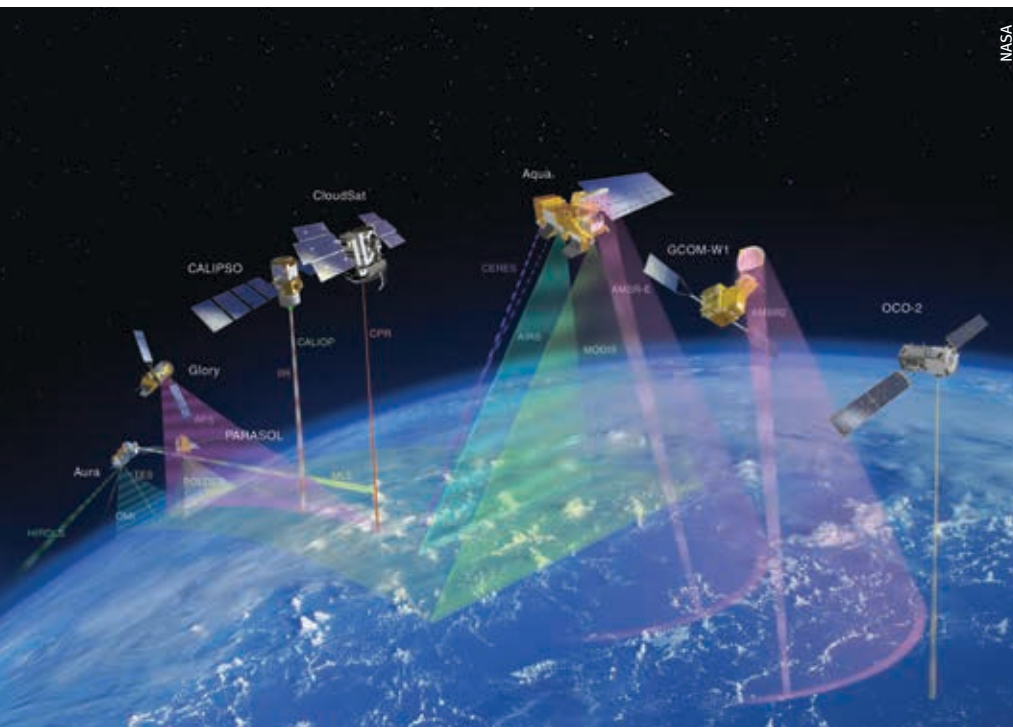
About 30 years ago, McDowell says, the satellite business began to globalize as the Europeans and Japanese started their own space programs. "By the mid-1980s, you got away from the era of government superpower activity, with smaller nations being players as well." And the number of countries with national space agencies has continued to grow—from 40 in 2000 to about 55 in 2009, according to a report on Space.com.

While the superpowers concentrated on military and intelligence satellites, most of the recent spacefaring nations have

focused on commercial and civilian orbiters. Today, McDowell estimates that roughly a third of satellites are dedicated to civilian applications, a third to military-related missions and a third to commercial programs.

Like most mature industries, the commercial satellite business has experienced its booms and busts. In the mid-1990s, there was optimistic talk that the satellite industry was poised for explosive growth, with hundreds of new communications satellites to handle voice and data networks. But these orbiters face competition from terrestrial cables and cell towers. "It didn't happen," McDowell says.

In recent years, cash, energy and enthusiasm have started pouring again into space startups. After the retirement of the aging space shuttle fleet in 2011, NASA announced that it would turn to private industry to send cargo to the



NASA

The “A-Train” convoy of satellites, which barrel across the equator each day at around 1:30 p.m., has emerged as a powerful tool for scientists who are studying the planet’s changing climate. Their multisensor views chart changes in key environmental phenomenon—such as clouds or ice sheets—from numerous perspectives.

McMansion-sized \$100 billion International Space Station, with the aim of controlling costs.

The agency has worked out deals with SpaceX Corp. of Hawthorn, California, and Orbital Sciences of Dulles, Virginia, to deliver 40 tons of supplies to the orbiter, which can accommodate six astronauts full time, in 20 flights, at a cost of around \$3.5 billion. SpaceX’s robotic Dragon spacecraft completed the first successful rendezvous with the Space Station in May 2012.

**ANATOMY OF AN ORBITER**

What keeps all these satellites in the sky? The Earth’s thin layer of atmosphere creates “drag” or friction on everything that moves across the surface. But starting at about 120 miles up, the atmosphere thins to the point where gravity is the main force acting on an object.

When something is traveling at about 17,000 mph perpendicular to the Earth’s surface, it’s moving fast enough to keep from being dragged back into the atmosphere by gravity but slow enough so it doesn’t zoom out of Earth’s gravitational field. The result is a curving path around the planet, called an orbit.

Orbits can fly just above the atmosphere, as most manned and Earth-observing satellites do; or spin roughly 3,000 to 6,000 miles out, like most astronomical and other science satellites.

Global Positioning System satellites circle at between 6,000 and 12,000 miles out, while weather and communications satellites generally use

takes a staggering amount of energy. So most satellites are built to be as light and compact as possible.

Satellites are all hand built by craftsmen, but all share the same basic design. A satellite’s body is called its “bus.” It contains the communications and control equipment, instruments, power and other technology. Most have solar cells and storage batteries—a few are nuclear-powered. All have computers, radios and stabilization systems, which may consist of gyroscopes, thrusters and star finders for orientation.

Usually, a given satellite will perform a few simple tasks, but because putting a satellite in orbit can cost from \$50 million to \$400 million, designers will use equipment that is both rugged and sophisticated to accomplish those tasks.

Each GPS satellite, for example, has an atomic clock on board and periodically transmits a signal relaying its

**TODAY, MCDOWELL ESTIMATES THAT ROUGHLY A THIRD OF SATELLITES ARE DEDICATED TO CIVILIAN APPLICATIONS, A THIRD TO MILITARY-RELATED MISSIONS AND A THIRD TO COMMERCIAL PROGRAMS.**

higher, “geostationary” orbits—circling the Earth once every 24 hours at an altitude of 22,223 miles in order to stay in a fixed position relative to the surface. These satellites are relatively slow but still travel at nearly 2 miles a second.

Accelerating a large, heavy object like the space shuttle, which weighed more than 230,000 pounds loaded, to a speed of 17,000 miles an hour obviously

location and current time. The signal is timed so that it transmits at exactly the same moment as all the other 24 or so GPS satellites. These signals arrive at the receiver at different times because some satellites are farther away than others. A GPS receiver uses the different arrival times to calculate the distance of the satellites. In turn, the receiver can use the data from at least four orbiters to calculate its location in four dimensions.



## HOW GPS SATELLITES WORK

GPS satellites, orbiting the Earth, periodically transmit a signal that relays their location and current time. The signals arrive at the receiver at different times because some satellites are farther away than others. A GPS receiver uses the different arrival times to calculate the distance of the satellites. In turn, the receiver can use the data from at least four orbiters to calculate its location in four dimensions.

## HAZARDS ON THE HORIZON

A growing challenge for spacefarers today is space debris, which can range in size from the spent stages of old rockets to fragments smaller than nuts and bolts. Traveling at several miles a second, a screw can become a hypersonic bullet.

As space has become more crowded, the problem has worsened. A long-defunct Kosmos 2251 Russian military communications satellite collided accidentally with a U.S. Iridium communications orbiter over northern Russia in February 2009, creating two huge orbiting clouds of junk. Not all

space scrap is put there by accident, either. In January 2007, China tested an anti-satellite weapon by pulverizing a 2,200-pound weather satellite, creating another orbiting scrap heap.

Donald Kessler, a former head of NASA's debris program, has predicted that one day there will be too much orbital trash to launch any satellites in near-earth orbit—a condition known as the Kessler syndrome.

Satellite designers are making current satellites to shed fewer parts and putting smaller ones in lower orbits, where they burn up in the atmosphere sooner. And improved satellite tracking has helped avoid further mishaps. But cleaning up the mess made by previous collisions, explosions and disintegrations faces a daunting set of technical and diplomatic challenges.

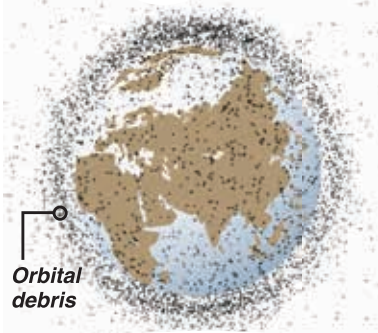
McDowell worries that the biggest threat to satellite programs may simply be the ever-rising cost of putting stuff into orbit. "That's, I think, the biggest challenge that all of the space agencies face—the accounting frontier."

But there is also hope. The history of rocket science is one of overcoming obstacles. As more countries start space agencies and more businesses enter the field, competition could spur growth—and drive down costs. Increasingly, countries are talking about avoiding the overcrowded near-Earth orbits by placing communications and other working satellites beyond the moon. Nanosats—cheap orbiters—are making space more accessible to students and small science projects.

And where our robot friends go, can humans be far behind? ●

## Space debris

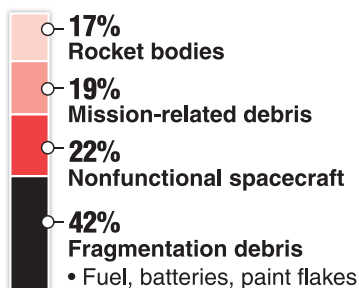
*Orbital debris, any man-made, nonfunctional object orbiting Earth, is cluttering space and can sometimes cause trouble.*



• Low Earth orbit region of space, within 1,240 mi. (2,000 km) of Earth's surface, is most concentrated area for orbital debris

Source: NASA  
Graphic: Melina Yingling

### Breakdown of debris



- 11,000 objects greater than 4 in. (10 cm)
- 100,000 objects between 0.4-4 in. (1-10 cm)

© 2011 MCT



## TRASH TALK AND MORE

- There are more than 10,000 pieces of space debris in orbit. A piece plunges to Earth on average once a day, though so far there is no record of any ever having caused terrestrial property damage or injuries.
- Butter-fingered or just unlucky astronauts have added to space clutter over the years by losing pliers, a bag containing \$100,000 worth of space tools, a glove and a camera while in orbit.
- The first earthling in space was the dog Laika, (whose name means “barker,”) aboard Sputnik 2 in 1957. The first to orbit the moon was a tortoise; it flew aboard a Soviet Soyuz spacecraft on Sept. 14, 1968.
- The \$100 billion International Space Station has been visited by 204 people since November 2000, according to NASA.
- Book now: Every seat for a U.S. astronaut on a Russian Soyuz spacecraft to the International Space Station now costs NASA \$55.8 million. In 2014, the price will jump to \$63 million.
- The Soviet Union sent up the first satellite, put the first man and woman in orbit, conducted the first spacewalk, made the first robotic soft landing on the lunar surface and launched the first space station. But the U.S. won the space race in 1969 with “one small step for man,” when Neil Armstrong planted his size 9½ left boot on the moon.

**The bright sun and a portion of the International Space Station and Earth’s horizon are featured in this image photographed during the STS-134 mission’s fourth spacewalk in May 2011. The image was taken using a fish-eye lens attached to an electronic still camera.**

Margaret Thatcher, nicknamed the "Iron Lady," models a replica armored breastplate in 1978, around the time she became the United Kingdom's first female prime minister.





# IRON **AND** METTLE

BY ALAN FEILER

Margaret Thatcher boldly steered her nation on a new course

**T**here's a tense scene in the 2011 film *The Iron Lady* in which Margaret Thatcher, as portrayed by Meryl Streep, is cautioned by U.S. Secretary of State Alexander Haig against going to war with Argentina over the Falkland Islands. Haig warns the British prime minister that the price for the conflict would be too high and politically risky, especially considering that the Falklands are located thousands of miles from Great Britain.

After noting that Hawaii is thousands of miles from the continental United States but remains vital to American interests, Streep's Thatcher announces she will not bow to the Argentinean "criminals and thugs" who invaded the British-controlled islands. Sounding much like one of her predecessors, Winston Churchill, she proclaims, "We must stand on principle—or we will not stand at all."

That simple, pithy-sounding line might have summed up Margaret Thatcher's general perspective on life—personally, professionally and geopolitically—and serves as a reference point and inspiration for all aspiring leaders. After all, she didn't acquire her nickname (from which the film is titled) for nothing.

Thatcher died recently at the age of 87 after suffering a series of incapacitating strokes. But there was a time when the "Iron Lady" commanded the world stage on a daily basis and was viewed (even by detractors) as a paragon of towering strength and steely determination, for preventing the decline of the British Empire as well as for helping to bring about the fall of Soviet-style communism.

"What people love is the smack of firm government," British writer and broadcaster Gyles Brandreth said in the 2012 documentary *Margaret Thatcher: The Iron Lady*. "And whether it was real or

imagined, people felt Margaret Thatcher gave them the smack of firm government. ... You might dislike her, but you really felt she knew what she was doing."

## DRIVEN BY CONVICTION

Lady Thatcher was born Margaret Hilda Roberts, on Oct. 13, 1925, in Grantham, Lincolnshire. Her father, Alfred, was a grocer, local politician and lay Methodist minister. He was also his daughter's primary role model and hero, and the family lived over Alfred Roberts' grocery store/post office. He was known for being a champion of small business and private enterprise.

He was also heavily involved in Grantham politics, and his conservative social and fiscal views deeply affected Thatcher throughout her political life.

A bright, inquisitive girl, Thatcher early on exhibited a strong work ethic, a deep fascination with current events and an uncanny knack for serving ably in leadership roles. At age 16, Thatcher developed a strong interest in chemistry. She applied to Oxford. "I regarded it as being quite simply the best," Thatcher recalled, "and if I was serious about getting on in life that is what I should always strive for."

In her third year of college, Thatcher became increasingly interested in campus politics. She joined the Oxford Union Conservative Association and eventually became the group's president.

In 1947, Thatcher graduated with honors from Oxford with a Bachelor of Science degree in chemistry. She then worked as a research chemist for BX Plastics and also joined the Conservative Association in Colchester, Essex.

Four years later, she was selected as a Conservative Party candidate. She lost, but as the youngest (and only female) candidate, Thatcher received a good deal of media attention.

At a dinner soiree during that period, she met Denis Thatcher, a wealthy, divorced businessman. They married in December 1951. Denis Thatcher funded his wife's law school studies, and in 1953 she qualified as a barrister specializing in taxation matters. That same year, she gave birth to their twins, Carol and Mark.

Not even the hectic, frenzied life of a young mother could keep Margaret Thatcher away from the political arena. In late 1955, she was narrowly defeated as a candidate. But in 1958, she was selected as the Conservative candidate for the town of Finchley and was narrowly elected a member of Parliament.

"She was a convictions politician," said Gyles Brandreth. "Right from the beginning, Margaret Thatcher was a woman of convictions and drive, and she was determined to find a seat."

### RISING STAR

Slowly but methodically, Thatcher worked her way up the Conservative Party leadership and learned the craft of politics. "She was a formidable character right from the beginning. She also had good looks and charm, and wasn't afraid to use both of those," said Brandreth.

In the years between 1965 and 1970, Thatcher held numerous key positions while the Tories were in the opposition. In 1970, she was appointed secretary of state for education and science.



Thatcher was elected a member of Parliament for Finchley, North London, in 1958.

In that role, she became a controversial figure when, attempting to cut costs, she abolished free milk for some schoolchildren, thus gaining the sobriquet "Margaret Thatcher, Milk Snatcher" from the media.

"I learned a valuable lesson," Thatcher wrote in her autobiography. "I had incurred the maximum of political odium for the minimum of political benefit."

But Thatcher continued to attract admirers, and she moved up the party ranks. In particular, her criticism of the high tax policies of the Labour government—she branded them as steps "not only towards socialism, but towards communism"—resonated with many in the Conservative leadership. In 1974, she mounted a leadership challenge that defeated Prime Minister Edward Heath, her onetime mentor, and became leader of the Conservative Party.

"She wasn't a far right-wing figure, especially in the early days," said Brandreth. "She was someone who was



Thatcher is pictured here in October 1976, a period when she served as leader of the Conservative Party.

ready to compromise. She appeared to be strident, but ... she was a conciliatory person. She had the style of a leader but the acumen of a politician."

In the 1978–79 political campaign season, Thatcher and her Conservative allies were highly critical of the Labour government's unemployment record and the role of trade unions in the ailing economy. Thatcher was seen as an agent of change, and her message against Britain's socialist infrastructure touched a nerve, particularly with middle-class voters.

The Conservatives won a 44-seat majority in the House of Commons, and Thatcher became the United Kingdom's first female prime minister. Arriving at 10 Downing Street on May 4, 1979, she referenced the Prayer of St. Francis of Assisi, calling for a sense of healing in her nation: "Where

## WORDS FOR THE HISTORY BOOKS... FROM MARGARET THATCHER

“Socialists cry ‘Power to the people,’ and raise the clenched fist as they say it. We all know what they really mean – power over people, power to the State.”

“Popular capitalism is nothing less than a crusade to enfranchise the many in the economic life of the nation.”

“BEING POWERFUL IS LIKE BEING A



In 1987, Prime Minister Margaret Thatcher with husband Denis stand at the back end of the Conservative Party “battle bus” with its slogan “Moving Forward with Maggie” on the back window. The bus was touring London Docklands.

there is discord, may we bring harmony. Where there is error, may we bring truth. Where there is doubt, may we bring faith. And where there is despair, may we bring hope.”

#### ‘MRS. THATCHER’S WAR’

In the midst of the economic and social malaise in Britain, Thatcher immediately took on austerity measures, even insisting on frugality in her official residence. She spoke out against trade unions and angered many in 1981 when talking about cuts in public spending during the recession.

But the following year provided Thatcher with her watershed moment. Argentina’s takeover of the Falklands offered her a chance to demonstrate that she lived up to the “Iron Lady” nickname given her by her Cold War rivals, the Soviets. Three days after the

invasion, and much handwringing and deliberation, Thatcher dispatched British warships to retake the islands.

Argentina surrendered on June 14, 1982, and the victory—despite the deaths of 255 British servicemen, 649 Argentinians and three Falkland islanders—secured Thatcher’s re-election the following year, as well as her legacy.

“From June 14, 1982, right up to her last week in office, Thatcher dominated British politics as no one had since Churchill,” writes John O’Sullivan in his 2006 book, *The President, the Pope and the Prime Minister: Three Who Changed the World*. “She had the power and prestige to sustain a bold foreign and defense policy even against strong opposition over the next eight years. ... Thatcher gave an enormous boost to national morale.”

But in March 1984, Thatcher drew the wrath of many of her countrymen when she clashed with striking coal miners and trade unionists. Thatcher refused to meet the union’s demands for pay raises and the prevention of pit closures. The strike went on for a year and greatly hurt the British economy. But in the end, Thatcher emerged victorious as striking miners went back to work and the issues of pit closures and pay raises were virtually abandoned.

Meanwhile, as Britain’s economy started to prosper (with the sale of state-owned industries and the taming of inflation), Thatcher’s stature in international affairs soared. With President Ronald Reagan, as well as the reform-minded Soviet leader Mikhail Gorbachev, she became a leading figure in orchestrating the end of the Cold War.

“They were kindred spirits,” Brandreth said of the Thatcher-Reagan alliance. “It was a partnership that really worked.”

In June 1987, Thatcher became the first prime minister since 1820 to lead a party to three successive election victories. But with the rise of severe economic hardships, Thatcher became a lightning rod for criticism among her colleagues and detractors. She was castigated for becoming increasingly autocratic, isolated and “over the top” in her dealings with cabinet members and others.

Thatcher endured several challenges to her leadership of the Conservative Party, only to prevail. But her approval ratings continued to

“There can be no liberty unless there is economic liberty.”

“Imagine a Labour canvasser talking on the doorstep to those East German families when they settle in on freedom’s side of the wall. ‘You want to keep more of the money you earn? I’m afraid that’s very selfish. We shall want to tax that away. You want to own shares in your firm? We can’t have that. The state has to own your firm. You want to choose where to send your children to school? That’s very divisive. You’ll send your child where we tell you.’”

LADY. IF YOU HAVE TO TELL PEOPLE YOU ARE, YOU AREN’T.”



On June 8, 2010, former British Prime Minister Thatcher waves as she stands with British Prime Minister David Cameron, on the doorstep of 10 Downing Street.

plummet as Labour ascended in the polls.

In November 1990, the resignation of deputy prime minister Sir Geoffrey Howe, the last remaining member of Thatcher's original 1979 cabinet, sounded the death knell for her political career. Although initially vowing to

"fight on and fight to win," Thatcher—after consulting with her cabinet and speaking with the Queen and other world leaders—announced her resignation. She would remain bitter about what she considered her ouster from power.

"We leave the United Kingdom in a very better state than when we came here 11 and a half years ago," Thatcher said a bit tearfully when leaving 10 Downing Street for the last time.

Thatcher remained a vital political figure, working closely behind the scenes for years. In 1993, she wrote a best-selling book, *The Downing Street Years*, about her tenure as prime minister. Two years later, she authored *The Path to Power*, chronicling her life leading up to being prime minister. She also toured the world as a lecturer until a series of strokes in 2002 forced her to give that up.

The following year, Denis Thatcher died. "Being Prime Minister

is a lonely job," Thatcher lamented in *The Downing Street Years*. "In a sense, it ought to be: You cannot lead from the crowd. But with Denis there I was never alone. What a man. What a husband. What a friend."

To her allies and supporters, Margaret Thatcher remained an iconic, heroic figure who restored Britain's economy, political structure, world stature and national pride. To her critics, she was the embodiment of British hubris, intransigence and divisiveness. But all would agree that her era of governance left its mark on Britain forever.

Brandreth believes Thatcher would have been pleased with the acclaimed film made about her life, starring Meryl Streep. "She wasn't vainglorious," he said of Thatcher. "But she was aware of what she achieved, and that it was remarkable and good. ... She was conscious of her place in history." ■

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### TRIVIA Did you know that...

**One barrel of petroleum** holds 42 gallons.

**The longest word** in the English language with no vowels is "rhythms."

**The ball** on top of a flagpole is called a "truck."

**A hardboiled egg** will spin. An uncooked or soft-boiled egg will not.

**Jupiter's moon Ganymede** is larger than the planet Mercury.

**Los Angeles'** full name is "El Pueblo de Nuestra Senora la Reina de los Angeles de Porciuncula."

**The average 1 1/4 lb. lobster** is 7 to 9 years old.

**Oenophobia** is the fear of wines.

**Panophobia** is the fear of everything.

**Mr. Rogers** was an ordained minister.

**A million dollars'** worth of \$100 bills weighs only 22 pounds.

**An olive tree** can live up to 1,500 years.

**The "vintage date"** on a bottle of wine indicates the year the grapes were picked, not the year of bottling.

**Istanbul, Turkey**, is the only city in the world located on two continents.

**Jennifer Aniston's** original name is Jennifer Anastassakis.

**The word "Tips"** is actually an acronym standing for "To Insure Prompt Service."

**In a deck of cards**, the only king without a moustache is the king of hearts.

[www.randomtriviagenerator.com](http://www.randomtriviagenerator.com)

### ON THE LIGHTER SIDE

**Two men waiting** at the Pearly Gates strike up a conversation. "How'd you die?" the first man asks the second. "I froze to death," says the second. "That's awful," says the first man. "How does it feel to freeze to death?" "It's very uncomfortable at first," says the second man. "You get the shakes, and you get pains in all your fingers and toes. But eventually, it's a very calm way to go. You get numb and you kind of drift off, as if you're sleeping. How about you, how did you die?" "I had a heart attack," says the

first man. "You see, I knew my wife was cheating on me, so one day I showed up at home unexpectedly. I ran up to the bedroom, and found her alone, knitting. I rushed down to the basement, but no one was hiding there. I ran up to the second floor but found no one there either. I went as fast as I could to the attic, and just as I got there, I had a massive heart attack and died." The second man shakes his head. "That's so ironic," he says. "What do you mean?" asks the first man. "If you had only stopped to look

in the freezer, we'd both still be alive."

**An Englishman**, a Frenchman, a Spaniard and a German are all standing watching a street performer do some excellent juggling. The juggler notices that the four gentlemen have a very poor view, so he stands up on a large wooden box and calls out, "Can you all see me now?" "Yes." "Oui." "Si." "Ja."

[www.anyjokes.net](http://www.anyjokes.net)

### Dates in History

**1862** - On July 12, President Abraham Lincoln signed into law a measure calling for the awarding of a U.S. Army Medal of Honor, in the name of Congress, "to such noncommissioned officers and privates as shall most distinguish themselves by their gallantry in action, and other soldier-like qualities during the present insurrection." The previous December, Lincoln had approved a provision creating a U.S. Navy Medal of Valor, which was the basis of the Army Medal of Honor created by Congress in July 1862. The first U.S. Army soldiers to receive what would become the nation's highest military honor were six members of a Union raiding party who in 1862 penetrated deep into Confederate territory to destroy bridges and railroad tracks between Chattanooga, Tennessee, and Atlanta, Georgia.

**1930** - On July 13, France defeated Mexico, 4-1, and the United States defeated Belgium, 3-0, in the first-ever World Cup football matches, played simultaneously in host city Montevideo, Uruguay. The World Cup has since become the world's most watched sporting event.

**1933** - On July 6, Major League Baseball's first All-Star Game took place at Chicago's Comiskey Park. The brainchild of a determined sports editor, the event was designed to bolster the sport and improve its reputation during the darkest years of the Great Depression. Originally billed as a one-time "Game of the Century," it has now become a permanent and much-loved fixture of the baseball season.

**1997** - At midnight on July 1, Hong Kong reverted to Chinese rule in a ceremony attended by British Prime Minister Tony Blair, Prince Charles, Chinese President Jiang Zemin, and U.S. Secretary of State Madeleine Albright. A few thousand Hong Kongers protested the turnover, which was otherwise celebratory and peaceful.

[www.history.com](http://www.history.com)

# MAGNIFICENT MAINE



*The land of lobsters and lighthouses has activities and landscapes for every taste*



BY PAUL E. KANDARIAN

What's there to do in Maine? Where do you want to start?

How about the coast: Maine, the biggest of the six New England states with a total area as large as the other five combined, has 5,500 miles of coastline, from sandy shores to craggy cliffs, and about 2,000 islands. Here, lobster is king; Maine produces almost 90 percent of all lobster devoured in the United States and the sweet crustacean shows up on nearly every menu in the state.

Inland waters? Whitewater rafting, kayaking, canoeing and fishing are in abundance in a state with a combined 32,000 miles of rivers and streams, equal to the total lengths of the Mississippi, Amazon, Yangtze and Nile rivers.

Camping, hiking and biking more to your liking? Maine has more than half a million acres of state and national parks, including the 92-mile Allagash Wilderness Waterway and a mile-high mountain, Mount Katahdin.

And if you prefer the great indoors, head to Portland, a city with vibrant food, arts and cultural scenes. Gaining entry

to all of it is easy, with two international airports and the newly expanded Amtrak Downeaster from Boston to Portland, Freeport and Brunswick. From these points, you can catch the Maine Eastern Railroad up the coast to Bath, Wicasset and Rockland.

"We have this magnificent coastline from beaches to dramatic rocky shores, numerous islands, mountain vistas, sparkling lakes, vast landscapes and miles of rivers and streams," says Carolann Ouellette, director of the Maine Office of Tourism. "You can connect with a wide variety of arts and cultural offerings, dine on fresh seafood and local products prepared by award-winning chefs, and shop in everything from outlet stores to small galleries."

Families flock to Maine in summer for outdoor experiences, including at Three Rivers Whitewater, a resort with access to the Kennebec, Penobscot and Dead rivers for all manner of water adventures—from easygoing paddles to muscle-burning rapids.

"One of our most popular [options] for families is a two-day trip, on an inflatable

**Clockwise from top: View of Mount Katahdin from Sandy Spring Pond. Portland Harbor. Whitewater rafting at Three Rivers Whitewater. Sebago Lake, site of the Duck House. Wooden pier at Old Orchard Beach. Harvest on the Harbor.**



Portland Convention and Visitors Bureau



Portland Convention and Visitors Bureau



Three Rivers Whitewater





**Clockwise: Catching some rays at the Old Orchard Beach. Frenchmen's Hole, a popular swimming spot. The picturesque Artist's Covered Bridge, built in 1872, has a reputation for being the most painted bridge in the state.**

raft one day, then whitewater rafting the next," says Judith Hutchinson, reservation specialist for Three Rivers Whitewater. "It includes camping, campfire cooking, all gear brought in for you and everything a family needs. It's really a fantastic bonding experience; it sets the tone for a lot of summertime memories."

Feeling even more adventurous? Try their "Jump and Raft"—a tandem

multiple-day cruises aboard the Grace Bailey and Mercantile, both National Historic Landmarks that carry 29 passengers; and the Mistress, which carries six. The trips leave from Camden, and take you to tiny fishing villages, islands and lighthouses, where you'll see whales, seals and puffins up close, with rates from \$475.

Hit the cooling ocean waters at popular spots like Ogunquit Beach,

"Best Mountain Park" by *Yankee Magazine*. There is a nine-hole flying-disc golf course, a new bungee trampoline to supplement its existing zip line tours, scenic lift rides, geocaching adventures, wildlife encounters, mountain biking, canoeing, kayaking, ATV tours, fishing and many other outdoor activities (check the resort website for pricing).

Stays of choice at Sunday River include the Jordan Grand Resort Hotel, close to the resort's golf course, and Grand Summit Resort Hotel, close to lifts and mountain bike trails.

Nearby are lots of free activities, including dips in old-fashioned swimming holes in the mountains of western Maine. Popular ones include Frenchman's Hole, the Letter S Pool and the Artist's Covered Bridge. Sunday River's hiking trails are free as well, and nearby state parks offer opportunities for hikes—from easy loops to multiday backpacking journeys.

For the urban adventurer, Portland is a city of contrasts, with Victorian neighborhoods on cobblestone streets to

*Hit the cooling ocean waters at popular spots like Ogunquit Beach, a favorite for families; Old Orchard Beach, a seven-mile stretch of sand centered by the fabled Old Orchard Pier; and Scarborough Beach State Park, one of the best in the state.*

skydive jump followed by a one-day river raft adventure, which Hutchinson says is one of the company's "most popular offerings."

With Maine Windjammer Cruises, you can sit back and let others do the work—or join in yourself, if you'd like. The cruise line offers

a favorite for families; Old Orchard Beach, a seven-mile stretch of sand centered by the fabled Old Orchard Pier; and Scarborough Beach State Park, one of the best in the state.

Sunday River Resort in Bethel is a ski resort in winter and a hotbed of family fun in summer; it was voted





## NOT-TO-MISS LIGHTHOUSES

*Maine has an abundance of iconic lighthouses, ever-flashing beacons of light that guide vessels in stormy ocean waters. Maine resident Alan Claude, noted lighthouse poster artist, recommends five must-sees for visitors.*

- 1. Cape Neddick Light, York:** Also known as “The Nubble,” this spectacular lighthouse is planted on a small rocky island. One of the state’s most popular lighthouses, it’s separated from shore by a 100-foot channel.
- 2. Portland Head Light, Cape Elizabeth:** A majestic beauty, this light house perches on a rocky promontory at Fort Williams Park. Built in 1791, it is the state’s oldest lighthouse. The park and picturesque lighthouse attract about a million visitors a year.
- 3. Doubling Point Light, Arrowsic:** This little-known but utterly charming wooden octagonal lighthouse on the Kennebec River was one of four built in 1898 to provide navigational aid for ships on the way to Bath, a city with four centuries of ship-building history.
- 4. Pemaquid Point Light, Bristol:** This classic white pyramid lighthouse, built in 1835, has the distinction of being the first sentinel in Maine to be automated when the keeper position was eliminated in 1934. Climb to the top and check out the Fresnel lens, which flashes every six seconds and is visible for 14 nautical miles.
- 5. Rockland Breakwater Light, Rockland:** Sitting at the tip of a nearly mile-long jetty, this lighthouse is surrounded by sea, hillsides, ships and lots of fresh Maine air, through which cuts a fog-horn blast every 15 seconds.





Kelly Woods

## SUMMER FESTIVALS

*You can't swing a lobster in Maine without hitting a festival; each summer the state celebrates everything from soft drinks to crafts to blueberries to, of course, lobsters.*

★ **The Moxie Festival (July 12–14):** An ode to the Maine-made soft drink, this festival in Lisbon Falls includes a native American powwow, parade, 5K race, car show, river race and more, all in honor of a soda that became the state's official soft drink in 2005. ([www.moxiefestival.com](http://www.moxiefestival.com))

★ **The Maine Lobster Festival (July 31–Aug. 4):** This festival honors the lobster with five days of feasting and fun on the midcoast, featuring a sea goddess coronation, parade, entertainment, an international lobster crate race, cooking contests and, oh yes, 20,000 pounds of lobster. ([www.mainelobsterfestival.com](http://www.mainelobsterfestival.com))

★ **The Machias Blueberry Festival (Aug. 16–18):** Machias is a town of 2,500 that swells to 25,000 for the festival, which celebrates the blueberry in a state that produces nearly 85 percent of the world's supply. Partake aplenty in all things blueberry, including a blueberry musical, blueberry pie-eating contest and blueberry farm tours. ([www.machiasblueberry.com](http://www.machiasblueberry.com))

For a complete list of festivals, go to [www.visitmaine.com](http://www.visitmaine.com)



Moxie Festival Committee

world-class theater, dining and culture. Stay at the recently renovated Portland Regency Hotel and hit the city sites.

Last fall, the Portland Museum of Art opened its Winslow Homer Studio in Prouts Neck, a renovated and preserved studio lauded as one of the most significant locations in the history of American art, where Homer lived and painted many of his masterpieces. Also check out SPACE Gallery in the heart of Portland's arts district, with 10 exhibitions and more than 200 events each year, including live music, documentary and indie films, visual arts, lectures and more.

Music lovers enthuse over the Portland Symphony Orchestra, the largest performing arts group in Maine, which offers a variety of performances—from pops to Mozart—in the 1,900-seat Merrill Auditorium, as well as outdoor shows. Portland Stage puts on seven shows a season, which play to more than 50,000 people annually, and has a theater workshop for kids in summer as well.

The city's food scene has grown tremendously in the last few years, and is today recognized by national and international culinary experts. Dry Dock Restaurant & Tavern is hot with tourists and locals, made famous by author/fisherwoman Linda Greenlaw (of *The Perfect Storm* fame); the harbor-side eatery offers great food to match the view.

A good way to check out the food scene is with Maine Foodie Tours in Portland, which includes tours by foot or trolley, and a "bike-and-brew" tour of five lighthouses in the area, and then three breweries by shuttle.

And be sure to check out the state's rich nautical history at the Maine Maritime Museum, which contains exhibits and artifacts, a historic shipyard with five original 19th-century buildings, and New England's largest sculpture—a full-size representation of the largest wooden sailing vessel ever built, the *Wyoming*.

For those in the family who love to shop, don't miss a visit to the



Tickets go fast for the Portland Sea Dogs, Double-A affiliate of the Boston Red Sox.

original L.L. Bean Outlet, located just 20 minutes north of Portland in Freeport. The company's flagship store, located on Main Street for nearly a century, is open seven days a week, 24 hours a day. The gigantic duck boot sculpture that sits out front makes the store impossible to miss.

Baseball fans will want to take in a Portland Sea Dogs game while they're in town. The popular Double-A affiliate of the Boston Red Sox makes its home at Hadlock Field, which features the

"Maine Monster" out in left field—a replica of Fenway Park's Green Monster. (Don't wait until the last minute to get tickets—they go fast.)

In Maine, "the possibilities are as varied and unique as the state itself," says Ouellette of a state whose license plates bear the word "Vacationland."

"It's a place where you can truly follow your own inner compass." ◀



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# Built as a gateway to the 1889 World's Fair, the Eiffel Tower was a symbol of defiance

BY EUGENE FINERMAN

**I**n travel posters and movies, the Eiffel Tower seems to define romance. Yet when the tower was constructed in the 1880s, it was an act of defiance. The world's tallest structure, composed of an intricate lattice of wrought iron, certainly refuted both the laws of gravity and the conventions of beauty. But more than that, the Eiffel Tower would proclaim to the world that France was not to be dismissed. If other countries now had greater armies or more extensive empires, France remained the cultural center of Europe.

A decade earlier, France was in ruins. In 1870, a French diplomat and a Prussian dignitary had an argument. The Prussian Crown demanded an apology, the French government refused, and the consequence was the Franco-Prussian War. France thought it would teach Prussia a lesson, but it was Prussia that had done all the studying. The German army was ready for war, the French simply for a parade. Within two months, the French army had been trapped and captured. Paris was besieged, enduring four months of bombardment and starvation before it surrendered. By the time the French asked for an armistice, they had lost 138,000 men; the German losses were 28,000 dead. The relative ease of its victories did not make Prussia more magnanimous. France was to be humiliated. The French provinces of Alsace and Lorraine were annexed by the German state. France was further

obliged to pay an indemnity—in gold—that was intended to cripple her economy; and until that indemnity was paid, German troops would occupy Northern France. Here, at least, the Germans underestimated France; the French raised the money in less than three years.



**Engineer Gustave Eiffel employed 40 draftsmen to produce a full-scale design of his tower.**

By the 1880s the French economy was flourishing, and Paris seemed more beautiful than ever. But the losses and humiliation could not be forgotten. On Paris' Montmartre, the highest elevation in the city, the basilica of Sacré Coeur was being built to commemorate France's dead. French pride demanded some form of vengeance, an affirmation

of the country's grandeur and greatness. In the past, Paris had been the site of several world's fairs—Expositions Universelles—and they had proved enjoyable and profitable. Why not another World's Fair, and this one a celebration of France herself! The French government would make this a priority. This Exposition would be in 1889, the centenary of the French Revolution. There was a certain Gallic gall in that choice of a theme. Most of Europe abhorred the idea of the French Revolution; it conjured images of the guillotine and memories of Napoleon. Yet, a World's Fair in Paris had an undeniable allure; commerce and entertainment would take precedence over politics.

But such an Exposition would require years of preparation and bold planning. In 1884, a government commission announced a competition to create a monument that would represent the spirit of the World's Fair. The challenge certainly piqued the interest of Gustave Eiffel (1832–1923), France's greatest engineer. His bridges spanned rivers in Bolivia, Hungary and Indo-China. He was the engineering consultant to the governments of Russia and Japan. The Statue of Liberty, France's gift to a fellow republic, was constructed on a framework designed by Eiffel. Given his worldwide commitments, Eiffel employed a staff of engineers, architects and draftsmen. In fact, it was one of his subordinates, an engineer named Maurice Koechlin, who first sketched a design of a unique tower.



**Built on the Champs de Mars, the Eiffel Tower served as the gateway to the 1889 World's Fair. Construction, begun in early 1887, stretched over many months. These images capture the progress as it unfolded: March 15, 1888; May 10, 1888; October 14, 1888; and December 16, 1888. The final photo shows fairgoers walking under the completed tower's arched base in 1889.**

There would be four giant columns of wrought iron, a strong but malleable metal. The columns would taper until, some 600 feet (183 meters) above ground, they would form one tower that would rise another 300 feet (91 meters). Their latticework structure would limit wind resistance, so it would be possible for the tower to reach an unprecedented height of 984 feet (300 meters). That would be twice as high as the Washington Monument, then the world's tallest building. Eiffel recognized the brilliance of Koechlin's proposal, and he applied the resources of his company into turning a sketch into a blueprint. Under Eiffel's supervision, 40 draftsmen worked on a full-scale design of the tower. There were to be 18,000 iron girders, beams and joists, each individually designed with a mathematical precision. Any deviation or miscalculation would threaten the

structure. The blueprints took up 5,000 sheets of drawing paper.

More than 100 designs were presented for the competition, but it proved to be no contest. On May 12, 1886, the Exposition Committee approved Eiffel's proposal. However,

**MORE THAN 100 DESIGNS WERE PRESENTED FOR THE COMPETITION, BUT IT PROVED TO BE NO CONTEST. ON MAY 12, 1886, THE EXPOSITION COMMITTEE APPROVED EIFFEL'S PROPOSAL.**

there still were financial considerations. The committee had not anticipated the price of a masterpiece; Eiffel estimated a cost of 6 million francs (\$1 million then, \$25 million today). The government would pay a quarter of the expenses, but Eiffel had to raise the rest. However, his company would

receive all the proceeds from ticket sales during the Exposition and for the next 20 years. Eiffel agreed.

The tower would be built on the Champs de Mars and serve as the gateway to the Exposition. Construction began on January 22,

1887. The foundations were laid 51 feet underground; that required the excavation of 1 million cubic feet of soil. By June the columns began to rise. Three hundred workers assembled the iron pieces in accordance with the meticulous plans. But the incomplete structure did not look



like a masterpiece. In an open letter to the Exposition Committee, some of France's leading artists and writers—including Guy de Maupassant and Charles Gounod—denounced the Tower:

*We come, writers, painters, sculptors, architects, passionate lovers of the beauty of Paris—a beauty until now unspoiled—to protest with all our might, with all our outrage, in the name of slighted French taste, in the name of threatened French art and history, against the erection, in the heart of our capital, of the useless and monstrous Eiffel Tower...*

*Listen to our plea! Imagine now a ridiculous tall tower dominating Paris like a gigantic black factory smokestack, crushing with its barbaric mass Notre Dame, Sainte Chapelle, the Tour Saint-Jacques, the Louvre, the dome of Les Invalides, the Arc de Triomphe, all our humiliated monuments, all our dwarfed architecture, which will be*

*annihilated by Eiffel's hideous fantasy. For twenty years, over the city of Paris still vibrant with the genius of so many centuries, we shall see, spreading out like a blot of ink, the shadow of this disgusting column of bolted tin.*

Gounod eventually conceded that he was wrong. Maupassant never did. And the construction continued. The Eiffel Tower was completed in March 1889 and formally opened on March 31. Ironically, the American-made elevators had yet to be installed, so anyone who wanted to get to the Tower's top had to climb 1,710 stairs. The prime minister of France declined, but Gustave Eiffel and a few hardy journalists made the 40-minute ascent. Once there, in sight of all Paris, Eiffel hoisted the flag of France. French cannons answered with a 20-gun salute.

The Exposition opened on May 6, and the Eiffel Tower was the gateway to 61,722 exhibits and shows. Visitors could see replicas of the Bastille, Javanese villages and an Egyptian

marketplace—with belly dancers. From America, there was Buffalo Bill and his Wild West Show; the sharpshooting Annie Oakley was the crowd favorite. Reflecting the latest advances in technology, the Fair was lit by electricity. With that added illumination, the Eiffel Tower stood as distinct in the night as it did in the day. Although the Exposition ended in October, tourists continued to flock to see the world's tallest building. In its first year, the Tower sold 1.9 million admissions. Gustave Eiffel recouped his entire investment in five months.

According to the original agreement, the Eiffel Tower was to have been torn down after 20 years. That clause was obviously revised. It remains, no longer the world's tallest structure but one of the world's most beloved landmarks. Today, more than 250 million visitors have ascended the Eiffel Tower.

In the 1880s, a wounded France sought a symbol of her greatness; the Eiffel Tower continues to prove it. ◀

# Solutions That Sell



## INITIAL CONTACT MADE

December 28, 2012

## END USER CUSTOMER

Refining company

## APPLICATION

Heavy crude oil

## WORKING PRESSURE

150 PSI

## TEMPERATURE

Ambient

## CHALLENGE

Customer would like to use a product that will increase the flow rate and lower the time needed to unload the railcar. Also the end user desires a product that is lighter in order to reduce risk of employee injury when connecting and disconnecting.

## RECOMMENDED PRODUCT

Dixon dry disconnect

## BUSINESS EARNED

\$85,000 on December 31, 2012

> Dixon was presented with the facts to the left and asked to recommend a solution.

The refinery was using a competitor's dry disconnect coupler and having issues with the valve opening when not in service and causing spillage. Spillage of heavy crude is a huge concern for the customer, but a greater concern was the potential of bodily harm to employees.

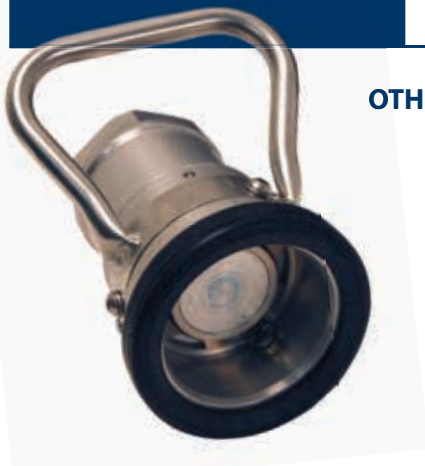
After evaluating the coupler currently in service, it was determined that the heavy crude was not allowing the valve to lock in the shut position. When the workers disconnected the hose and moved it out of service, on occasion the locking arm would open. Dixon was asked to come on site with the industrial distributor to assess the application and propose a solution.

In a meeting with 20 representatives from the refinery, including the safety, environmental, operations and purchasing managers, Dixon displayed its dry disconnect. The meeting was very beneficial because all departments from the refinery were represented

and everyone's questions and concerns were answered.

They were delighted to hear the flow rate would increase from 600 to 1000 GPM with the Dixon dry disconnect. Another key benefit of the dry disconnect is its locking mechanism. The Dixon dry disconnect design has a twist to lock the connection which provides a 100 percent assurance that there will not be any valves popping open when not connected.

At the conclusion of the meeting, Dixon joined the operation team and took the coupling to the railcar where it was installed and tested. The refinery workers took turns connecting and disconnecting the coupler. All were



## OTHER DRY DISCONNECTS AND BREAKAWAYS AVAILABLE FROM DIXON

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- Dry aviation
- Dry gas

### Cam & Groove design

- Dry disconnect
- Actuator style

### Bayonet design

- Dry disconnect

### Steam service

- Dry disconnect

### API coupler

- Automatic action upon contact with API adapter

### Safety breakaways

- Industrial version (breaking bolt design)
- Marine version (breaking bolt design)





highly impressed with its ease of use. They preferred the two handle design on the Dixon disconnect over the single handle on the API coupler. The overall consensus was the Dixon coupler was much easier to handle, as well as to connect and disconnect.

After putting the Dixon dry disconnect in service and allowing the customer to test the unit, we offered a complete solution consisting of:

1. Supplying a dry disconnect that would increase the flow rate and, in turn, increase productivity.
2. A dry disconnect that would allow only the heavy crude to flow when coupled, preventing any spillage and potential danger to employees.
3. A more ergonomic unit that reduces the risk of potential bodily harm to the operator.

The end result is that the distributor placed a single order for \$85,000 to Dixon to outfit the railcars currently in service. The customer will be placing an identical order because the facility is being expanded and the number of railcars doubled. ◀

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- optional selectivity for preventing contamination due to cross-coupling.
- a low number of moving parts, uncomplicated design and high quality materials ensures long product life

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# Just Say No!

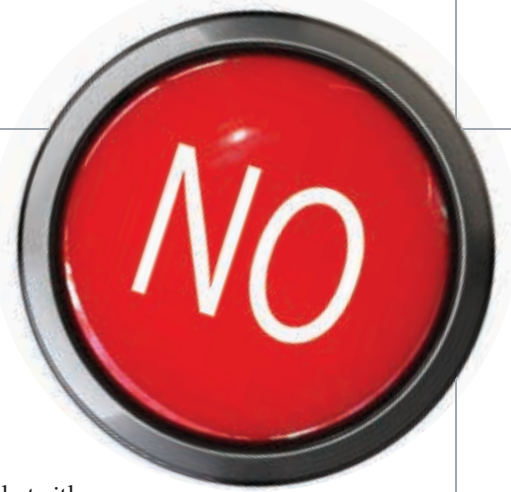
> For most of us, saying no can be extremely difficult—particularly saying no to our bosses when they set that “new” project on top of the stack of existing ones.

It is natural to have a desire to please and feel wanted by those close to us or in a position of authority. But, there are times we all must say no, in both our personal and professional lives. In business, we’ve all felt our knees weaken when a customer makes an unusual request where the appropriate response would be no. Under those conditions, saying yes can have pernicious consequences...

Finished with their first house of the day, two technicians were reeling in the pressure washer hoses on their truck, when they noticed a small bulge in the middle of one of them. Concerned, they called their scheduling boss to find out what he wanted them to do. The maintenance supervisor got on the phone and told them to take the hose off the reel and go to the shop where they purchased it to get it fixed. Angrily, he added that he didn’t know what they had done to his new hose, but he wasn’t going to get his “butt chewed” for spending money needlessly. He also informed them, in no uncertain terms,

that either the hose would get fixed, or they would need to look for new jobs. They quickly removed the assembly and rushed to the hose shop.

When the two technicians arrived, they plopped the hose on the counter and said they needed it repaired. The counter person chuckled and replied, “That’s not happening!” Alarmed, the technicians explained that they had been given strict orders to get



**DAN DIXON**

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this fixed immediately. His response was that he had just gotten back from a workshop where one of the topics was “what to do” and “what not to do,” and that this definitely falls under the “not to do” category. These hoses have special fittings, they’re bought pre-made from the manufacturer, and it takes up to a week to get them in.

While taking the scenic route back to the shop and discussing their future employment options, the two “defeated” men noticed a sign on a building that read, “Hose assemblies made or repaired while you wait.” Certain that this must be divine intervention, they pulled into the parking lot, grabbed the hose and ran inside. When they explained their predicament to the salesman, he told them what they had

already heard before. Seeing how desperate they were, however, he said that he would give it a shot.

When the supposedly “successful” repair was completed, the relieved technicians called their scheduling boss,

and then moved on to the next home. When they arrived, one technician attached cleaning wands to the hoses on both reels and uncoiled the “repaired” hose, while the other started the pump motor. He hurriedly grabbed the wand on the other reel, while running toward his workmate who had already started spraying the house. Just then, the

“repair” on the other hose let loose! With blinding speed, the hose whipped his legs out from under him, breaking one and severely lacerating the other.

Saying yes to a child’s teary-eyed plea or a customer’s insistent request

**In business, saying no to potentially dangerous situations is the act of a good corporate citizen.**

can produce less than desirable results. In business, saying no to potentially dangerous situations is the act of a good corporate citizen who cares more about his customer’s future and well-being than about the immediate reward of the sale. ◀

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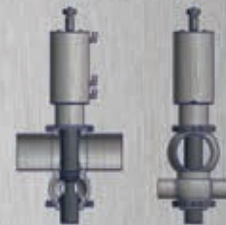
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# Keeping Your Skin Healthy

By taking proper precautions, you can enjoy summer fun in the sun

> Ronald Siegle is an outdoorsy kind of guy. He golfs. He scuba dives. And when he's not at the office, the "gentleman farmer" spends his time on his 11 acres of land, gardening and taking care of his animals.

You might think that because Siegle is a dermatologist and a spokesman for the Skin Cancer Foundation that he would caution his patients and others to hide out indoors in order to avoid the sun's harmful rays and reduce their risk of skin cancer. In fact, his advice couldn't be more different. "I want people to go outside and live life, not stay in and hibernate," he says. "People should be able to do what they want to do outdoors, what makes them happy. But there is a way to do it and be safe without limiting your enjoyment."

Protecting your skin from skin cancer, which is the most common form

of cancer and accounts for nearly half of all cancers in the United States, isn't difficult. It just takes some knowledge, a little bit of planning and some simple gear.

Here are some tips:

**Suit up.** Cover your skin with protective clothing to help keep it safe

from the sun. Make sure that fabrics are tightly woven and can't be seen through when held up to the light.

**Get the right sunscreen and use it.**

Make sure to slather sunscreen with an SPF of 15 or higher on any skin that's exposed to the sun. Reapply every two

hours and after swimming, toweling off or sweating. For extended outdoor activity, use a water-resistant, broad-spectrum sunscreen with an SPF of 30 or higher. Make sure to use 1 ounce of sunscreen (enough to fill a shot glass) and apply it 30 minutes before going outside to all exposed

"A tan is an indication that damage has been done to the skin. There is no such thing as a healthy tan." —Dermatologist Ronald Siegle

areas of your body. Don't forget to use sunscreen on hazy or overcast days, and remember to protect your ears and neck, too.

**Look cool.** Wearing sunglasses with 99 to 100 percent UV absorption rate provides optimal protection to the eyes.

**Take a lesson from Australia.**

In Australia, which has the world's highest incidence of skin cancer, public health officials recently launched a skin cancer prevention program that includes covering playgrounds and pools with tents and instituting a "No hat, No play!" rule at schools. Follow their lead by seeking shade between 10 a.m. and 4 p.m. when the sun is at its strongest and always wearing a broad-brimmed hat outdoors.

**Know that no tan is a healthy tan.**

Many people grew up thinking that a tan is a sign of good health. It's not. "A tan is an indication that damage has been done to the skin," says Siegle. "There is no such thing as a healthy tan."

**Get your vitamin D indoors.**

Yes, the sun provides vitamin D, which



has been shown to be important for strong bones and a healthy immune system. Because the sun also exposes one to harmful ultraviolet radiation, experts suggest that you get your recommended 600 international units (or 800 international units if you are 70 or older) of vitamin D a day from food sources like oily fish, fortified dairy products and cereals, and supplements.

**Seek help.** If you notice any change on your skin, including the spread of pigmentation, change in the size and/or color of a mole, or increased itchiness or tenderness in a certain area, go see your doctor.

**Just say no to tanning beds.** People under the age of 35 who use indoor tanning machines increase

their risk of skin cancer by 75 percent, according to the International Agency for Research on Cancer. The agency recently listed ultraviolet radiation-emitting tanning beds as “carcinogenic to humans”—their highest category of cancer risk. If you use indoor tanning, please stop. And don’t let the young people in your family start tanning, indoors or outside.

**Maintain your youth.** There’s a hidden bonus to taking steps to protect your skin from skin cancer: You’ll end up looking younger. “About 90 percent of the things we attribute to aging are actually due to excess sun exposure,” Siegle says. “Examine your own body



and you can see the difference between where the sun has shone and where it hasn’t,” he says. “Prudent sun protection done right definitely yields great benefits when we get older.”

**Know your stuff.** Got questions about protecting your skin and preventing skin cancer? The Skin Cancer Foundation at [www.skincancer.org](http://www.skincancer.org) has lots of information, tips and true stories that will help provide answers.

For more information, visit [www.skincancer.org](http://www.skincancer.org) ➤

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In 1938, a DuPont researcher named Roy Plunkett was trying to develop a nontoxic refrigerant. He and an assistant at DuPont's Jackson Laboratory were experimenting with gases related to Freon® refrigerants, using chilled, pressurized cylinders. To their surprise, they found that in one cylinder the gaseous material had become solid.

The gas had polymerized, or bonded, into a waxy white powder, a resin later named PTFE. Rather than discard the apparent mistake, the naturally curious Plunkett ran some tests on the new substance to determine its properties. At the time, the 27-year-old could not have imagined that this material would go on to become one of the best known and most widely used polymers of all time.

Plunkett found the resin to be extremely slippery, chemically stable and resistant to corrosion, with a very high melting point. It is also one of the largest molecules known to science. It showed so much potential for commercial and industrial application that it was assigned to the Plastics division at DuPont for further study.

At first it appeared the material would have limited application because it was so costly to produce. Teflon initially was sold to industry and the military, where its low friction level

made it ideal as a coating for machine parts that slide against one another. During World War II, Teflon was extremely useful in the Manhattan Project. In 1945, the product was trademarked as Teflon®, and its manufacturing process was patented.

By the 1960s, Teflon in various forms was in wider use, as a stain repellent in fabrics, as an ingredient in wire insulation and, most famously, as a nonstick coating for cookware.

The first nonstick pan using Teflon, made by a French engineer in 1954, was called Tefal. Seven years later, the first

U.S.-based Teflon-coated pan was marketed as "The Happy Pan."

Today, Teflon and its derivatives are found in light bulbs, hair products, wiring insulation, carpeting and furnishings, windshield wipers, eyeglass lenses and countless other products. It even coats the fiberglass roof of the 20-acre Hubert H. Humphrey Metrodome in Minneapolis.

In contemporary conversation, Teflon is often used as a nickname for people—especially elected officials—to whom criticism does not stick. The term was first used in reference to U.S. President Ronald Reagan, who became known as "the Teflon president." President Bill Clinton has also had this term attached to him, as did former British Prime Minister Tony Blair, whom the British press often referred to as "Teflon Tony."

Teflon inventor Roy Plunkett went on to a distinctive career with DuPont, before retiring as director of operations of Freon products in 1975. Over the years he received many honors. He was inducted into the Plastics Hall of Fame in 1973 and the National Inventors' Hall of Fame in 1985. Plunkett died in 1994, at the age of 83. Today, DuPont continues to honor him with an award in his name that recognizes those who contribute important new products using Teflon. ◀





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