

6 Battlefield Shepherd
Father Emil Kapaun

16 Frank Lloyd Wright
A visionary architect

22 Spain's 'Wild Coast'
One of Spain's 'must see'
destinations

28 Rocket's Red Glare
The War of 1812

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THE AGE OF OIL

AS THE THIRST FOR OIL CONTINUES TO GROW,
PRODUCTION EFFORTS
AROUND THE WORLD HAVE JUMPED
INTO OVERDRIVE

SPRING 2014
ASIA/PACIFIC — FALL 2014



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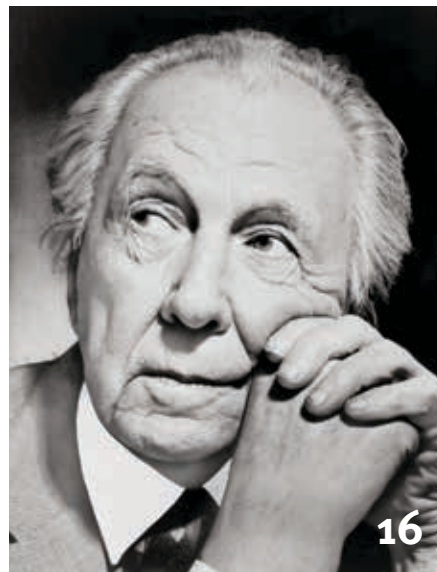
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FEATURES

- 8 THE AGE OF OIL**
Even after 150 years, the oil industry is going strong around the world, thanks to ever increasing demand and advances in technology.
By Robert Rapier
- 16 AN ARCHITECT WHO PUSHED THE LIMITS**
Frank Lloyd Wright was never short of self-confidence, ideas or bravado. The buildings he designed attest to his genius.
By David Holzel
- 22 SPAIN'S 'WILD COAST'**
Rich with cultural attractions, innovative dining and picturesque small towns, Costa Brava is one of Spain's "must see" destinations.
By Jodi Ettenberg
- 28 BY THE ROCKET'S RED GLARE**
The War of 1812 defined the character of a fledgling nation.
By Eugene Finerman

DEPARTMENTS

- 5 BUILDING CHARACTER**
Children of all ages gain wisdom from the 'Six Pillars'
- 6 PROFILE**
Father Emil Kapaun
- 12 BY THE NUMBERS**
Oil Around the World
- 21 THE DIXON DRILLER**
- 32 DIXON SPOTLIGHT**
Innovation on Wheels
- 34 KEEPING IT SAFE**
Opening Minds
- 36 HEALTH & FITNESS**
Worth Smiling About
- 38 INVENTIONS**
The Power of Print



PUTTING A PREMIUM ON SAFETY

In each issue of *BOSS* since the magazine's start, we've included an article that focuses on "Keeping it Safe." That's because safety—in our manufacturing plants, warehouses and offices—has always been an important part of our culture at Dixon.

Each year, approximately 4,400 American workers die while on the job, according to the U.S. Bureau of Labor Statistics, and many more are injured, some seriously.

At Dixon, we want to be part of the solution to this problem, so we actively promote the safe use of the products that we manufacture and sell.

Most accidents are caused by the misapplication or misuse of a product. To prevent such accidents, we encourage all of our distributors and end users to read all the safety warnings in Dixon's literature. In addition, we invite you to visit the *BOSS* magazine archives (dixonvalve.com) to view past "Keeping It Safe" articles, on topics ranging from "Ensuring Air Compressor Safety" (Fall 2005) to "Safety with Steam" (Fall 2010).

It is our responsibility to design and manufacture reasonably safe products, and it is the responsibility of our distributors and end users to ensure that these products are used correctly. By working together, we can ensure a safe workplace.

Thanks for reading,

Dick Goodall

BOSS

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Lasting Lessons

Children of all ages gain wisdom from the ‘Six Pillars’

> In the Winter 2013 issue of *BOSS*, we wrote about employees at Dixon—and other businesses in Chestertown, Maryland—who volunteer each week to visit local public school classrooms and share insights about the “Six Pillars” of good character through the national Character Counts curriculum.

In the essay excerpts below, participating schoolchildren share some of the lessons they’ve learned from these visits.

Cheaters cheat themselves. If you cheat, you are keeping yourself from learning and it’s not fair to others who have worked hard. Character Counts is helping kids be better kids, so they can be better grown-ups. —2nd Grader

I like Character Counts because you represent the type of character I am trying to be. You take time out of your schedule to teach us about the pillars of Character Counts, and you talk to us in a way that we really understand the lesson. In fact, sometimes when you are talking, it is like you are talking right to me. —3rd Grader

Two pillars that are important to me are citizenship and trustworthiness. Whenever I go to Girl Scouts we try to show the church hall that we can be trusted. We have to be responsible and pick up after everything we do. Also my neighbors have cats; whenever they go away on a trip I watch them. Our neighbors try to give me treats or little souvenirs, but I say no thank you; they give it to me anyway. So they show character, too. —5th Grader

Citizenship is one of my favorite pillars because it’s challenging. In my opinion, to be a good citizen you must help out your community by picking up trash or helping anyone who needs help around you. Also, to be a good citizen you must follow the rules at home and at school. Citizenship is a hard pillar because you have to make time for it.

It requires you to give up your own personal time in order to do good for others and your country. You must work hard if you want to be a good citizen, which takes dedication and sacrifice. —6th Grader

Character Counts has taught me to respect myself, other people and things of nature. I have two dogs and 10 cats. I care about my dogs and cats by feeding them, washing them, petting them and letting them inside so they don’t get cold at night. I think Character Counts plays a big part in taking care of animals. You have to care about them, treat them with kindness, respect and love. If anyone is willing to take care of an animal, they have to be responsible enough. —6th Grader

I’m in middle school. Those four words seem to tell people “I have no respect for anyone in my presence.” For some kids, like me, this is not true. At home and school, although I may tease them, I have total respect for my family and friends. I am never rude to the point where I can see that it is actually bothering them. There is a line that is not meant to be crossed.

How can you show a person citizenship? It is as easy as being friendly to a new child in school. Just imagine if you were a new student. It

is a very scary situation. It’s like learning who you are all over again—wondering which group is the right one for you. When someone makes a gesture for you, it reassures you that you will be fine in your new school. By being a good citizen, not only will you have a good day, but you showed someone else that they are welcome to be your friend. —8th Grader

I respect anyone I meet because of where I come from. In my country, if you do not respect someone older than you or your classmates, they are allowed to beat you. That is why in Nigeria you can never see children talking back to a teacher or their parent. I was surprised my first week of school seeing how children talk back to their teachers. Where I come from we call that disrespect. I do not hang out with disrespectful students. All of my friends are respectful. They don’t talk back to teachers or their parents. It would be nice if all students in my high school could act that way.

—10th Grader



Shepherd of the Battlefield

This Catholic priest's selflessness knew no bounds



> He was known as “the shepherd in combat boots.”

And to the soldiers who served alongside Father Emil Kapaun in the Korean War, the Roman Catholic priest truly was a godsend.

The U.S. Army chaplain for the 8th Cavalry Regiment, 1st Cavalry Division, had tobacco pipes shot from his mouth as he dragged wounded soldiers from the battlefield. In the North Korean prison camp where he was held, he washed the clothes of the dead for their burials, and gave away his own food to share with POWs who were dying from cold and starvation. And even as his captors were sending him off to his death, he asked God to forgive them.

Through his example, he showed others how to have courage and faith.

“Father Kapaun’s life, I think, is a testimony to the human spirit, the power of faith, and reminds us of the good we can do each and every day regardless of the most difficult of circumstances,” said President Barack Obama, at a ceremony on April 11, 2013, in which he posthumously awarded Kapaun the Medal of Honor.

Kapaun was born on April 20, 1916, to Czech immigrants and grew up on a farm near Pilsen, Kansas. He was a quiet child who, on his way to church to serve as an altar boy, was known to stop to pick flowers for the altar.

He was ordained in 1940 and served parishes near his hometown before joining the U.S. Army Chaplain Corps in 1944. He served in Burma and India for the final two years of World War II and was promoted to captain. Kapaun returned to the United States to earn a master’s in education at Catholic University, and in 1950 he volunteered to serve in the Korean War.

His parents opposed his return to service. “But he said the boys needed him more than we did—and he went,” his mother, Elizabeth, told reporters when they asked about her son.

Kapaun’s activities on and off the battlefield were legendary.

In November 1950, when 20,000 Chinese soldiers engaged in a surprise attack on his regiment, Kapaun didn’t retreat—he rushed forward to pray over the dying and drag the wounded to safety. Herbert Miller was lying in a ditch, his ankle shattered by a grenade, when a Chinese soldier raised a rifle to

Miller’s forehead to kill him. As Miller tells it, Kapaun calmly walked over to the Chinese soldier, pushed him aside, and helped Miller stand up so that he could carry him on his back.

That same month Kapaun was captured near Unsan, North Korea, and held with other soldiers in a prison camp near Pyoktong. The conditions were unbearable, but Kapaun gave the men around him hope. He cracked jokes to boost morale, watched over the sick, fed the hungry and clothed the needy. He risked his own safety by stealing dysentery medicine from the enemy and sneaking into soldiers’ huts at night to pray with them.

“Father Kapaun was at first an enigma, as all simple men are,” noted Clarence Anderson, a physician imprisoned with Kapaun in North Korea, in *The Miracle of Father Kapaun*:



Priest, Soldier, and Korean War Hero (Ignatius Press, 2013), by Roy Wenzl and Travis Heying. “You wonder why he would do the things he did ... he was a man without personal motives, without any regard for his personal comfort.”

Kapaun cracked jokes to boost morale, watched over the sick, fed the hungry and clothed the needy. He risked his own safety by stealing dysentery medicine from the enemy and sneaking into soldiers’ huts at night to pray with them.

In spring 1951, Kapaun developed a blood clot in his leg, dysentery and pneumonia. His friends tried to care for him and hide his illnesses from the guards, who had come to see Kapaun

as a threat to their authority. But they were discovered and the chaplain was ordered into isolation and deprived of food, water and medical treatment.

“I’m going to where I’ve always wanted to go,” he told his friends. “And

when I get there I’ll say a prayer for all of you.” Then he blessed the enemy guards and forgave them. Kapaun died two days later on May 31, 1951. He was 35.

Even after his comrades returned home, they never forgot Father Kapaun.

For 60 years after his death, they worked to get the priest the recognition he deserved from his country and his church. Kapaun’s legend grew as their stories about him were published in newspapers around the world and he became associated with two possible healings experienced by people who prayed to Kapaun. The Vatican is currently reviewing his candidacy for sainthood.

“If the meek shall inherit the earth, it will be because people like Father Kapaun willed it to them,” POW Jerry Fink told the *Wichita Eagle*. “That man will always live in my heart.”

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THE AGE OF OIL

AS THE THIRST FOR OIL CONTINUES TO GROW, PRODUCTION EFFORTS
AROUND THE WORLD HAVE JUMPED INTO OVERDRIVE

BY ROBERT RAPIER

MOST PEOPLE would have a difficult time imagining life without oil.

Oil petroleum is used to produce the pesticides and herbicides that farmers use to grow crops, which are then transported to market in vehicles that contain numerous plastic and synthetic rubber parts, made from oil. These vehicles are powered by oil, and probably driven on roads made of oil-derived asphalt. Oil is also used to produce detergents, medicines, paints and nylon clothing.

Air transport is practically 100 percent dependent upon oil, while the entire U.S. transportation sector depends on oil for around 95 percent of its energy. We grew up in an age of abundant petroleum, and this is reflected in the cars we drive, the layout of our cities and our commutes to work.

Around the world, the thirst for oil continues to grow in many countries, particularly those in developing regions. Between 2011 and 2012, oil consumption in Africa, China, India and the former Soviet Union jumped by some 5 percent. The Middle East also saw a jump (4.5 percent), as did the Asia Pacific region, where consumption grew by just more than 3.7 percent—an increase of approximately 1 million barrels per day (bpd).

To feed this insatiable thirst, oil production around the world has

jumped into overdrive. In 2012, global oil production reached an all-time high of 86.2 million barrels per day, according to the 2013 *BP Statistical Review of World Energy*. The United States posted the largest production increases in the world, accounting for 53 percent of the total global increase.

For the past 150 years, we have lived in the Age of Oil. We have to look back to the 1850s to see a society that did not yet benefit from this slick substance.

But how did we get to this point?

Humans have been using petroleum as an energy source and for medicinal purposes for thousands of years. Petroleum had long been collected in some locations from oil pits similar to the La Brea Tar Pits in California, but the Chinese are reported to have drilled for oil as early as 347 AD. Until the 19th century, however, oil usage around the world was minor and sporadic.

That changed in the mid-19th century when several commercial oil wells were drilled in Europe and North America. While there are competing claims about who drilled the world's first commercial oil well, a well drilled in Titusville, Pennsylvania, in 1859 is widely credited with kicking off the American petroleum industry.

The story starts with George Bissell, whom many consider to be the father of the American oil industry. Bissell

had an idea that so-called rock oil (petroleum) that seeped naturally from the ground in many places could be produced commercially and refined into a fuel for oil lamps. After commissioning an analysis of a local sample of petroleum that showed that the kerosene fraction indeed made an excellent fuel for oil lamps, Bissell formed the Pennsylvania Rock Oil Company, which later became the Seneca Oil Company.

Seneca hired Edwin Drake to search for oil around Titusville. Drake noticed that salt well drillers often had unwanted oil associated with the salt water they were attempting to extract, and he decided to use the same drilling technique in an effort to produce oil. In August 1859, he succeeded. An oil rush began in Pennsylvania.

Pennsylvania quickly became the most important oil-producing region in the world. As oil production rose, one casualty was the whaling industry. Prior to the commercialization of petroleum, whale oil was commonly used as fuel for oil lamps and as a lubricant for moving parts. By 1859, many whale species had been driven nearly to extinction.

But kerosene proved to be a superior option for consumers, and demand for whale oil soon plummeted. Thus the rise of the oil industry was a major factor leading to the decline of the



Drilling bit and positive displacement motor in front of a drilling rig.



This 1861 photograph shows Edwin Drake (foreground, top hat) at the original 1859 Drake oil well in Titusville, Pennsylvania, the first commercial oil well drilled in the United States.

whaling industry, and to the recovery of many whale species.

The oil industry rapidly grew in the Appalachian Basin, with new discoveries in western New York, Ohio, Kentucky and West Virginia. The oil that was produced was transported to refineries that distilled the kerosene, while disposing of undesirable fractions like gasoline—often in nearby rivers.

A young man named John D. Rockefeller sensed a great opportunity, and began acquiring refineries and making deals with the railroads. In 1870, Rockefeller formed the Standard Oil Company, which quickly established itself as one of the world's first multinationals, and the first major U.S. business trust. The company bought out competitors, or undercut them and put them out of business. By the turn of the century, Standard Oil would control about 90 percent of the U.S. oil industry.

Standard Oil's business practices attracted a great deal of criticism, especially after a journalist named Ida Tarbell published a series of critical articles that broadly turned public opinion against the company. The federal government investigated and concluded that Standard Oil built its dominance by engaging in unfair business practices.

In 1909, the U.S. Department of Justice sued Standard under the Sherman Antitrust Act, and in 1911 the Supreme Court ruled that Standard Oil had to be split. The resulting companies went on to become Exxon and Mobil (now back together as ExxonMobil), Chevron, Marathon and Amoco (which ultimately merged with BP).

While the initial growth spurt of the oil industry was driven by kerosene demand, the late 19th century brought the invention of the automobile. Prior to that time, gasoline was a highly

volatile and generally undesirable by-product of kerosene distillation. But gasoline turned out to be a very good fuel for the internal combustion engine, and the rapid growth in the early 20th century of affordable automobiles created a greater demand for oil production. In the United States, demand for Henry Ford's Model T grew rapidly, and expanding oil production provided the fuel for these cars, enabling a level of personal mobility that had never been experienced in human history.

Diesel, a heavier petroleum fraction than gasoline, soon became the preferred fuel for an engine patented by Rudolf Diesel in 1892. The diesel engine would become a favored mode of transport for heavy trucking and commercial ships. And the kerosene that initially kick-started the oil industry would ultimately prove to be an ideal fuel for commercial jets. This worked out well for the oil industry since the invention of the electric light greatly diminished the demand for kerosene lighting.

Thus, the rise of the oil industry both enabled, and was enabled by, the rise of the most mobile civilization in the history of the world.

BEYOND

Americans consume petroleum products at a rate of 3.5 gallons of oil per day. But, as shown here, petroleum is not just used for fuel. Among the many uses for refined crude oil:





Fueling Success of the Allies

By 1900, U.S. production had risen to 175,000 barrels per day, with production still centered in Pennsylvania and neighboring states. Ultimately, however, oil fields—and oil-producing regions in general—will reach a production peak and then begin to decline. As Appalachian Basin oil production began to decline, the oil industry moved first to Indiana and Illinois. But then major oil discoveries in Oklahoma, Texas and California shifted the heart of the oil industry to the West, a situation that continues today.

The most famous of the new round of oil discoveries took place in Texas in 1901. Outside Beaumont, Texas, near the Gulf Coast, mining engineer Anthony Lucas had been drilling unsuccessfully on a hill known as Spindletop. In January 1901, he drilled into an oil formation that blew the pipe



From left: A 1949 photo of a Standard Oil Company station in San Francisco, from the book *The Gas Station in America*, from the Johns Hopkins University Press. Three Sands Oil Field, Tonkawa, Oklahoma, in 1921.

right out of the well, which then gushed uncontrollably for nine days. This iconic image of the gusher at Spindletop would define the beginning of the oil age in Texas.

Spindletop was to that point the largest gusher the world had ever seen, but other large finds followed in Texas. In 1930, the East Texas Oil Field was discovered, and would remain the largest oil field in the United States until the discovery of Prudhoe Bay in Alaska in 1968. By the mid-1930s, Texas oil production had reached 1 million bpd, around half of total global oil production.

American oil would contribute to the success of the Allies in World War I,

and by World War II, oil had become an indispensable strategic commodity for both sides. Oil played a role in Japan's decision to attack Pearl Harbor (an American oil embargo had caused a crisis in Japan, which relied on the U.S. for 80 percent of its oil), as well as Hitler's decision to invade Russia. The victory for the Allies was fueled by American petroleum.

The U.S. supplied 6 billion of the 7 billion gallons of oil consumed by the Allies during World War II. This was enabled by construction of a pair of pipelines that allowed shipment of crude oil and finished products from Texas to the East Coast. Further, the conversion of U.S. oil into synthetic rubber spared the Allies a rubber shortage following Japan's occupation of the Netherlands East Indies (source of 90 percent of the world's natural rubber supplies).

During the war, the U.S. government rationed gasoline and controlled prices. For the first time, the government and American consumers were confronted with the impacts of insufficient oil supplies, a lesson they would experience again in the 1970s. Nevertheless, U.S. oil production continued to grow, and continued cheap petroleum fueled the growth of suburbs following the war. Cheap oil also ensured that fuel

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- Toilet Seats
- Dice
- Lipstick
- Toothpaste



Source: <http://www.ranken-energy.com/Products%20from%20Petroleum.htm>

BY THE NUMBERS OIL AROUND THE WORLD



Shaybah, Saudi Arabia



Airdrie, Alberta, Canada

LEADING OIL PRODUCERS

(barrels per day in 2012)

- Saudi Arabia: 11.5 million
- Russian Federation: 10.6 million
- United States: 8.9 million
- China: 4.2 million
- Canada: 3.7 million



LEADING OIL EXPORTERS

(barrels per day in 2012)

- Saudi Arabia: at 8.9 million
- Russia: 7.2 million
- United Arab Emirates: 2.6 million
- Kuwait: 2.4 million
- Nigeria: 2.3 million



Shenyang, China

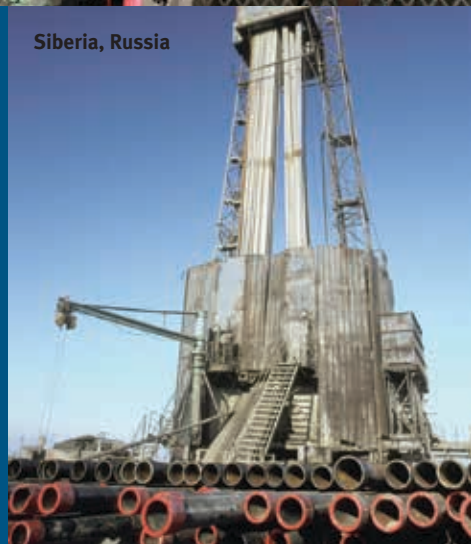


Bakersfield, California, U.S.

LEADING OIL IMPORTERS

(barrels per day in 2012)

- United States: 7.4 million
- China: 5.9 million
- Japan: 4.6 million
- India: 2.6 million
- South Korea: 2.2 million



Siberia, Russia



Photo by the Texas Energy Museum/News makers

efficiency was a low priority for those shopping for a new automobile.

Oil production continued to rise through the 1950s and 1960s, and scientists continued to figure out ways of turning oil into useful products. The range of oil-based products grew, and included synthetic herbicides and pesticides that helped enable a revolution in crop production that greatly expanded agricultural output around the globe. The global population grew rapidly due to an abundance of food, and this in turn helped further increase the demand for oil.

The 1970s would begin to usher in a major geopolitical shift around global oil supplies. While U.S. oil production would continue to grow until 1970, demand for oil in the U.S. had outstripped production for decades. The U.S. had become a net importer of petroleum in 1949. When President Richard Nixon took office in 1969, U.S. oil production was nearing a peak after more than 100 years of expanding production. In 1970, U.S. oil production reached 9.6 million bpd—then began a long, steady decline.

Consumption Up, Production Down

When Nixon began his second term in 1973, oil production had declined to 9.2 million bpd while oil consumption continued to grow. As a result, oil imports would more than double during Nixon's presidency, and American citizens soon learned about the increasing geopolitical risks from growing oil imports.



From left: The Lucas Gusher blows out oil on January 10, 1901, on Spindletop Hill in Beaumont, Texas. A portion of the Trans-Alaska Pipeline in the Alaska mountain range.

The defining energy event for the Nixon administration took place in October 1973. In that month, various members of the Organization of the Petroleum Exporting Countries (OPEC) dramatically increased the posted price of oil in response to U.S. support for Israel during the Yom Kippur War, and announced an oil embargo against the United States.

from Nixon's first year in office. Oil consumption was at an all-time high, and domestic production was down 14 percent from the 1970 peak. Only three months into office, Carter delivered a major speech in which he described the energy situation as "the greatest challenge our country will face during our lifetimes" outside of preventing war.

42 : THE NUMBER OF GALLONS IN 1 BARREL OF OIL

The embargo was ultimately expanded to a number of other countries, and the result was a rapid quadrupling of the price of oil. In response, Nixon instituted additional price controls and began rationing oil to states based on 1972 levels of consumption. On November 7, 1973, Nixon announced Project Independence, the stated goal of which was energy independence for this country by 1980. To reach that goal, he signed legislation that authorized the Trans-Alaska Pipeline, opening access to Prudhoe Bay in Alaska, the largest oil field ever discovered in the United States.

When President Jimmy Carter was sworn into office in 1977, oil imports had increased by 370 percent

During Carter's administration domestic production reversed a six-year decline, after completion of the Alaska Pipeline allowed the Prudhoe Bay oil field to begin production in 1977. Excluding Alaska, however, production in the lower 48 states declined by more than 10 percent during Carter's term.

Increased production from the Prudhoe Bay oil field continued during the early 1980s and President Ronald Reagan's first term. But U.S. production began to decline during the mid-1980s. Years of high oil prices had brought online substantial oil capacity outside of OPEC. An oil glut developed, and oil prices fell more than 50 percent between 1985 and 1986. Low oil prices provided a disincentive for

WHAT IS FRACKING?

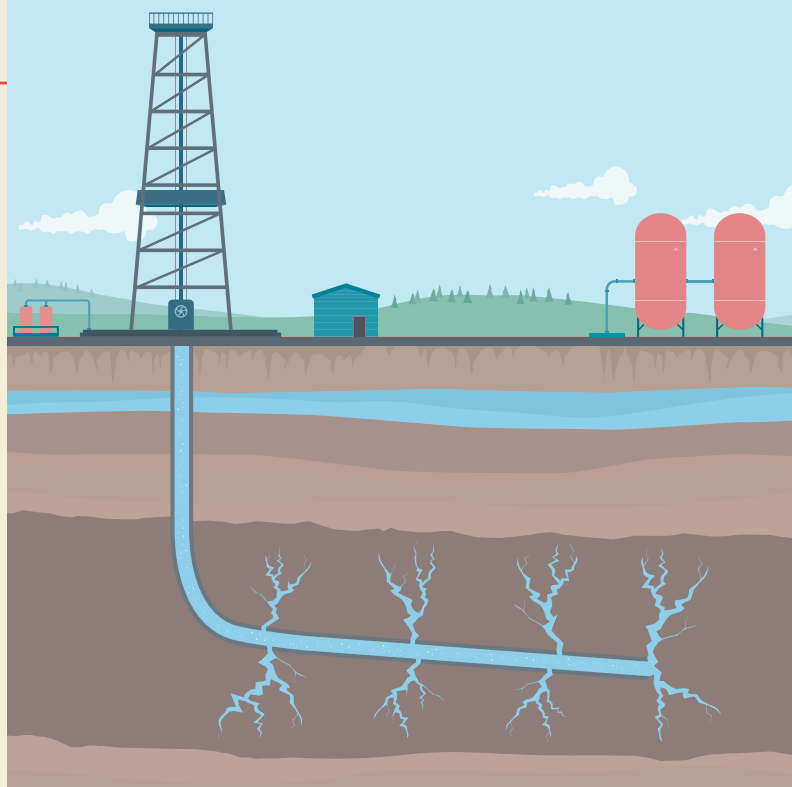
TO PRODUCE OIL, a hole is drilled into the zone where the petroleum deposit is located. The hole is lined with sections of pipe—the casing—that are then cemented into place. The casing prevents sections of the drill hole from collapsing, and also presents a barrier against contamination of aquifers that may be above the petroleum deposit.

After the casing has been cemented into place, drilling continues both vertically and then horizontally, sometimes for several miles. Inserted pipe lines the casing and the entire length of the well bore, and then must be perforated to allow oil to flow. This is done by lowering explosive charges into the oil production zones and setting them off, creating holes (of predetermined size and frequency) through the pipe. The explosions also create cracks in the reservoir rock around the pipe, which enables oil to flow into the well bore.

The cracks may be further opened by hydraulic fracturing, or “fracking,” the formation. This involves pumping water, sand, gel and chemicals down the well under high pressure to open the fissures by breaking open channels in the reservoir rock. The sand (proppant) is there to hold those channels open to allow the oil (or natural gas) to flow to the well bore.

Fracking has become a controversial issue in recent years, primarily owing to misinformation around the technique. For example, a memorable scene from the Oscar-nominated film *Gasland* (2010) shows a man lighting his tap water on fire. The implication is that this was caused by fracking, but in fact the gas in the water was determined to be a natural phenomenon. Nevertheless, an image was created of a dangerous process that could contaminate groundwater.

But fracking is not new. Fracking was first commercially introduced in the oil and gas industry in 1949, and application of the technique grew rapidly in the oil and gas fields of Oklahoma and Texas. It has been carried out in some locations for more than 60



A diagram of hydraulic fracturing, a method of extracting natural gas or oil from below the earth's surface.

years. In recent years, fracking has been applied to wells that have been drilled horizontally.

The technology of horizontal drilling and hydraulic fracturing has created a new oil and gas boom in the United States, primarily in Texas, North Dakota and Pennsylvania, resulting in this country's once more becoming the fastest growing oil and gas producer in the world.

Fracking has been applied more than 1 million times in the United States and more than 2.5 million times worldwide; it is carried out on around 60 percent of all oil and gas wells drilled in the world. The process does carry some environmental risk. A well casing can be improperly cemented and leak into an aquifer, and cases of this happening have been documented. It is also possible to leak fracking fluids before or after the fracking job has been carried out.

But the U.S. Environmental Protection Agency (EPA) administrator has testified that the agency is unaware of any incidents of water contamination caused by fracking. The thousands of layers of solid rock that generally separate aquifers from production zones where fracking takes place present a formidable barrier against migration of fracking fluids.



Aerial view of frac sand washing sediment ponds at a Wisconsin mine.



A drilling rig sits on a fracking site in a Colorado farmer's field.

domestic production, and Prudhoe Bay production peaked in 1988. Thus, the decline in U.S. production that had reversed itself as Prudhoe Bay ramped up continued, and it would not reverse direction again for the next 22 years.

U.S. oil production continued to decline throughout the 1990s and from about 1999 oil prices began to climb in response to growing demand, particularly in developing countries. In turn, higher oil prices spurred innovations, such as a combination of a decades-old technique called hydraulic fracturing (see "What Is Fracking?") with horizontal drilling. Higher oil prices made application of these techniques economical for the first time, and in 2008, U.S. oil production once more began to rise, and has now risen every year since.

Just how far this new fracking revolution may take U.S. oil production is hotly debated, with some suggesting that the potential is overstated. Others claim that the U.S. will once more retake the crown as the world's leading oil producer. The U.S. has fallen to the No. 3 oil producer globally, behind Saudi Arabia and Russia, but U.S. oil production is currently rising faster than in any country in the world.

There have been many surprises since Edwin Drake drilled that well in Titusville, Pennsylvania, in 1859, but the U.S. resurgence in oil production ranks among the biggest. It just goes to show that it is too early to begin writing an obituary for U.S. oil production because even after 150 years, the industry is still going strong. —

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FRANK LLOYD WRIGHT WAS NEVER SHORT OF
SELF-CONFIDENCE, IDEAS OR BRAVADO.
THE BUILDINGS HE DESIGNED ATTEST TO HIS GENIUS.

AN ARCHITECT WHO



Above, above right, and next page:
Wright's innovative Fallingwater,
in Pennsylvania, which he designed
for the Kaufmann family, over a
waterfall. Today it is a National
Historic Landmark.

THE CLIENT WAS ON THE PHONE.

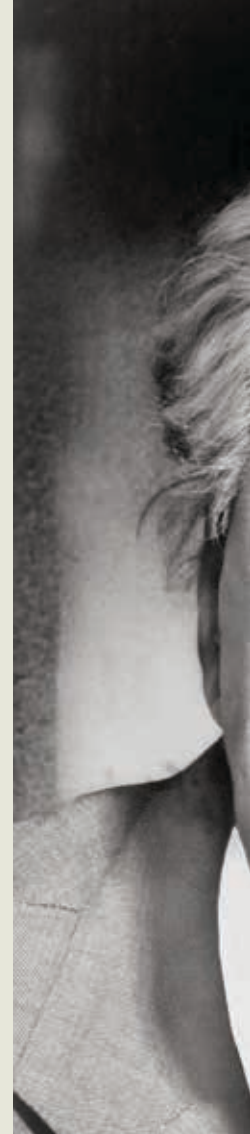
*Mr. Wright, I'm in Milwaukee and
I thought I'd come and see what you've
designed for me.*

Frank Lloyd Wright replaced the receiver and went to his drafting table. His client, a Pittsburgh department store magnate named Edgar J. Kaufmann, was about to drive 140 miles from Milwaukee to the home where Wright lived and worked to see the country getaway near a little waterfall that the world-famous architect had planned for him. He'd be there in three hours.



Wright hadn't drawn a single line. Calmly, he took three sheets of tracing paper and began to draw the house. "We were feeding him pencils," one assistant recalled. After drawing the floor plans, Wright drew a side view, then an elevation. All the while he kept up a lively conversation, describing the features of the house that were appearing on the sheets like completed thoughts. "He knew where every tree was, he knew where every rock is," the assistant said.

In less than three hours Wright was done, just as his secretary came in to announce that Kaufmann had arrived. Wright stood up and walked to his client. Extending his hand in greeting, Wright said, "Welcome E.J. We've been waiting for you."





Frank Lloyd Wright



PUSHED THE LIMITS

BY DAVID HOLZEL

Wright called the home that he presented to his wealthy client that day in 1934 Fallingwater. Built on a stream in southwestern Pennsylvania, it has been described as the most famous private home in the world.

Wright's performance for Kaufmann revealed the architect's brilliance and how he thrived on chaos. It demonstrated his supreme self-assurance and shameless theatricality. Frank Lloyd Wright, America's most famous and original architect, pushed the limits of not only architecture but engineering. Some of the problems inherent in his buildings—they famously leak—are being solved only now as the advancement of materials catches up to Wright's vision.

At the time he designed Fallingwater, America was in the pit of the Great

Depression and Wright's career was in eclipse. Instead of disappearing into history, he embarked on a new and ever more fertile period, one that would last more than 30 years.

THE GREAT AMERICAN CONFIDENCE MAN

Wright had always been a prodigy, an innovator, a tireless mythmaker and self-promoter. He was "the great American confidence man," said architectural historian Vincent Scully. Always in debt, never one to apologize for any mistake, Wright had a lifelong ability "to pull a design out of my sleeve," as he often boasted.

He was born in rural Wisconsin in 1867, and his ties to the Midwest landscape influenced his work until the end of his life. His father, William Wright, was an itinerant preacher and

musician. His mother, Anna Lloyd Jones, a teacher, prepared her only son for greatness, convinced that he would become an architect.

Wright completed neither high school nor college, but took well to drafting work and in 1888 was hired by the Chicago firm of Adler and Sullivan, whose Louis Sullivan was world-famous as the "father of skyscrapers."

Setting out on his own in 1893, Wright became a young maverick who sought a unique American architecture. His Prairie School style—houses, that emphasized the horizontal rather than the vertical to "blend in with the Midwestern flatness," according to biographer Meryle Secrest—were an example of what became known as "organic architecture," which sought to unify a house's plan and setting.

Even though Wright was headstrong and controlling, always in debt and constantly over budget, clients wanted to bask in the presence of his genius and creative energy. “He was 200 percent alive,” remembered one draftsman.

Wright designed commercial buildings as well, such as the Imperial Hotel in Tokyo, a four-year project. Shortly after it opened in 1923, a catastrophic earthquake hit Japan. One of the few buildings left intact was the Imperial, which Wright had designed with floating foundations meant to move with the earth, and walls of double-shell construction that were thicker at the bottom than the top.

Then in 1929, the U.S. economy collapsed. The European-based machine-inspired International School of architecture became the cutting edge, and Wright’s work fell out of favor. Clients evaporated as the Depression took hold. But always the hustler, Wright was ever on the lookout for opportunities. He refashioned himself as the outsider, the critic of trends imported from abroad. “Just because people lived in the machine age, doesn’t mean people’s houses should look like machines,” he declared. He wrote an autobiography in which he constructed his own legend, much of it at odds with the facts.

Clients like Edgar J. Kaufmann loved Wright. Even though the architect was headstrong and controlling (he often designed the furniture for his houses as well as details down to napkin rings and sometimes a gown for the lady of the house), even though he

was always in debt and constantly over budget, clients wanted to bask in the presence of Wright’s genius and creative energy.

“He was 200 percent alive,” one draftsman remembered.

HOMES FOR THE MASSES

Fallingwater still has the capacity to astonish. Its three levels cantilever over the falls, anchored to the rock ledge beneath the house. Years after the house was built, Wright recalled his design choices as the “natural thing” to do.

Wright designed “Usonian” homes like the Rosenbaum House, in Alabama, as a low-cost option for middle class families.



Other commissions followed. In 1936, Herbert and Katherine Jacobs challenged Wright to design a house that would cost only \$5,000 (\$82,800 today) to build. Wright eagerly accepted. He had begun to think about the problem of housing for people of modest means. He called the affordable houses he would build “Usonian”—the name coming from U.S.

The Jacobs House, built on the outskirts of Madison, Wisconsin, was the first of 60 Usonian houses Wright designed through the 1950s. It was a one-story, flat-roofed structure, built on an L-shaped slab foundation. Usonian houses were constructed of local materials. They had open floor plans with the hearth as the focal point. There was no attic and no garage—a carport sufficed.

Wright’s engineering was forward-thinking: He used radiant heat in the floors, an overhanging roof containing a ventilation system, and a new method of prefabricating walls, with three layers of board and two of tarpaper.

Donna Grant Reilly’s parents built their own Usonian home outside Cedar Rapids, Iowa, in 1945, using a plan that Wright had designed for them. In *Preservation* magazine, she recalled how alien the house seemed to the neighbors.

THE WRIGHT STUFF

Wright was famous for the homes he designed. But he also created many unforgettable buildings for other purposes. Here are three:



Unity Temple, Oak Park, Illinois, 1905

On his mother's side, Wright came from a family of radical Unitarians, and the architect's design for this Unitarian church was also radical for its day. It was built entirely of cast concrete, a new material. To create anticipation before worship, Wright, ever the showman, created seven sharp turns that a worshiper must take before entering the light-washed auditorium.



Johnson Wax Building, Racine, Wisconsin, 1936

The atrium of this corporate administration building uses Pyrex glass tubing as a skylight—a Wright innovation—and hollow reinforced columns to support the ceiling. “Tapering columns made an enchanting architectural forest,” writes biographer Ada Louise Huxtable.



Solomon R. Guggenheim Museum, New York City, 1959

In 1943, Wright began work on this museum to display abstract art; it opened on New York's Fifth Avenue shortly after his death in 1959. The Guggenheim's design reflects Wright's fascination with circular forms. The visitor begins on the top floor and moves through the single gallery that spirals down to the ground floor.



A photo taken in June 1957 shows Wright at the entrance to a family chapel on his estate, Tallesin, in Wisconsin.

in. Their living room had glass on three sides, so the room changed with the seasons and the family watched storms roll in, she said.

Wright never managed to construct a \$5,000 Usonian house. The closest he came was for a client in Phoenix, whose home ended up costing \$25,000. It fell to other, lesser, architects to adapt the Usonian idea in a way that reached the masses. Their handiwork—the ranch house—is ubiquitous across America.

Usonian houses inevitably suffered from Wright's experimental engineering. The in-floor heating system in Reilly's house "was not up to the task in the frigid Iowa winters," she said. "My parents never solved it." The house also leaked, a problem her parents weren't able to correct until the 1960s.

"It was much harder to explain to other people, who just couldn't understand the concept of having stone walls inside the house, or of having no paint, no wallpaper, no plaster. This was heresy!" she said.

True to the centrality that Wright placed on the hearth, Reilly's house had a fireplace big enough for her to stand

"It's a little ironic that Wright designed his Usonian houses for the 'common man,' but the cost of keeping them up puts them out of that realm. That's the only flaw I see in his philosophy," Reilly said.

Wright never retired—or slowed down. "I can't get them out fast enough," he said of his projects toward the end of his life. In the nine years before his death in 1959 at age 91, Wright designed nearly a third of the 1,100 buildings he produced during his career.

Throughout, he never lost confidence in himself and retained a supremely high opinion of his place in architecture.

In fact, as the story goes, when Wright was called into court one day, he identified himself as the world's greatest architect, according to biographer Ada Louise Huxtable. Asked how he could make such a statement, Wright said he had no choice: He was under oath. ◀

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TRIVIA Did you know that...

If you stand at the equator on the first day of spring, you will see the sun pass directly overhead. This is only true two times a year—the first day of spring and the first day of autumn.

Spring fever is not just a myth; the body may experience physiological changes due to changes in diet, hormone production and temperature.

Easter is celebrated on the Sunday following the Paschal Full Moon,

which is close to the first Sunday after the first full moon after spring begins.

According to studies by the U.S. Department of Transportation, Daylight Savings Time saves about 1 percent of electricity a day.

Tornado alley is most active in the spring.

Arbor Day is celebrated on the last Monday in April. However, each state can select its own date, depending on weather conditions.

Baby birds are born with the ability to sing, but they must learn the specific songs of their species. They are able to acquire these songs between 10 and 60 days of age, and they begin to sing them the next spring when they are about 300 days old.

(holiday-haven.com)
<http://www.22facts.com/spring/>

ON THE LIGHTER SIDE

Larry was a photographer for *The New York Times*, and was scheduled to meet a plane on the runway to take him on a job. "Hit it," said Larry, as he climbed into the first plane he saw on the runway. The pilot took off and was soon in the air. "OK," said Larry, "fly low over the trees over there; I want to take a few pictures."

"What do you mean?" asked the pilot. Larry looked at the pilot and answered a little annoyed, "I need to take some pictures for *The New York Times*, so please..."

There was a long pause, before the pilot asked in a shaky voice, "You mean you're not my pilot instructor?"

A lady went to a psychiatrist, complaining of a terrible phobia. "Every time I lay down on my bed, I get this terrible fear that there is something underneath.

"Wow," responded the psychiatrist, "I've never heard of such a phobia, but like all phobias it can be treated, but it will likely take around 20 sessions."

"Okay," responded the lady. "How much is each session?"

"Oh, it's just \$80 a session, but trust me it's well worth it."

When the lady didn't come back to the psychiatrist, he gave the lady a call. "How come I didn't hear from you?" he asked.

"Well," responded the lady, "when I came home and told my husband about the cost, he thought he would save some money. He just cut the legs off the bed!"

greatcleanjokes.com

Dates in History

1864: On March 1, President Abraham Lincoln nominated Ulysses S. Grant for the newly revived rank of lieutenant general. At the time, George Washington was the only other man to have held that rank. Winfield Scott also attained the title but by brevet only; he did not actually command with it.

1872: On March 1, President Grant signed the bill creating the nation's first national park at Yellowstone. Early in 1872, Congress moved to set aside 1,221,773 acres of public land straddling the future states of Wyoming, Montana and Idaho as America's first national park.

1888: On March 11, one of the world's worst blizzards in American history struck the Northeast, dumping as much as 55 inches of snow in some areas.

1918: On March 3, Bolshevik Russia signed the Treaty of Brest-Litovsk with the Central Powers, abandoning the Allied war effort and granting independence to its Polish and Baltic territories, the Ukraine and Finland.

1930: On March 12, Indian independence leader Mohandes Gandhi began a defiant march to the sea in protest of the British monopoly on salt—his boldest act of civil disobedience yet against British rule in India.

1939: On March 27, University of Oregon defeated Ohio State University 46-33 to win the first ever NCAA men's basketball tournament.

1996: On March 2, the Ford Motor Company celebrated the production of its "1" millionth Mustang—a white convertible, in Dearborn, Michigan.

www.history.com





Opposite page: The streets of Pals village in Emporda. Above from left: Aerial view of the Cadaques Bay; a detail of the Costa Brava.

SPAIN'S 'WILD COAST'

RICH WITH CULTURAL ATTRACTIONS, INNOVATIVE DINING AND PICTURESQUE SMALL TOWNS, COSTA BRAVA IS ONE OF SPAIN'S 'MUST SEE' DESTINATIONS

BY JODI ETTEMBERG

In 1908, a Catalan journalist named Ferran Agulló published an article in a local paper, dubbing northern Spain's most memorable coastline the Costa Brava (Wild Coast). Beginning at Portbou near the French border and ending at a town just north of Barcelona called Blanes, that rugged coast has become a popular vacation spot in Spain. While the name fell by the wayside over the ensuing decades, it was revived in the 1950s and 1960s when a postwar Spanish government sought to bring tourism to the coasts of Catalonia. After all, Costa Brava's proximity to the French Riviera meant that it, too, had

superb weather, sandy beaches and tiny roads at the edge of the sea.

While larger hotels and resorts were constructed during the early tourism boom, particularly along the southern edges of Costa Brava, the government has recently pushed back against the region's reputation as a package holiday destination. Instead, focus has shifted, bringing visitors to the coast's many small towns, which house museums, Greco-Roman archaeological sites, creative arts and innovative eating. Though vacationers from nearby European countries do enjoy spending time along Costa Brava's

220-km (176.7-mile) stretch of coastline, the region has most definitely not succumbed to wild crowds. From Girona, one of the larger towns in Costa Brava, to miniature inlets, coves and castles on the Mediterranean, plenty of quiet remains for everyone to discover.

Coves and Villages to Explore

Stepping off the beaten path is simple in Costa Brava. The best way to explore is to rent a car, buy a map and start on the coast. A particularly beautiful stretch begins in Begur, close to the spiderweb of roads linking the coves of



SPAIN

FRANCE

COSTA BRAVA

MEDITERRANEAN SEA

- Figueres
- Girona
- Palafrugell
- Blanes
- Cadaqués
- Empuries
- L'Escala
- Begur
- Tamariu
- Palamós

Aiguablava and Tamariu. A fortified medieval town, Begur has a historical city center that is closed to traffic and full of curled streets that open into small plazas. Its castle, originally owned by a feudal lord, looks over the town from atop a tiny hill, providing striking views of the surrounding area.

From Begur, head south to Palafrugell, a formerly fortified town

paths that lead down to the water, the gardens remain one of the most picturesque places to stop for a picnic.

Finally, continue south to Palamós, founded in the late 1200s as a port for Peter II of Aragon. Sitting at the tip of the Badia de Palamós (Bay of Palamós), the town is perfect for water sports, and fishing has sustained it well through the years. A fishing museum

Stepping off the beaten path is simple in Costa Brava. The best way to explore is to rent a car, buy a map and start in on the coast.

with a cork museum and watchtowers from the 14th century, and nearby Cap Roig for botanical gardens that are built into the hillside. With winding

(www.museudelapesca.org) traces the progression of Palamós' main industry. From 3 to 6 p.m., Tuesday through Saturday, tourists can watch

TAPAS: Fun Bites

As with many countries, Spanish food varies depending on geographic location, from paella in Valencia to *jamón ibérico* from the south and southwest, to Manchego sheep's milk cheese from the La Mancha region of Spain. Wherever you go, however, you can find tapas, which are plates of bite-size food that showcase the local gastronomy.

While tapas are offered in North America as a meal unto itself, in Spain they are usually served between

meals—snacks that accompany wine or alcohol as a midway point between lunch and dinner. Dinnertime in Spain is customarily quite late—from 9 p.m. until midnight, sometimes later—so tapas fit between the midday meal and the late night eating.

While in North America we often eat our tapas sitting in restaurants, in Spain people traditionally consume them standing up and clustered around a tiny bar table



the town's fish auctions happen live—and eat the fish shortly thereafter at one of the town's many tapas bars.

The Dalí Triangle

A trio of museums—collectively known as the Dalí triangle—provides an artistic counterpoint to the coastal villages. While Salvador Dalí (1904–1989) is best known for his surrealist painting *The Persistence of Memory*, he was also a photographer, sculptor and film artist.

Cadaqués, a whitewashed town reminiscent of a Greek fishing village, served as an artist's enclave well before Dalí's time, temporarily lodging Picasso, Matisse and Magritte, among others. Dalí's Port Lligat home, now the Dalí

House-Museum, is a short 20-minute walk from town. Dalí and his wife, Gala, lived in the house for more than 50 years, slowly buying up fishermen's dwellings and converting them into a very personal studio and residence.

As expected from a surrealist like Dalí, the home is a labyrinth of personal memories. A stuffed polar bear holding a net-shaded lamp greets tourists at the door and the home's many giant white eggs, art installations and taxidermied animals follow. When Gala died in 1982, Dalí moved out. The inside of the house has been untouched ever since. With only a small group able to visit at a time, reservations should be made in advance at www.salvador-dali.org/museus/portlligat/en_index.html.

From left: The castle atop Begur, a fortified medieval town, provides a striking view of the surrounding area; the Dalí House Museum in Port Lligat, home to Salvador Dalí and his wife, Gala, for more than 50 years; the Dalí Theatre-Museum in Figueres, which was designed, painted and decorated by Dalí and contains many of his works and surrealist installations.



or long bar top. This custom makes tapas into more of a social event than a specific type of food. Spaniards will usually start at one bar and then hop to another and another. Originating from the Spanish verb *tapar* (to cover), tapas are at the very heart of Spanish attitudes toward meals: lively, noisy and full of conversation.



Left: The Dalí Castle in Púbol was a gift from Dalí to his wife, Gala, who is buried in the basement; the Greco-Roman ruins in Empuries.

When to go:

August is far too crowded a month, with most of Europe on vacation and looking for the beach. “Shoulder” season—April and October—is much more quiet, as are the warmer months of June and September.

How to get there:

Flights to and from Barcelona’s El Prat Airport will be the most affordable from the United States. From there, it is approximately 1.5 hours of driving time to Girona and the Costa Brava region. Alternatively, for those in Europe, Ryanair flies directly into Girona airport.

The Dalí Theatre-Museum in Figueres was designed, painted and decorated by Dalí and contains many of his works and surrealist installations. Most famous is the Mae West room, constructed so that a sofa in the shape of lips, fireplace “nostrils” and the rest of the room magically make up Mae West’s face when viewed from the correct angle. There is also a replica of Michelangelo’s *David* crafted lovingly from car tires. With very little guidance in terms of exhibit order, the museum is a popular—and sometimes confusing—experience.

Finally, the Dalí Castle in Púbol was a gift from Dalí to Gala, a quiet place for her to seek refuge. He decorated it in true Dalí style, with an emphasis on illusion and the out-of-place. When his beloved Gala passed away, she was buried in the cellar. While he intended to be buried next to her—there is an empty tomb next to hers—he suffered

a heart attack in 1989 in his birthplace of Figueres and was buried there.

A Piece of History in Empuries

Slightly south of Roses, the Greco-Roman ruins in Empuries date from 6 BC, when the Greeks settled in the area. From 1 BC to 3 AD, Empuries was occupied by Romans, after which the town was abandoned. In 1908, the government began excavating the ruins, and the work continues today. A visit reveals a vast network of walls, columns and dwellings with mosaics and paintings still intact. An amphitheater, basilica and archaeology museum fill in the rest of the town’s history (www.mac.cat/eng/Branches/Empuries).

A day trip from L’Escala is the best way to see Empuries via the long promenade (2.5 km or 1.5 miles each way), allowing you to visit fortified



With its colorful Mediterranean architecture, the ancient city of Girona, on the Onyar River, bridges the old with the new.

cascading vines, cozy plazas when you least expect them to appear. At night, a climb up the cathedral's 90 steps reveals the city shimmering below, a vision reflected in shadows of the many lanterns that light up the alleyways. The Onyar River, lined by pastel-colored buildings called Cases de l'Onyar, cleaves the center of town in two. From Romans to Moors to a formerly vibrant Jewish quarter, Girona is a soup of architecture, shopping and history, with several worthy museums to explore.

With a country as large as Spain, picking one region and diving into its past and future make for a rewarding vacation. Costa Brava most definitely yields sufficient sights for a trip of its own. ■

farmhouses and pre-Roman era churches along the way.

Spellbound in Girona

The ancient city of Girona is a reliable choice to bridge the old with the new. Its medieval quarter (Barri Vell) sits

above the more modern sections of the city, with cobblestone lanes and staircases circling up to its stunning cathedral. When explored by day, the old city is an explosion of color—yellowed buildings against bright flowers, wrought iron balconies with

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BY THE ROCKET'S RED GLARE

THE WAR OF 1812 DEFINED THE CHARACTER
OF A FLEDGLING NATION

BY EUGENE FINERMAN

In 1812, “*Britannia Rules the Waves*” was more than a rousing song. It was the overbearing truth. Britain possessed the greatest navy in the history of the world—500 ships that were the lifeline of a global empire and her weapon against Napoleon. Fighting France, Britain’s navy could transport and supply an army of 100,000 men in Spain while it blockaded every port from the Adriatic to the North Sea. With its unrivaled power and unsurpassed arrogance, the Royal Navy also cruised North American waters, disrupting commerce, kidnapping citizens and mocking American sovereignty. These continual outrages goaded the United States into a war, a conflict that accomplished little but gave America a lasting pride. We remember it as “the War of 1812,” even if the British do not remember it at all.

Since 1793, Britain had been at war with France. The British navy had sunk any French pretense of a navy and, beginning in 1806, was enforcing a continental blockade to strangle French commerce. British warships were also patrolling the Caribbean and escorting convoys to Australia. These extensive and worldwide missions required

manpower: 140,000 sailors. The challenge was maintaining that number. The conditions on the ships were deplorable. With rotten food, brackish water and no effort at hygiene, diseases invariably depleted the crews. Between the diseased and the dead, the British

With its unrivaled power and unsurpassed arrogance, the Royal Navy also cruised North American waters, disrupting commerce, kidnapping citizens and mocking American sovereignty.

navy was ever in need of more men—and had no scruples in getting them.

In the course of a voyage, when sailors died or were stricken, a British man-of-war would stop an unarmed neutral ship and seize its sailors for replacements. This form of kidnapping

was called “impressment.” America was a neutral country and its merchant fleet was routinely subject to these British raids. Between 1806 and 1812, 8,000 sailors were “impressed” from American ships. Most of these men were of British birth; their native accent would justify their seizure. While many were now American citizens, that fact was irrelevant. Their British birth obliged their “indelible allegiance” to the Crown. Their impressment was simply restoring them to their rightful loyalty. The British logic was preposterous, but the British cannons were irrefutable.

Of course, the American government protested ... and was ignored. The U.S. Navy had fewer than 20 ships, hardly a threat or even an adequate defense. Ironically, even as their diplomats were at an impasse, Britain and the United States enjoyed a thriving trade. Britain’s textile industry demanded American cotton. President Thomas Jefferson believed that a threat to Britain’s commerce might curb her naval policy. In December 1807, the president proposed an embargo of all international trade, assuring Congress that the prospect of idled factories and

Right: In the early 1800s, U.S. merchant ships were routinely subjected to raids from the British navy, which relied on “impressment” (thinly disguised kidnapping) to add to its ranks by stealing sailors from American ships.



From the original painting by H. B. Matthews



The U.S. victory in the Battle of Lake Erie, in September 1813, was a decisive one, giving America control of the Great Lake.

moldering stockpiles would humble Britain. The embargo went into effect on December 22, 1807. Foreign ships could not enter American ports, and American ships could not sail abroad. However, Jefferson's strategy proved a greater threat to American commerce: 55,000 seamen and 100,000 dockworkers were thrown out of work. Cotton and tobacco rotted in warehouses. On March 1, 1809, the disastrous embargo was repealed.

As for the British navy, it relied on extortion more than ever. The Crown had granted it the license to seize cargo

400,000, with only 5,000 soldiers to defend it. America had a population of 7 million, and its army and militia totaled 400,000 men. The British army had 250,000 men, but some of its regiments were stationed in Australia, India and South Africa. Ireland always required garrisons, and 100,000 British soldiers were fighting the French in Spain. The empire did not have a regiment to spare for Ontario. In its calculus of war, Britain was prepared to lose Canada; defeating Napoleon mattered more.

But Britain had cultivated alliances against the looming American threat.

In August, a British fleet sailed into the Chesapeake Bay. A force of 4,500 marines disembarked and brushed aside the American forces attempting to stop them.

and ships. Britain's navy now was little more than piracy with a dress code. In America there was a growing sentiment for war. Its advocates were known as the War Hawks, and they had a clear strategy in mind: Attack Canada! Indeed, the British territory was vulnerable. It had a population of

Native American tribes had seen their lands steadily annexed by the growing republic, which now numbered 18 states. Against the encroaching settlers, the beleaguered tribes found Britain a sympathetic and generous ally. They were promised British protection and given British arms. Perhaps Britain



A view of the bombardment of Fort Mchenry, near Baltimore, by the British fleet. The "star-spangled banner" can be seen in the lower, middle left part of the picture.

calculated this alliance would deter America's thoughts of war. The opposite was true. The alliance outraged the Americans, especially in what was then the western frontier: the states of Kentucky, Tennessee and Ohio. Their senators and congressmen became the most vociferous of the War Hawks. In June 1812, President James Madison acceded to the growing demand and asked Congress for a declaration of war. In the House of Representatives, the vote was 79 to 40 for war; the Senate agreed, voting 19 to 13. As of June 18, 1812, America was at war.

In July, the commander of the Michigan territory led a force of 2,000 men in an invasion of Ontario. Surprised by British resistance, he retreated to Fort Detroit. Dismayed by the British pursuit, he surrendered the fort and his army. Other forays into Canada never even got past the border. Although ostensibly at war with Britain, the American Army was chiefly fighting its own ineptitude. Its officers were incompetent, and the soldiers were untrained. The state militias were unreliable. New England opposed the war, and its militias sat out the fighting. New York's militia was confined to serving within the state limits. Yet, however passive its war record, the New York militia made a lasting contribution to American culture. A Mr. Samuel Wilson was the meat supplier for the troops; the soldiers nicknamed him Uncle Sam. In time, the name became synonymous with the government and the symbol of America itself.



The Battle of New Orleans, on January 8, 1815, was the final battle of the War of 1812, resulting in victory for the American forces against the British.

At least by 1813 the American forces had improved. True, the British did repel an American attack on Montreal. However, there were a number of American victories. Detroit was recaptured. And on Lake Erie, a slapdash flotilla of nine schooners and sloops defeated a British assortment of six boats. The control of the Great Lake was a strategic triumph for America. However, the news from Europe should have dispelled any sense of self-satisfaction. America counted on Napoleon as the continuing preoccupation of Britain. But this proved to be the wrong time to rely on his military genius. Russia and winter had destroyed his Grand Army; then all Europe had turned on him. By March 1814, his enemies had captured Paris,

and the emperor was now an exile on Elba. The war in Europe was over, and Britain turned its attention on America.

Britain had no strategic objective: only vengeance. But it certainly had the power to exact that. By the summer 100 British warships were in American waters, and 40,000 veteran troops had been transported to North America. In August, a British fleet sailed into the Chesapeake Bay. A force of 4,500 marines disembarked and brushed aside the American forces attempting to stop them. The British began marching on Washington, D.C. They took the capital on August 24; that night the officers dined at the presidential mansion. The evening's entertainment was setting the mansion afire. The Capitol building was also put to the torch. In the subsequent

British forces burning Washington, D.C., on August 24, 1814.



reconstruction of the mansion, the scorched walls were covered up with whitewash. The president's home would become known as the White House.

The British expedition continued its rampage and in September approached Baltimore. Here, however, the American forces held their ground. The British marines halted while their navy pursued the attack. Baltimore's harbor was defended by Fort M'Henry. For 25 hours, the British fleet bombarded the fort, but the American flag waved its defiance. Finally, conceding its failure, the British fleet sailed away. Francis Scott Key witnessed the duel and described it in a poem. He referred to the fort's flag as "the star-spangled banner." His poem would become America's national anthem.

In late 1814, a British army landed in Louisiana: its goal was the capture of New Orleans. The battle was fought on January 8, 1815. Some 8,000 British veterans faced an American force of militiamen and volunteers, numbering 4,000. A full-frontal assault was expected to brush aside the rabble. But the rabble slaughtered and repelled the British: one-third of their force was killed or wounded. This was the greatest battle of the War of 1812 and the outstanding American victory. However, it was also completely unnecessary. Two weeks earlier, the diplomats of America and Britain had signed a peace treaty, but the news had yet to reach America.

The Treaty of Ghent ended the war ... and resolved nothing else. The borders of Canada and America were unchanged. Britain made no apology or compensation for its high seas arrogance. Yes, men had died—1,600 Britons and 2,200 Americans—but on a European scale the entire war was scarcely a skirmish. To the British, the War of 1812 is a trifle, a sideshow barely recalled. Yet, Americans define themselves by this war. Defying the power of Britain, occasionally defeating it, America had proved its character and courage. This was indeed a real and enduring nation. ◀



Solutions on Site Van Drives Dixon Innovation to End Users

> Last August, Dixon marketing specialist Tony Haston pulled up at a refinery in Wynnewood, Oklahoma, in Dixon's new Solutions on Site Van, and began a whole new way of doing business with the energy industry.

Haston was one of the first to use the van, which he describes as "an enlarged cargo van with a big enough box in back that you can stand up in it."

At the refinery in Wynnewood, Haston's contact came out to see the van. "We opened it up and started showing him our new products," he says. Before long, the van, with its Dixon logo, began to attract further attention, and Haston was able to set up a training session on the spot.

It was a successful first run for the Solutions on Site Van, which signals Dixon's goal to bring a new level of innovation to end users, according to Scott Jones, vice president of sales and marketing.

"The Solutions on Site Van completes the circle of finding a field application challenge, coming up with an innovative solution to address that issue, producing a prototype for field trials and getting approval from the user," says Haston.

"We have traditionally been a distribution-oriented manufacturing company," Jones says. "We made

products and sold them to distributing companies, which sold the finished product to a refinery or a paper mill or a steel mill. We really left it up to our distributors to promote our brand to end users."

Dixon wants to drive the Solutions on Site Van directly to end users in order to create engineering solutions to

The van: equipped with new products and ready to roll.

the challenges raised by customers. “The purpose of the van is to highlight our new products, showing them to potential users of the products for feedback and approvals,” Haston says.

The van—an extension of Dixon’s Mobile Connection Trailer program that includes two 35-foot trailers for training and product promotion—is outfitted with product samples, videos, literature and a package of products that Dixon can provide the energy market. “It emphasizes our ability to manufacture something new or make alterations that will make their job easier,” Jones says.

The Solutions on Site Van has a direct tie to Dixon’s Innovation Center, which opened in Chestertown in 2012. “The Solutions on Site Van completes the circle of finding a field application challenge, coming up with an innovative solution to address that issue, producing a prototype for field trials and getting approval from the user,” says Haston.

He adds, “Satisfied users will in turn remember Dixon as an innovative problem solver, and turn to us for their next application issue. There is tremendous satisfaction in knowing Dixon has helped our customer save time and money—and helped save someone from having a safety incident or hazardous spill.”

Jones is hoping to have enough successes with the new van to justify ordering a second one in the future: “The Solutions on Site Van accomplishes the goals of being more market oriented and being innovative for the end user, and it provides another tool to help our distributors grow their business,” he says. ◀

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Opening Minds

Selling safety isn't easy, but the pay-off is priceless

> Ralph had been successfully selling industrial hose and other related products for more than 20 years and felt he had pretty much seen it all. During the weekly sales meeting, Ralph found out his new sales manager had signed up the entire sales crew to attend a hose and coupling workshop sponsored by a fitting manufacturer. Sales had been off recently, and Ralph viewed this day as one of lost opportunity (and lost commissions). After the meeting, Ralph met with his boss and pleaded not to go. He proclaimed that his way of doing

things had worked well for quite a while and there wasn't anything to be gained by his being at this meeting. But his boss insisted, and told Ralph that they might even teach an old dog like him a few new tricks.

Sitting and waiting for this workshop to start, Ralph despondently thought about yesterday's conversation with a new account. He'd worked really hard to just get his foot in the door and had gotten a decent amount of business, but he knew there was a lot more to be had. They'd called wanting him to visit



today, but because of this required meeting, he told them he couldn't be there until tomorrow. It took just about every trick in his bag before they reluctantly agreed to postpone the meeting. Afraid he would lose out on some or all of this business, Ralph's mood darkened by the minute. Needless

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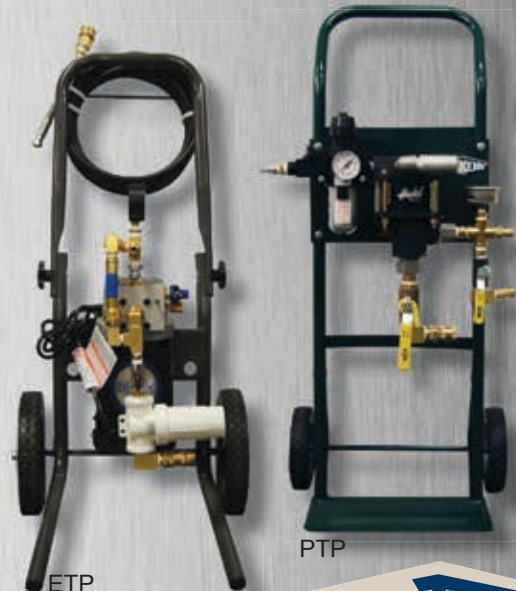
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to say, when the meeting started, he was not in a receptive frame of mind.

As the meeting progressed, Ralph's attitude went from pessimistic, to intrigued, to invigorated as he learned about products he never knew existed. He was shown things about hose and couplings in a light he had not thought of before, and, although he hated to admit this, he learned a few things he'd never known. After the meeting, Ralph called to thank the sponsor for the opportunity and ask if the plant manager and director of safety could attend the next workshop.

Ralph planned on putting some of his newfound knowledge to the test. So the next day, he started the meeting by focusing on the safety features of these new products. He explained processes and procedures he'd learned about at yesterday's meeting that could save the

plant significant money every year and create a safer workplace. Intrigued, the plant manager professed that these new products and Ralph's suggestions could fix a lot of problems he'd been having. He then recounted an incident that had occurred the previous week where a worker had been severely hurt. Just then the purchasing agent interrupted to ask how much these new products would cost them. Without missing a beat, the director of safety retorted that if these products could fix the problems and keep even one person from getting hurt, then he didn't care what they cost!

At the end of the meeting, Ralph was handed a purchase order the size of which he'd not seen in quite a while. As he was leaving, the director of safety pulled Ralph off to the side. He thanked him for not being just another salesman with the "we've got it too, and at a better

price" pitch. He then asked Ralph to come back next week for an in-depth talk about some of those processes and procedures. Pointing at the purchase order in Ralph's hand, the director of safety winked and commented, "That's only the beginning."

Anyone can talk price. Selling safety is not easy, especially for those set in their ways. Change is inevitable. Having the strength to be open to new ideas and to actively pursue new concepts can be rewarding.

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Worth Smiling About

Good dental hygiene can impact your overall health

> Regularly visiting the dentist does more than ensure a sunny smile. Your oral hygiene can also offer early clues to health problems.

Because gum tissue cells are remade quickly, health issues manifest themselves more immediately in the gums.

“The overall health of the body is clearly visible in the health of the gum tissue,” says Matthew Messina, DDS, consumer advisor for the American Dental Association. “We can spot [signs of] diabetes, leukemia, blood disorders, vitamin deficiencies. Those are very often seen by dentists first.”

On the flip side, good oral hygiene can be your first line of defense against other health issues. Without a proper brushing routine, bacteria in the mouth can reach dangerous levels, and lead to tooth decay and gum disease. Studies have shown possible links to several diseases as well, including endocarditis (an infection of the heart’s inner lining, which usually occurs when bacteria from another part of the body enter the bloodstream) and cardiovascular disease (which may be linked to inflammation and infections from oral bacteria).

In the fight against tooth decay and gum disease, Messina has some straightforward advice.

“It’s not sexy, but brushing and flossing are still the best way to go,” he says.



Some additional tips to help keep your smile bright and your oral hygiene exemplary:

Brush smart. The most important cleaning is a thorough two-minute brushing before bedtime that hits the tops, bottoms, sides and front of teeth. A morning brushing that includes the area under the tongue will banish morning breath. Don’t brush too hard, and wait at least 30 minutes after eating or drinking something acidic, which weakens tooth enamel.

Be careful of whitening toothpaste. The same ingredients that whiten your teeth by ridding stains can also eat away at enamel. Also, using too much whitening can whiten teeth beyond their natural color, making some teeth whiter than neighboring crowns.

Floss. “You know those tiny gaps between your teeth? Your toothbrush isn’t reaching in there,” says Messina. “Wrap floss around your middle fingers and guide it gently between your teeth with your thumbs and index fingers. “One flossing a week is better than none, but it is something that gets easier over time.”



Eat a balanced diet. Not only can sugary and acidic foods eat away at tooth enamel, but not getting the right amount of vitamins and minerals can weaken your teeth and gums. Nutrients

whether traveling by car, bus, train or plane, don't let oral hygiene fall by the wayside—even if it means brushing your teeth in that tiny bathroom on the plane. If you chew gum or enjoy mints,

the layer of dentin underneath. Acidic drinks like soda, coffee, tea, juice, wine and energy drinks may exacerbate discomfort. Overuse of tooth-whiteners can also irritate dentin.

The most important cleaning is a thorough two-minute brushing before bedtime that hits the tops, bottoms, sides and front of teeth. A morning brushing that includes the area under the tongue will banish morning breath.

like vitamin C and calcium play a crucial role in maintaining strong teeth and gums; red, sensitive gums may indicate a vitamin C deficiency.

Be prepared when on the go.

“Make sure you pack a toothbrush with you in your travel kit,” Messina says. If you're constantly on the move,

choose sugarless options, which are easier on the teeth.

Watch out for teeth sensitivity.

If you've ever gotten a toothache from something too hot or too cold, you might have sensitive teeth. This can happen from enamel wearing away or from gums wearing away, revealing

Establish rapport with your dentist.

“The important part is making sure you establish your ‘dental home,’ someone you can call if you have questions,” Messina says. “That should start before you have a problem.”

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The Power of Print

How the printing press changed history.

> By today's standards, the Gutenberg Bible is a challenge to read. With no indentations, paragraph breaks or even spacing between words, its pages are a sea of Latin words.

But when the first copies of the Bible debuted around 1455, the two-volume book marked the start of the Printing Revolution. It was the first book to be mass-produced using a movable-type printing press. While people would have guessed it at the time, that printing press—the invention of German metalworker Johannes Gutenberg—would become one of the most important inventions in human history.

By making books and other printed material affordable and available for the masses, the printing press broke the monopoly that had been held by the literate elite, allowing for the mass communication of potentially revolutionary ideas. It bolstered the rise of the middle class, permanently altering the structure of society. Historians credit the printing press with playing a key role in the development of the Renaissance, Reformation, Age of Enlightenment and the Scientific Revolution.

Of course, Johannes Gutenberg had no such lofty ambitions when he began his tinkering in the 1430s. He just needed to make money to pay down his debt from missteps he'd made in his family metal-working business.

In the centuries before Gutenberg's birth in Mainz, Germany, around 1399, books had been painstakingly reproduced by hand, primarily by monks (copyists) who toiled away in the "scriptoriums" of monasteries. The process got a bit easier with the introduction of block printing, which

came on the scene in Europe when Gutenberg was growing up but actually had its origins in ancient China.

Chinese printers would cut a block of wood to the size of a page, then carve out each word on the smooth face of the wood to create a stamp, which was then dipped in ink. Multiple copies of a page could be made relatively quickly this way. Of course, it took a long time to carve each block, which in turn could only print a single page. Nevertheless, the Chinese can claim the production of the first complete printed book in AD 868, titled the *Diamond Sutra*. In 1041, Bi Sheng's movable clay type expedited this process. However, his proto-European movable press fell into disrepair often because of fragile clay construction and never worked for large-scale printing.

By the 1430s in Germany, Gutenberg had become familiar with block printing and was determined to improve upon it. Using at first wood, and later metal (tin, lead and antimony), he developed 290 blocks of letters and symbols; these could be arranged to create words. Unlike earlier fixed blocks, these new types were movable; they could be set up to print one page, then taken apart and set up to create an entirely different one.

Gutenberg's true genius lay in combining several elements into a practical system that allowed for mass production. To construct his printing machine, he adapted a wine press, which allowed him to slide paper in and out of it. He also developed an oil-based ink (linseed- and soot-based) that improved upon earlier water-based inks



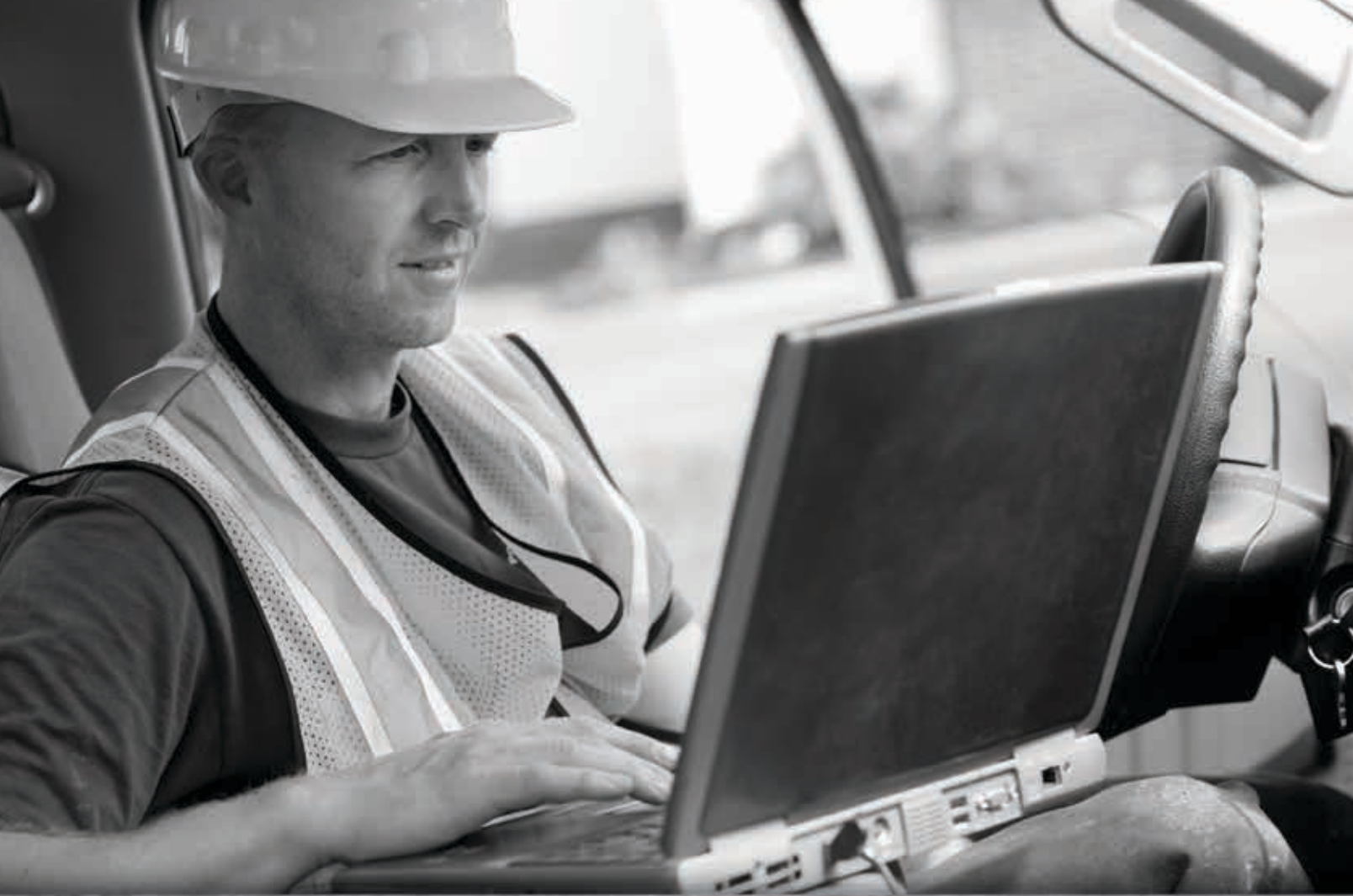
Photo by Authenticated News/Getty Images

Engraving of the first printing press, invented by Johannes Gutenberg, 16th century.

and adhered more effectively to rag-cotton linen paper. (Such paper would rapidly replace the more expensive vellum, derived from animal skin, which had been in use for centuries.) Once the blocks were inked, paper would be hand-fed through a roller.

By 1440, Gutenberg was using his press to print indulgences for the Catholic Church. He turned soon after to printing the 42-line Bible, a trial-and-error endeavor that would guarantee him a spot in the history books but, ironically, earn him no money. In the expensive process of developing the printing press, Gutenberg had secured funding from a German lawyer named Johann Fust. Impatient for a return on his investment, Fust successfully sued Gutenberg and won everything he owned, including his tools and press.

By the time of Gutenberg's death in 1468, printing presses were churning out books in cities across Europe. The printing system that he had invented—which inspired revolutions and forever altered the course of human history—would remain relatively unchanged until the late 20th century. But Johannes Gutenberg died in poverty. ●



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