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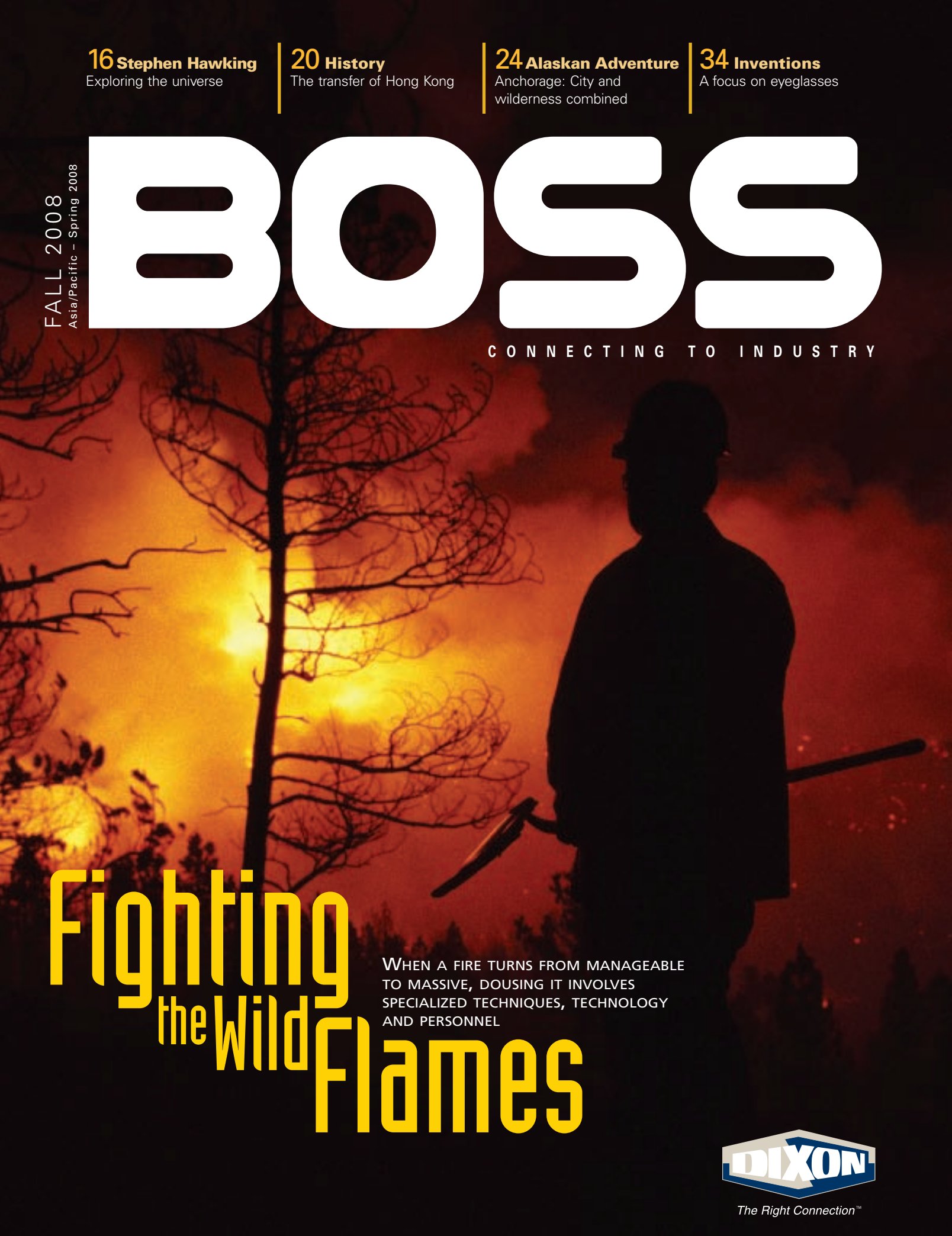

Fighting the Wild Flames

WHEN A FIRE TURNS FROM MANAGEABLE TO MASSIVE, DOUSING IT INVOLVES SPECIALIZED TECHNIQUES, TECHNOLOGY AND PERSONNEL

PHIL KIMBLE
Product Training Specialist
28 years

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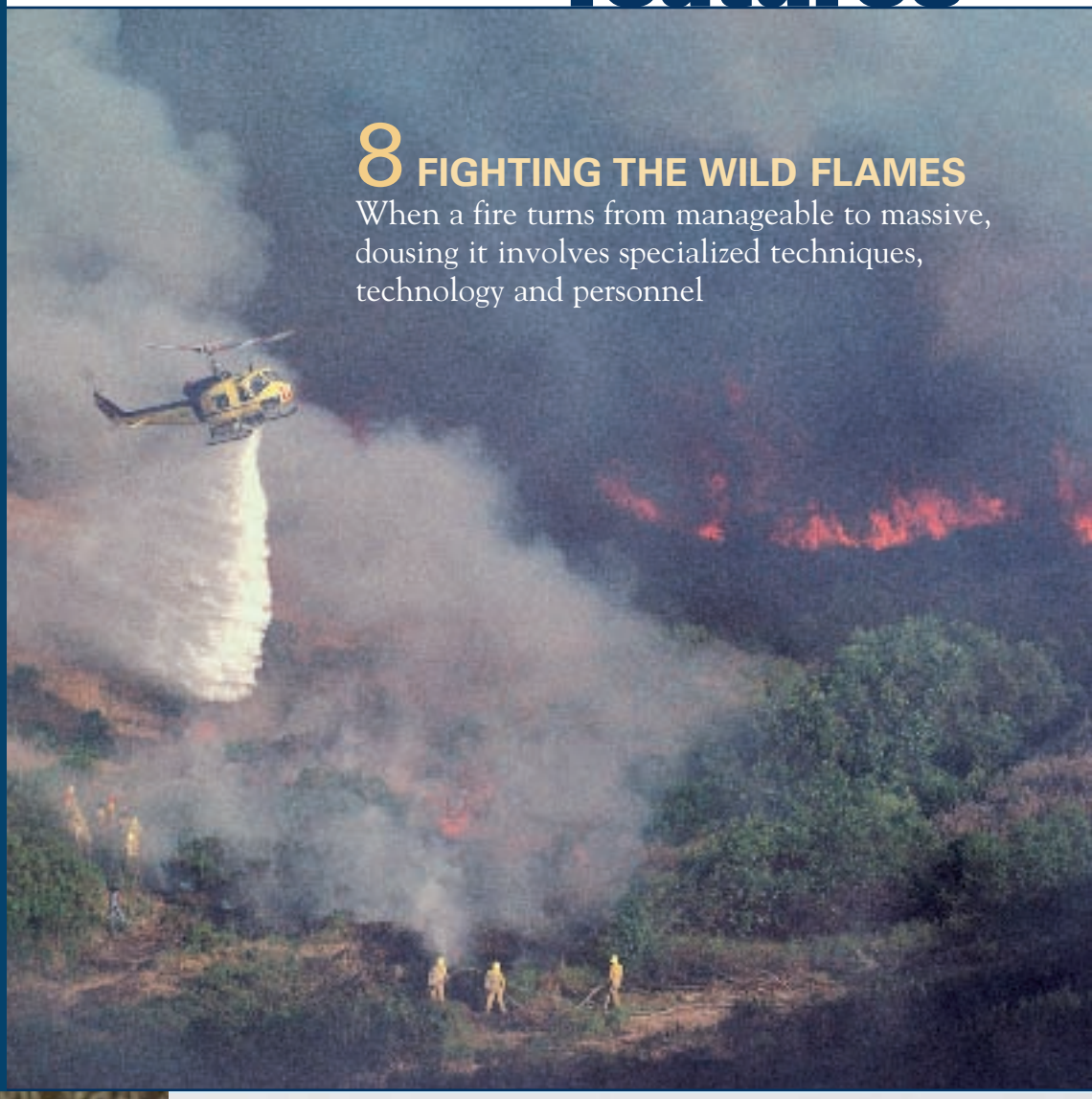

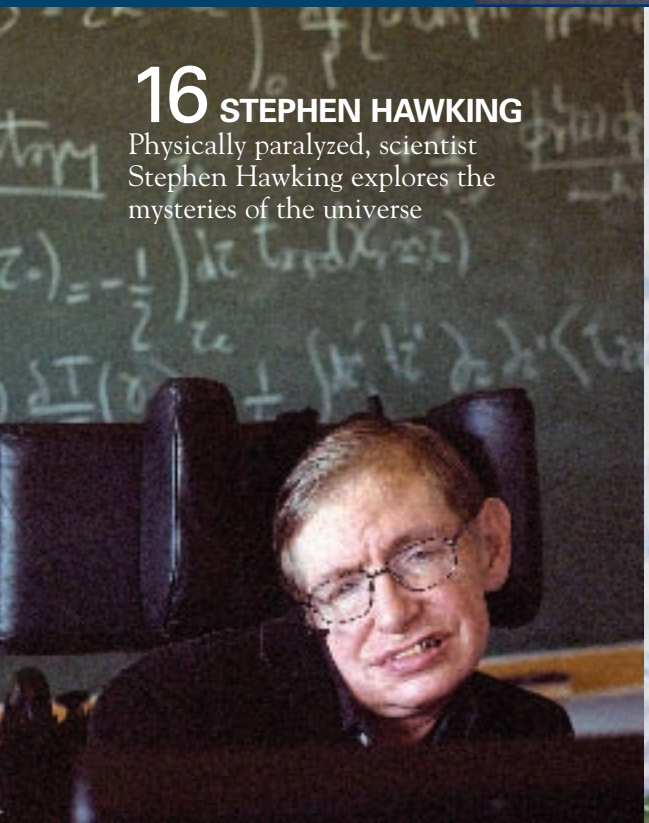

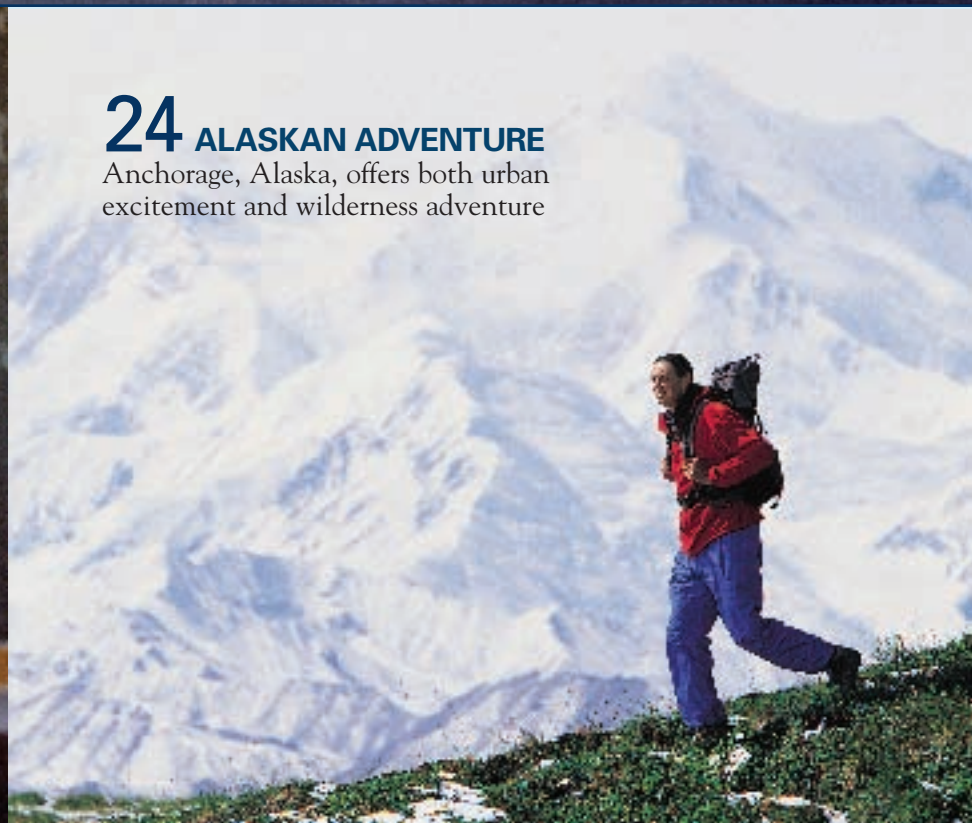

Gold Medals for Effort

I have always been inspired by the Olympics. This year has been no exception. Olympic gold medalists Michael Phelps, Nastia Liukin and Libby Trickett are nothing if not examples of extraordinary talent, hard work and dedication. These highly acclaimed folks do deserve our admiration. During this same period of time I attended the funeral of a retired employee. Miss Nora Taylor worked in one of Dixon's manufacturing plants more than 10 years ago. She stood out for her extraordinary work effort, positive attitude and giving nature. After retirement, she would stop by to visit the plant on occasions when she was not visiting one of the nursing homes in our area.

We all run into unsung heroes in our jobs and community who will never receive the recognition of an Olympic champion like Michael Phelps. I know that our businesses would not be as successful without the Nora Taylors of the world. We try to create a culture of empowerment and gratitude for jobs well done, but I sometimes find myself questioning our efforts to say thanks. We cannot give a gold medal for all the acts that these wonderful people perform every day, but we can and should make every effort to express our thanks. A few kind words to a family member, co-worker or service provider, if given sincerely, can be as good as gold.

Thank you.

Dick Goodall

Dixon Valve & Coupling Company headquarters in Chestertown, Md. *BOSS* readers are encouraged to send in their photos of industrial landscapes to BOSS@dixonvalve.com or BOSS Magazine, 1040 Park Ave., Suite 200, Baltimore, MD 21201.

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Little League Cheats Don't Win the Day

By Michael Josephson

Danny Almonte was the 14-year-old pitcher who tore his way through the 12-and-under Little League in 2001, winning all 17 games he played. This disgraceful episode of cheating was perpetrated by Danny's father, who forged a birth certificate, and Rolando Paulino, a man with a long history of cheating who founded a league he named after himself.

Little League president Stephen Keener put it plainly and accurately: "Clearly, adults have used Danny Almonte and his teammates in a most contemptible and despicable way. Their actions are reprehensible."

It added fuel to the fire to learn that Almonte and Paulino had done the same thing with Danny's older brother. The scary thing is that the scam almost worked. The team placed third in the World Series, losing only because Danny could not pitch every game, and Danny received the kind of fame that legends and very large signing bonuses are made of.

Diligent efforts of suspicious opponents to prove Danny was a ringer had consistently failed. Only the persistence of a *Sports Illustrated* reporter uncovered the truth. To those who minimize the two-year difference, keep in mind that by pretending to be a 12-year-old, Danny could throw his 70-mile-per-hour fastball from a mound 40 feet away. If he played kids his own age, it would have been 60 feet.

Paulino and the Almontes stole opportunity from every team they played, but to the credit of the Little League organization that has fought mightily to assure that fair play and sportsmanship prevail, and some really classy parents and kids from College Park, Pa., and Oceanside, Calif. (teams that suffered elimination in the regional and national finals), the virus of cheating failed to destroy the gratitude and good memories of the boys who played it straight.

PHOTO COURTESY OF THE LIBRARY OF CONGRESS.

The Other Custer

Capt. Thomas Custer was twice honored for battlefield bravery

By Sarah Achenbach

Capt. Thomas Ward Custer's heroics during the Civil War are the stuff of legends. As an 18-year-old second lieutenant in the U.S. Army Calvary—his first attempt to join the Army at age 16 failed, but several months later, with his father's permission, he enlisted—Custer earned two Medals of Honor during the Appomattox Campaign. On April 3, 1865, his unit, Company B of the 6th Michigan Calvary, ran into Confederate soldiers near Namozine Church, Va. Charging forward on horseback, Custer leapt across the barricade, captured the Confederate colors, three officers and 11 enlisted men, and earned his first Medal of Honor.

Three days later, he earned his second at Sailor's Creek, Va., when he and his men encountered the 2nd Virginia Reserve Battalion. Again, Custer and his horse took flight over the soldiers, but this time, there was a second line. Charging for the Confederate flag, Custer was shot point-blank in his cheek. Rocked by the impact, he remained in the saddle, killed the Confederate flag bearer who had fired the shot, and captured the battle flag. He then rode triumphantly into the Union troops, clutching his prize, and shouting to his commanding officer (and older brother) Gen. George Armstrong Custer, "Armstrong, the damned Rebels have shot me, but I've got my flag."

He is the only soldier during the Civil War to receive dual Medals of Honor for two separate actions—only two other Civil War sailors would join him in this honor—and one of only 19 in history to be awarded two separate Medals of Honor.

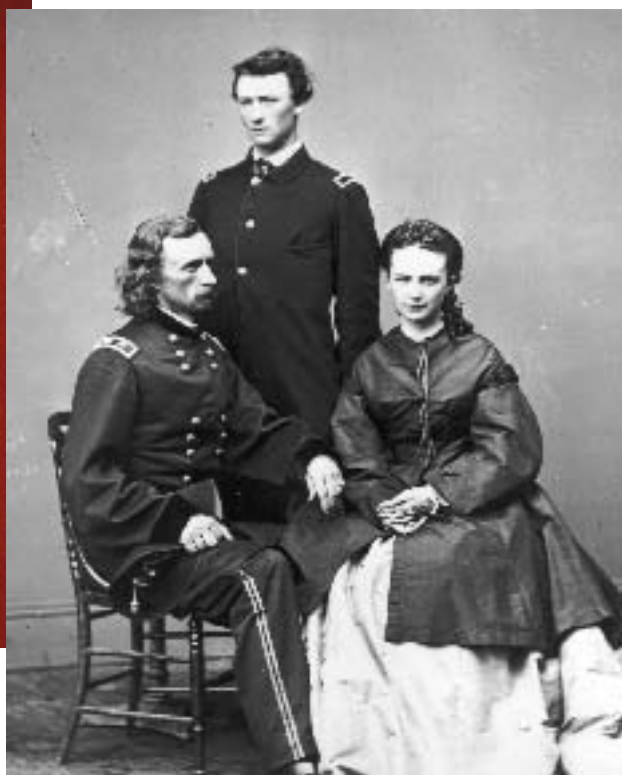
Yet, history remembers (if it remembers him at all) simply as "the other Custer." His bravery, life of military service, and even death at age 31 were overshadowed by his older brother by six years and commanding officer from 1864 to 1876.

A bachelor throughout his life—rumors persist that he fathered several children in his home state of Ohio—Custer greatly enjoyed his time spent with George and his wife, Libbie. Following the Civil War, Custer joined the 7th Calvary under Lt. Col. George Custer's command. In 1873, three years after the 7th Calvary's first Indian War experience (and George's court-martial for shooting deserters during the ill-fated 1867 campaign against the Cheyenne), the 7th Calvary moved west to the Dakotas. There, in the privacy of George's quarters, the two brothers and Libbie Custer often could be found engaged in child's play. Libbie Custer wrote, "The day rarely passed that Col. Tom, my husband and I did not have a game of romps. The grave orderly who sat by the hall door used to be shocked to see the commanding officer in pursuit of us by the steps."

Their love for pranks continued when brother-in-law James Calhoun, younger brother Boston and nephew Autie Reed joined them by 1876 at Fort Abraham Lincoln for the Great Sioux War. On May 17, the 7th Calvary began marching west to Montana. During the first few weeks of the march, the older Custers played pranks on their younger relatives, once pretending to be Indians about to ambush Boston, a civilian.

On June 22, Brig. Gen. Alfred Terry ordered George to march the 7th Calvary south along the Little Bighorn River to scout for a large Sioux village. On the morning of June 25, Gen. Custer decided to attack the village with Tom Custer in command of Company C, Calhoun leading Company L, nephew Autie riding with Uncle George and Boston with the 150-wagon pack train. With Custer's men greatly outnumbered, in a little over an hour, what is considered the

PHOTO (LEFT) COURTESY OF THE LIBRARY OF CONGRESS.



worst military disaster in U.S. history was over.

Indeed, Custer's Last Stand was the Custers' last stand, as each of the Custer men—and all of the men under George Custer's command—perished. Scalped and mutilated beyond recognition, Capt. Tom Custer was recognized only by the initials on his tattoo. His brother's body, clad in buckskin and not Army blues, was stripped of its weapons but left intact. Fittingly, Capt. Custer's remains were found beside his older brother's. For a year, they remained beside each other on the battlefield, the hard Montana dirt mounded upon their fallen bodies in makeshift graves, until Gen. Custer's remains were interred at West Point. Capt. Custer's remains are buried at Fort Leavenworth, Kan., the white tombstone noting his Medals of Honor.

Though much of history and the Gen. Custer lore remain silent on Capt. Thomas Custer's heroic life, brother George was not. He once remarked proudly that "Tom should have been the general, and I the lieutenant."

Capt. Thomas Ward Custer enjoyed a close relationship with his more famous brother, Gen. George Armstrong Custer, both on and off the battlefield. He is shown here, standing in back, with his brother George and George's wife Elizabeth "Libbie" Clift Bacon Custer.

Fighting the Wild Flames

BY VIRGINIA HUGHES

IN THE SUMMER OF 2005, AMIDST THE REGION'S WORST DROUGHT in six decades, wildfires sparked across the forests of northern Portugal. By Aug. 6, more than 2,000 firefighters were tackling two dozen fires across the country. Over the next three weeks, increasing temperatures—up to 104 degrees Fahrenheit (40 degrees Celsius)—and strong winds further fueled the blazes, the largest of which spanned 13 miles.

With its modest firefighting resources tapped out, the Portuguese government called on its European neighbors for help. France and Spain sent in firefighting planes, while Germany and Holland each sent several helicopters. At the peak of burning, close to 800 firetrucks and 31 airplanes and helicopters were in use.

By the end of August, the air humidity rose, temperatures fell and the major fires were put to rest. But the damage had been done. All told, fires had scorched more than 741,000 acres of forest land, destroying more than 100 homes and 500 farm buildings. A total of 13 Portuguese civilians and 10 firefighters died.

Villagers watch as the flames burn trees on a hill opposite the village of Sao Frutuoso, Portugal in 2005, left. Residents of the village of Sabugueiro, near Seia, in central Portugal, try to beat back the flames from a wildfire, right.

As devastating as Portugal's 2005 summer was, fires of that magnitude are nothing new, and are becoming increasingly frequent all over the world. In 2000, an estimated 865 million acres of forests and woodlands were destroyed by fire, with 80 percent found in the ultra-dry savannas of sub-Saharan Africa and the islands of the southwest Pacific, according to the Food and Agriculture Organization of the United Nations. In 2004, a whopping 4.2 million acres burned in the most northern forest of the Yukon Territory, and another 6.7 million acres in neighboring Alaska. Russia's 2007 fire season saw almost 14,000 fires, damaging more than 2 million acres. As for the continental United States, last year the explosive spree of fires in Southern California alone burned more than 1.3 million acres. (See sidebar, page 15: By the Numbers.)

How do governments handle such a large-scale disaster? Forty years ago, the universal fire management strategy was to prevent as many fires as possible; and for those that started anyway, to suppress them.

That all changed around 1970, when scientists realized that fire is most often a natural and healthy part of forest ecology and should sometimes be permitted. "Before, the agencies' mentality was to put everything out as soon as it starts and as quickly as you can," explains Tory Henderson, branch chief for equipment and chemicals for the U.S. Forest Service. "The biggest change in the last 20 years is how we've learned to use fire to benefit the ecosystem."

Today, a large, international network of fire managers studies the climate and ecological conditions under which to set controlled fires. (See sidebar, page 12: Prescribed Fires.) They also design sophisticated mathematical models to predict when and where the big fires will rage. They use high-tech satellite systems and gadgets that spot actual fires in real time. And if they determine that a fire should be squelched, they send in skilled firefighting troops by air and by land to put out the flames before they destroy acres of vulnerable terrain.

Still, none of these technologies by themselves can put fires to rest. As Marty Alexander, longtime fire behavior researcher in the Canadian Forest Service, says: "At the end of the day, it's still the guy on the ground, with a shovel and an ax, who's doing the real work."

Making Predictions

Though the basic tools for firefighting—the planes, trucks, repellants and hand tools—haven't changed much since World War II, fire prediction technology has improved significantly. "Before, say, 1980, we used pretty rough-and-ready methods," says Alexander, who specializes in modeling fire behavior. "Now we can actually make some sound predictions."

Fires are most prevalent in places that have a wet season, when trees and vegetation can grow quickly, followed by an extended dry season where that vegetation—or "fuel"—becomes extremely flammable. Fires are most likely to spark during long periods of drought, with low air humidity and high temperatures. When high winds or lightning storms are added to that mix, fires spread quickly—up to 40 miles in a single day.

Starting about 25 years ago, fire scientists created sophisticated mathematical predictive models based on a variety of climate and ecological factors. "To a large extent, our models can only be as good as the weather forecast is," Alexander says. "So you can build two different models: one

Ask a Smoke Jumper

Brandyn Harvey, 31, is one of about 400 American "smoke jumpers"—those elite, highly trained firefighters who drop from airplanes via parachutes to put out the wild flames in remote areas. Harvey, who hails from Boise, Idaho, also worked for six years on a "Hot Shot" firefighting crew, where he not only fought fires but also did prescribed burnings. We caught Harvey in between trips and asked him about his training, firefighting gadgets and the thrill of the jump.

What is your job? Do you love it?
I love it, yeah. Throughout the fire season we will be sent out to different locations, depending on fire activity at the time. We'll ship out with eight to 12 smoke jumpers, set up shop. We could be ready at the airport within minutes of getting a call, then we're off the ground and jumping into wildfires.

It's the pinnacle of the firefighting realm. I was pretty lucky to be selected and to have the support I had from my old Hot Shot crew. We have the most fun job, I think, getting to parachute in and put out fires. And since we're a national resource we get to travel a lot.

A lot of my friends joke with me and say I should talk about my job more, because it would help me pick up chicks [women].

Is it scary sometimes?
It's definitely full of adrenaline. A lot of the guys and gals that do it are super athletic because we have to be at the top of our game. We have to jump out of airplanes, and hike 20 miles at a time. The training is very rigorous. A lot of people compare it to the Navy SEAL program.

What was your training like?
Initial training for smoke jumping was six weeks. The first week was pretty tough. They took us up in the woods, hiked us around. They really push you to your physical and mental peak. You have to be an Olympic athlete when it comes down to it, suck it up and push your body further than you ever have before. They want the best. They usually wash [release] half of the rookies every year.

How much does one parachute cost?
Probably a couple grand [$1,800 - $2,000]. Then we've got reserves with us, and harnesses are probably another $500 with all the gadgets. We build all of our own equipment. There's a whole fleet of sewing machines that fabricate everything we have. We try to constantly evolve with lighter, newer fabric, protection pads, whatever.

Besides parachutes, what kind of technology or gadgets do you use?
We use altimeters when we jump. And we use GPS's [Global Positioning Systems] constantly. They're probably our best friend, especially in Alaska because there aren't a lot of landmarks. We use radios, too, and laptops for fire behavior calculations.

Cell phones are detrimental, because we don't get service usually. So we use satellite phones if we're out in the desert. To get the satellite phone to us they'll drop it down in a little mini-parachute.

How often do you travel?
All summer usually, sometimes 21 days straight. In a good fire season we'll work 1,200 or 1,300 hours worth of overtime. We work a year's equivalent in six months. I usually get the winters off a little bit, so I'll travel around, snowboard and do odd jobs.

What is the most surprising thing about your job?
Well, the guys I work with are some of the biggest do-ers you'd ever meet. If there's no fires, we'll go do flood relief or go help with Hurricane Katrina. We're an all-incident resource. We picked up space shuttle pieces from old shuttle recovery in Texas.

Any advice to aspiring smoke jumpers?
When you do this, put everything on the line. If you don't make it, you've got to go find another job.

Prescribed Fires

In 1974, four years after one of California's worst fire seasons in history, Clive Countryman, head of fire behavior studies at the U.S. Forest Service's station in Berkeley, Calif., published an influential study addressing the problems of fire suppression. He put forth a thesis that shocked the rest of the field: One way to prevent large, destructive wildfires is to intentionally start smaller ones.

Prescribed fires, Countryman argued, would burn up dry, flammable vegetation or "fuel" before it could accumulate and lead to uncontainable fire conflagrations.

"Fire is not going to go away unless we build a whole lot of parking lots," the Canadian Forest Service's Marty Alexander says in reference to Countryman's idea. "We have to somehow coexist here, and we're not going to do that by fire suppression alone. You have to have some prescribed fires in the ecosystem."

Today, fire managers across the world routinely use prescribed fires (also called controlled fires). Determining when and how to set one is a complicated science that depends on, among other factors: the type of trees being burned, the time since the last fire in the area, past and current moisture content of the air and—because of the smoke—public relations.

"A lot of the grassland areas have lots of acreage that's got to be burned by a certain deadline. You can't just do it any old day," says smoke jumper Brandyn Harvey, who worked for several years on a "Hot Shot" crew that set prescribed fires throughout the western United States. That's because Hot Shot crews have to start the fires when weather conditions are most favorable, to minimize the chance that changing winds could spread them to undesignated areas or that an unplanned fire will spark while the crews are working.

Most prescribed fires are started by ground crews using a hand-held drip torch. For starting fires in larger areas, crews will use power torches mounted on all-terrain vehicles.

based on the worst-case scenario and one based on the most likely case." As well as temperature, humidity and wind speed, the models factor in the volume and moisture content of the "fuel."

More recently, these quantitative models were merged with geographic information systems (GIS), so that the precise location, size and trajectory of the most likely fires would appear on a map. The maps and data are available from a central Web site, and may be downloaded to firefighting crews' laptops or fire operations centers throughout the world. "Now on a computer you can actually show what the perimeter of land burned would look like after one hour, or two hours. It helps in all kinds of scenarios," Alexander says.

Spotting a Fire

Effective predictive techniques are important because they allow firefighting organizations to plan ahead, directing equipment and staff to the areas most at risk. But just as important is quickly pinpointing actual fires. The faster a fire is spotted, the less damage it can do before a firefighting crew can extinguish it.

In most places, fires are detected by regular patrolling of likely hot spots by single-engine manned aircraft. But in recent years, communities frequently plagued by wildfire have turned to remote technologies, such as NASA satellites that detect dry areas, smoldering fires and the infrared signatures of carbon dioxide emissions.

The newest of these satellite technologies is called the Moderate Resolution Imaging Spectroradiometer, or MODIS, a sophisticated instrument that's found on two satellites orbiting the Earth. MODIS holds a variety of sensors that detect electromagnetic radiation—whether visible light, microwaves or infrared heat. MODIS systems scan the entire Earth's surface every one to two days. Once that data on smoke and fire radiation is sent back to Earth, NASA geographers merge it with maps of local roads, topography, vegetation and population density, and disseminate it to firefighting operations across the world.

"We can access the satellite information over the Web—it's updated twice daily," says Lachlan McCaw, a bushfire research scientist in Western Australia's Department of Environment and Conservation. "That's proven extremely effective." He says satellite technology is especially useful for detecting fires in Western Australia, which is largely unpopulated and difficult to monitor with planes.

Still, MODIS data can't show how fire radiation is changing from one hour to the next. Last summer, NASA and the U.S. Forest Service started experimenting with remote sensing technology on unmanned aircraft, rather than using satellites. The sensors could monitor the spread of a specific fire as it happens, and send the data back to geographers in near real time.

The new technology was tested in October 2007, when raging fires broke out in San Diego County, Calif., with

A MODIS image of the Viejas Fire near San Diego, Calif. The image of this wildfire was taken on Jan. 4, 2001, by the Moderate Resolution Imaging Spectroradiometer (MODIS), flying aboard NASA's *Terra* spacecraft. The scene shows the wildfire and smoke plume from the Alpine region, east of San Diego, left. Firetrucks and men assemble to fight a wildfire from the ground, right.

mixed results. The system worked perfectly until large clouds got in the way of the infrared sensor. Developers are now working to address the problems. Using unmanned aircraft "would expand our capability a great deal, because right now we have a limited infrastructure built for infrared technology," says Henderson of the U.S. Forest Service.

But fire spotting doesn't have to be so high-tech. In some parts of Western Australia, firefighters keep watch in treetop towers during the fire season. Because the local geography is fairly flat, there's no other way to get a good view. "You get a guy to climb up a tree, using spikes in the sides [of his boots], step into a small cabin structure, and look out," McCaw says. "They've been doing it that way for a very long time."

Extinguishing the Flames

Once a fire's been spotted, the first decision for local officials is whether they want to spend money and firefighting resources to extinguish it. Small fires, especially those far from populated areas, should sometimes be left to burn. Burning these small amounts of shrubs and bushes can prevent a more dangerous fire from breaking out in that area in the future.

"You also have to look at what the land's purpose is," says McCaw—that is, whether it's a national park, nature reserve, national forest or remote grassland. Fires are sometimes left to burn for weeks or months in places like Australia's "unallocated crown lands," which are government-owned, unpopulated and not actively managed. "There's no clear reason to put firefighters at risk putting those fires out," he says. In contrast, of the approximately 700 large wildfires that occur in Western Australia every year, at least half "would have the potential to affect rural or residential property," he says. "So, we obviously have to contain those as quickly as possible."

The swift, coordinated, strategic effort from firefighting crews is often compared to a military operation. In the United States, crews work under a chain of command, from regional volunteers to state control centers, to the National Interagency Fire Center. About 100 "Hot Shot" crews, made up of highly skilled firefighters trained and employed by the federal government, travel around the country to help local authorities as needed. Similarly, the Bureau of Land Management and the U.S. Forest Service have trained about 400 "smoke jumpers" who parachute directly into raging fires.

The standard response to a wildfire is called a "single resource initial dispatch," in which a small number of firefighters take a bulldozer and a fire engine to the scene of the fire and suppress it with water. Three things are necessary in order for a fire to burn: a heat source, oxygen and receptive "fuels," the latter being the easiest one for firefighters to remove. The fuel along the perimeter of the fire is bulldozed, cutting off its ability to spread. Then, the water extinguishes it.

That's the simplest case. For more extreme weather conditions, a fire could easily advance faster than the initial dispatch can contain it. In those cases, the initial dispatch crew would contact the coordination center and request additional resources. This gets complicated when multiple fires are going on at once, with more anticipated for later in the day or the week. "Usually, we're not worried about fighting the current fire," says Chris Worrell, a fire training officer in the Florida Division of Forestry. "The question we have to ask is: where is the next fire going to be? It's a constant game of catch-up."

Fires larger than about 10 acres can't be stopped by land crews alone. Manned aircraft—often retrofitted military planes and helicopters from World War II—fly to the outbreak to drop water or chemical retardants. The largest planes, six-wing aircraft, hold up to 3,000 gallons of liquid. Much more common, however, are large air tankers that hold about 1,200 gallons and single-engine planes that carry 600 gallons.

If chemical retardants are dropped just after a fire has started, they can keep it from spreading until ground crews reach it. Since retardants last much longer than water, they also can be dropped in places where a fire is anticipated to spread. The chemical retardants (usually phosphorus-based) are usually colored red so that air crews can see where they landed.

Other than small developments in the chemistry of retardants—they've been made less toxic so that they can be dropped closer to waterways without poisoning local fish—aviation fire technology hasn't changed much in the last 30 years. "The last innovation we had was the flying drip torch in the mid-1970s," says Alexander. The drip torch, also known as a "helitorch," is a device that swings from a helicopter and dispenses and ignites fuel. "Basically, it's a way to fight fire with fire," Alexander explains. Adding fire to strategic areas next to or near an existing fire can reduce its intensity or steer it into a trajectory that will cause minimal damage.

Dixon vs. Fire

The following Dixon Powhatan products are used in the firefighting industry:

- Nozzles
- Back pack systems
- Accessories
- Couplings
- Adapters
- Valves
- FRLs
- Fire hose

Coordination among the various local, state and federal agencies is probably the most vital element to suppressing a fire. "The best way to describe it is like a spider web," Worrell says. The National Interagency Fire Center sits at the center of the web, and strings connect to one of eight regions. Each of those strings connects to another cluster of states, which, in turn, connects to counties and local municipalities. The entire web is mapped out on a central database.

"We can tell the system we need additional help here in Florida, and within 24 hours we have firefighters show up from California, Texas, all over," he explains. After 23 years on the job, Worrell says he's fought fires "in every state west of the Mississippi."

The cooperation doesn't stop at national borders. In the same way the European Union member countries pitched in to help Portugal in 2005, American, Canadian and Mexican operations share resources when in need. During the winter off-season, many American firefighters even fly to Australia to help in what is their summer fire season, and vice versa.

"I believe in what I do," Worrell says. "There's nothing more gratifying than showing up somewhere with minimal resources, making sound and quick decisions, and saving people's homes and lives."

Arson

Last fall, wildfires engulfed more than a half-million acres of Southern California, thanks to extremely dry conditions, high winds and—at least for a rural community in the northern part of Los Angeles County—a 10-year-old boy with a box of matches.

On Oct. 22, the Los Angeles County Sheriff's Department apprehended the young arsonist, who claimed that he "accidentally" set off the 38,000-acre fire.

Fire authorities suspected that several of the large California fires that year were intentionally set. FBI investigators collected evidence and more than $150,000 in reward money was offered for accurate information about the arsonists. At least three people were arrested on charges of arson.

Though investigators immediately suspect foul play whenever a fire has many points of origin, there are no official statistics recorded in the United States on the number of wildfires started by arson.

A chemical retardant is released from a plane in order to keep a wildfire from spreading.

By the Numbers:

Yearly averages of area burned, by region:

Rank	Country	Hectares	Acres	Square Miles
1	Sub-Saharan Africa	230,000,000	568,342,377	888,035
2	Australasia (mainly Australia)	54,500,000	134,672,433	210,425
3	Southeast Asia	6,900,000	17,050,271	26,641
4	North America	4,100,000	10,131,321	15,830
5	South Asia (mainly India)	4,100,000	10,131,321	15,830
6	South America	2,900,000	7,166,056	11,197
7	Central Asia	2,000,000	4,942,107	7,722
8	Northeast Asia	1,000,000	2,471,053	3,861
9	Mediterranean	700,000-1,000,000	1,729,737-2,471,053	2,703-3,861
10	Caribbean, Mexico and Mesoamerica	446,000	1,102,090	1,722
11	Balkans	156,000	385,485	602
12	Baltic and adjacent countries	32,000	79,073	124

(Data collection periods vary by area, but range from 1984-2006. Source: Food and Agriculture Organization of the United Nations' Global Forest Resources Assessment, 2005.)

By SARAH ACHENBACH

Beyond Expectations

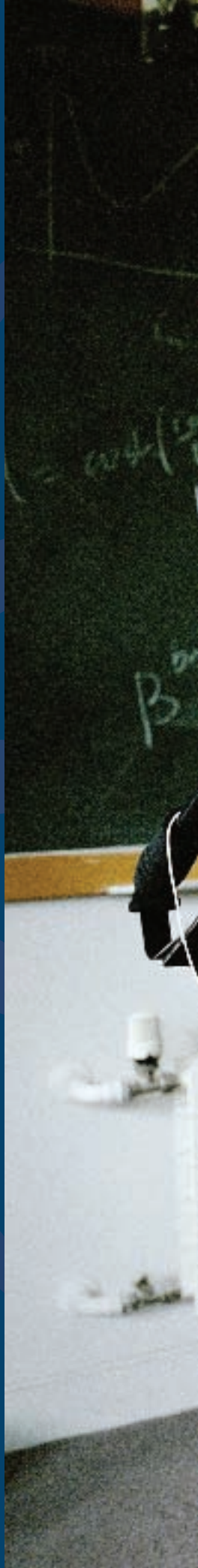
PHYSICALLY PARALYZED FOR MOST OF HIS ADULT LIFE, SCIENTIST STEPHEN HAWKING CONTINUES TO EXPLORE THE MYSTERIES OF THE UNIVERSE

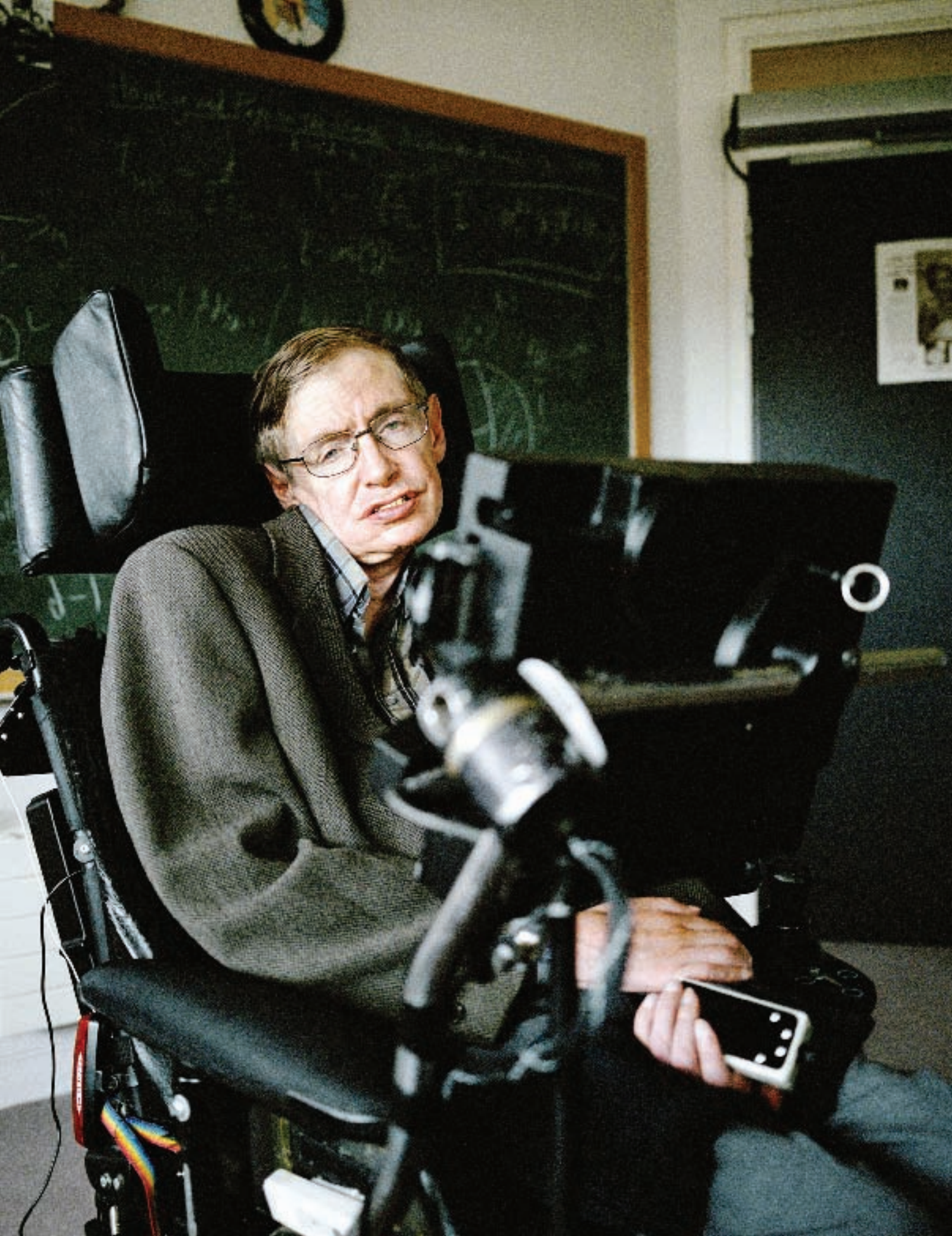
The prognosis was grim: 21-year-old Stephen Hawking likely had only a few years to live. The young man was just coming into his own as a scientist, working on a Ph.D. in cosmology, the study of the universe's origin, structure and development, at Cambridge University.

"The doctors told me to go back to Cambridge and carry on with the research I had just started in general relativity and cosmology. But I was not making much progress, because I didn't have much mathematical background. And anyway, I might not live long enough to finish my Ph.D. I felt somewhat of a tragic character," Hawking writes.

Instead of surrendering to what is now known to be amyotrophic lateral sclerosis or ALS (also known in the United States as Lou Gehrig's disease), Hawking discovered with great surprise that the prospect of imminent death brought out a joy for life. His research began to progress, and he became engaged to his first wife, the former Jane Wilde, whom he had started dating about the time of his diagnosis. "That engagement changed my life," he says. "It gave me something to live for."

And live he did.





Now arguably the most famous cosmologist in the world, Hawking's dazzling intellect has secured his place as one of history's most important scientists. The Lucasian Professor of Mathematics at Cambridge University since 1979, he holds the same post that Sir Isaac Newton once held. The recipient of numerous honorary degrees, medals and prizes, including the Companion of the Order of the British Empire in 1982 and the Companion of Honour in 1989, Hawking is a Fellow of The Royal Society and a member of the U.S. National Academy of Sciences.

His boundless curiosity and the very limited boundaries of his physical self have made him an internationally known and respected figure well beyond scientific circles. His popular books—*A Brief History of Time* (Bantam, 1988), which spent a record four years on the *London Sunday Times*' best-seller list, *Black Holes and Baby Universes and Other Essays* (Bantam, 1993) and *The Universe in a Nutshell* (Bantam, 2001)—have helped stargazers everywhere better understand the universe.

In *A Brief History of Time*, he writes, "However, if we discover a complete theory, it should in time be understandable by everyone, not just by a few scientists. Then we shall all, philosophers, scientists and just ordinary people, be able to take part in the discussion of the question of why it is that we and the universe exist. If we find the answer to that, it would be the ultimate triumph of human reason—for then we should know the mind of God."

AT A LOOSE END

In a coincidence bordering on prescience, Hawking was born on Jan. 8, 1942, exactly 300 years after the death of Galileo. His parents, Frank and Isobel, raised him in Oxford, England—a safer place during World War II than their London home—and when the young Hawking was 8, his family moved to St. Albans, a small town north of London. At the St. Albans School, Stephen was a good, but not outstanding, student who immersed himself in books. Enrolling in his father's alma mater, University College, Oxford, Hawking intended to study mathematics, although his father, a research biologist, preferred he study medicine. Since mathematics was not offered at University College, he chose physics, earning a degree in natural science. It was during his time at Oxford that the young man started to blossom.

His physics tutor, Robert Berman, later said in *The New York Times Magazine*, "It was only necessary for him to know that something could be done, and he could do it without looking to see how other people did it. ... He didn't have very many books, and he didn't take notes. Of course, his mind was completely different from all of his contemporaries."

It was just as his world was opening up intellectually that his physical abilities were beginning to deteriorate. Never particularly graceful or athletically inclined, he was getting more and more clumsy. In his third year at Oxford, he had fallen a few times for no apparent reason. At his father's urging, Hawking went to his family doctor, who in turn referred the young scientist to a specialist.

Just after his 21st birthday, Hawking entered the hospital for a two-week battery of tests. The results ruled out multiple sclerosis, but no specific diagnosis was offered at the time. Instead, Hawking recalls that the doctors gave him vitamins and the news that they expected his incurable, terminal condition to get much worse rather quickly. "Not knowing what was going to happen to me, or how rapidly the disease would progress, I was at a loose end," he writes.

His engagement to Jane provided the impetus to keep going: Hawking needed to find a job if he were to provide for a family. (He and Jane were married for 30 years before they divorced. They have three children, Robert, Lucy and Tim, and two grandchildren. Hawking is divorced from his second wife and former nurse, Elaine Mason.) While at Cambridge,

A growing black hole, called a quasar, can be seen at the center of a faraway galaxy in this artist's concept, opposite page. Hawking's early research explored the creation and extreme conditions of black holes. Hawking experiences zero gravity during a flight over the Atlantic Ocean. "It was amazing ... I could have gone on and on," Hawking, then 65, said after riding on the modified jet.

IMAGE COURTESY OF NASA.

he applied for and received a research fellowship in theoretical physics at Gonville and Caius College, Cambridge.

As his disability worsened and he was confined to a wheelchair, his scientific reputation blossomed. "This meant that people were prepared to offer me a sequence of positions in which I only had to do research, without having to lecture," writes Hawking.

The disease was causing his speech to slur. Hawking could communicate, but only those who knew him well could understand him clearly. His papers were dictated to a secretary and any lectures he gave were through an interpreter. A tracheotomy operation following a bout of pneumonia in 1985 left him unable to speak at all. Now, Hawking had to painstakingly point at letters on a card to communicate with his family, nurses and colleagues.

Walt Woltosz, a California-based computer programmer, came to the rescue with Equalizer, a program that allows Hawking to select his words from menus on a screen by pressing a switch, which can be operated by head or eye movement. With his wheelchair fitted with a laptop, Equalizer and a speech synthesizer made by Speech Plus that varies intonation, Hawking is able to speak or write about 15 words a minute through an infrared sensor mounted on a headpiece that detects motion in his cheek. "The only trouble is that it gives me an American accent," he quips.

MYSTERIES OF THE UNIVERSE

Hawking's early research focused on using Einstein's Theory of Relativity to explore the creation and extreme conditions of black holes. Coupling for the first time General Relativity (gravity) with Quantum Mechanics (the physical laws that govern atoms), Hawking and his Ph.D. adviser Roger Penrose proved the radical theory that black holes aren't completely black, but rather that they emit radiation. As massive stars shrink, they become black holes radiating substance into space, ending in an explosion and an eventual, inevitable disappearance.

Now referred to as Hawking Radiation, this theory combines the concept of "space-time singularities"—events during which the laws of physics appear to collapse—the thermodynamics of black holes, and highly complex mathematics. Hawking's research is one of the most significant contributions to the Grand Unified Theory through which physicists use a single equation to explain all physical matter in the universe.

This revolutionary research led Hawking and Penrose to equally radical discoveries about the Big Bang Theory implying that the laws of science entirely determined the cosmos' creation and will predict its end. On his Web site, Hawking elaborates in a lecture titled "The Beginning of Time": "…The universe has not existed forever. Rather, the universe, and time itself, had a beginning in the Big Bang, about 15 billion years ago. This is probably the most remarkable discovery of modern cosmology."

Hawking and Penrose predicted that time begins and ends within a black hole or "singularity," at which point Einstein's Theory of Relativity breaks down—and can no longer be used to predict what might emerge from the singularity. The universe, he theorizes, has no edge or boundary, but exists in a unique state of constant transition with one universe changing into another. Hawking's current research focuses on the new idea of imaginary time (measuring time in imaginary numbers), further defining space and time's intricacies and infinities.

His life's research and writings have greatly broadened modern knowledge of how the universe is expanding, how galaxies developed and the role black holes played in their creation—and will play in their extinction. Through it all, Hawking has never stopped dreaming about traveling through the very galaxy he's spent a lifetime quantifying.

On April 26, 2007, he took a short flight—and a small step toward that goal—aboard the Zero Gravity Corp.'s modified Boeing 727 jet that simulates the experience of weightlessness. During the flight from NASA's Kennedy Space Center in Florida, Hawking went weightless for about 25 seconds at a time—about four minutes total—during the jet's eight parabolic dives from 32,000 feet to 24,000 feet. Hawking hopes to be part of Virgin Galactic's suborbital space tours, which the company plans to begin in 2009.

"I think the human race doesn't have a future if it doesn't go into space," Hawking told the BBC News Web site prior to his flight. "I also want to show," he said in an e-mail interview with *The New York Times*, "that people need not be limited by physical handicaps as long as they are not disabled in spirit."

Hawking has helped to explain the mysteries of the universe to millions. But it is his perseverance in the face of daunting physical limitations that teaches the real lesson of life. "My expectations were reduced to zero when I was 21," he says. "Everything since then has been a bonus."

THE TRANSFER OF HONG KONG

How the tiny island of Hong Kong became a pawn in the power struggles of history

By Eugene Finerman

At midnight, July 1, 1997, in an elaborate pageant that marked the end of a historical epic, the sovereignty of Hong Kong was transferred from Great Britain to China. Concluding their 156-year rule of the colony, the British departed with pomp and ceremony: splendid uniforms, regimental bands and formal banquets. But beyond the spectacle was the unique agreement between two incongruous countries—the monarchy and the communist—and the peaceful, generous compromise they had reached in determining Hong Kong's future. Britain's Prince Charles and China's President Jiang Zemin stood on the same dais, the personifications of their countries in this historical act: the old empire was giving ground to the new world power.

Ironically, that was how the history of Hong Kong began. In the early 19th century, however, China was the old empire and Britain the new world power. China had become the relic of a great nation. When Europe was stirring from the Middle Ages, China's might, culture and wealth were unmatched. In the 15th century an emperor had disbanded the Chinese navy. His arrogance would become China's policy for the next four centuries. As China succumbed to complacency and stagnation, European empires arose, powered by scientific advances and an Industrial Revolution. Foremost of these new powers was Great Britain.

In the 18th century, British ships were plying China's shores, eager to trade for silk, porcelain and especially tea. However, China was selling but not buying. The imperial government regulated commerce, restricting European imports into the empire. Furthermore, China would only accept silver bullion as legal payment. This trade deficit with China—and the drain on bullion—was undermining Britain's economy. British merchants, however, eventually found a way to reverse the trade imbalance: selling opium.


Hong Kong became a bustling city of almost 6.5 million and one of the world's great financial centers under Britain's 156-year rule.

Smoking opium was a vice long known to China, and the opium poppy was easily cultivated in British-controlled India. A ready supply of the drug increased the Chinese demand for it. By the 1830s, the opium traffic had grown to 1,400 tons a year from 75 tons annually in the 1770s. Now, China was running a trade imbalance with Britain; worse, an estimated 4 million Chinese men were opium addicts. Confronted with this crisis, China sought to stop the opium trade.

In 1839 an imperial viceroy confiscated 1,200 tons of opium from British merchants. He even wrote an open letter to Queen Victoria, criticizing her for permitting "her barbarians to poison the Chinese people" with opium. For the sake of free trade, sovereignty and royal dignity, Britain went to war with China.

Although China had a population of more than 400 million, it still proved hopelessly outmatched by the British. Britain had the best navy in the world equipped with modern weapons while China had only antiquated arms. This so-called Opium War lasted from 1839 until 1842. With their unchallenged mobility and unmatched firepower, the British were free to blockade, raid and conquer at their leisure.

In 1841, the British seized a large island a mile off the Southern coast of China. With its deep-sea anchorage, this island—Hong Kong—made an excellent base. When the war ended with the Treaty of Nanking in 1842, vanquished China opened its markets to British goods, paid for the confiscated opium and ceded Hong Kong Island to Britain.

Hong Kong, meaning "fragrant harbor" in the Cantonese dialect, is 29 square miles. What had been a Chinese fishing community now became the base of the British Empire. Ships docked there, warehouses and trading offices were built, and soon the island was a thriving international market. Administrators, traders and officers settled with their families, and Hong Kong became a teeming city. The island could not contain this urban growth, and China was coerced into giving Britain more land. In 1860, Hong Kong's boundaries increased by another 6 square miles, but the burgeoning British colony soon required more.

So, on July 1, 1898, China "agreed" to lease 368 square miles of land across the straits from Hong Kong. With the acquisition of the New Territories, the colony's size increased tenfold. Unlike its earlier concessions of land, however, China had not ceded the territory in perpetuity. The lease was only for 99 years, after which the land would revert to Chinese sovereignty. At the time, 99 years seemed forever. Neither the Chinese mandarins nor the Victorian diplomats could have imagined the tumult of the next century.

The incompetent imperial government was overthrown in 1911, but the succeeding republic proved just as weak and inept. It could not suppress rebellions by vying warlords or defend itself against a communist revolution. Yet, while China was in chaos or under tyranny, Hong Kong continued to flourish, its population further swelled by refugees. The citadel of imperialism became the haven for freedom.

But in that same 99-year period, Britain had declined. Most of its empire was gone, and Hong Kong was the relic of a bygone glory. Furthermore, British sovereignty over the New Territories—90 percent of Hong Kong's area—would expire on July 1, 1997. Britain did not have the legal right or the might to deny China the restoration of that land. Nor was Britain prepared to take in millions of refugees from Hong Kong who might flee communist rule. Britain had no alternative but to try to negotiate a peaceful accommodation with China.

Fortunately, that was China's intention as well. China aspired to have all of Hong Kong, not just 90 percent.

Chinese and British leaders gathered for the official transfer of power of Hong Kong held on July 1, 1997.

Diplomacy and patience could achieve it. The pragmatic among the communist leadership had long appreciated Hong Kong as their window and market to the world. With so much to gain, Beijing was willing to dispense with Marxist doctrines on economy and sociology. In 1984, China's leader Deng Xiaoping proposed this idea as the basis for negotiations: "One country, two systems." He meant that even under Chinese rule, Hong Kong could maintain its capitalist economics and lifestyle.

Using that concept as their basis, China and Britain reached an agreement on Sept. 27, 1984. All of Hong Kong would be "restored" to China on July 1, 1997. However, Hong Kong would maintain its autonomy for 50 years. As a "Special Administrative Region," Hong Kong would have self-rule in domestic and economic matters. China pledged, "The current social and economic systems in Hong Kong will remain unchanged, and so will the lifestyle … Hong Kong will retain the status of an international financial center, and its markets will continue …." China would not even tax its flourishing financial enclave. The very boundaries of Hong Kong would be preserved. Visas would be required for any travel between the People's Republic and Hong Kong. Only in military and diplomatic matters would Beijing assert authority. In summary, Hong Kong would remain an autonomous colony, but now China's instead of Britain's.

This declaration, with its long list of generous and reassuring concessions, did contain one sobering statement. Hong Kong's autonomy was guaranteed for only 50 years. As of 2047, it would lose its independence and be fully integrated into the mainland, subject to the policies and social system of that future China.

The agreement had been reached, the timetable set, and Hong Kong went about its business. There really was nothing else to do but accept the inevitable. Some 50,000 of Hong Kong's leading figures and their families did receive British citizenship—for past services and future "contingencies." But for most of the colony's now 6 million residents, so long as their lives and businesses were unaffected, the transfer of power was a diplomatic abstraction.

Almost 13 years later, on July 1, 1997, that diplomatic abstraction became a historical reality. Prince Charles represented the Royal Family and, indeed, British history on the last day of British rule. However, the Chinese leadership—President Zemin and Prime Minister Li Peng—chose only to attend the official transfer of power; they did not wish to share in the nostalgia for the British Empire. On a dais, where the official ceremony took place, stood two flagpoles. One flew Britain's Union Jack; the other awaited its new flag.

At midnight, as a British military band played—for the last time in Hong Kong—"God Save the Queen," the Union Jack was lowered from its flagstaff. Then, as the Chinese national anthem played, the flag of China was raised.

Throughout Hong Kong, the British symbols and royal regalia were removed from public buildings. A new, Beijing-approved administrator took over from the British governor. While British armed forces were departing with marching bands, Chinese armed forces quietly occupied the territory's military bases. And Hong Kong's markets were still open for business.

Eleven years have now passed, and Hong Kong maintains its unique, perhaps precarious, autonomy. In 2047, that autonomy will expire; but who can say what the prevailing policies of China will be then? The leadership of China actually seems more intent on emulating the capitalism of Hong Kong. The future China may well be what Hong Kong is today. However, that chapter of history waits to be written.


Beaufort Sea
Barrow
Fort Yukon
Nome
Fairbanks
CANADA
Anchorage
Cordova
Bering Sea
Gulf of Alaska
Unalaska
Bear Lake
Prince Rupert
Kamloops
Vancouver
Seattle
Portland
Oakland
San Francisco
Los Angeles
San Diego
North Pacific Ocean

Alaskan Adventure

The city of Anchorage, Alaska, offers both the urban traveler and the wilderness explorer easy access to a wealth of entertainment

BY GREG RIENZI

Anchorage, Alaska, has been transformed into a visitor's paradise during the past few decades, offering the best of both worlds: wilderness and city life.

The increasingly cosmopolitan city features a thriving cultural scene, a new shopping district, a variety of restaurants, an outstanding transportation system and a relatively mild climate for such a northern destination. Perhaps the best part of Anchorage, however, remains the same—the view.

On a clear day in Anchorage, you can see the postcard version of Alaska.

The city is engulfed with natural splendor. Depending on where you look, you can see snowcapped mountains, glaciers, forests, tundra or the ocean. Anchorage is literally perched on the edge of a vast wilderness. To highlight that feature, the city's tourism board in 2007 adopted the slogan "Big Wild Life." The city itself resembles a sprawling suburb, but a half-million acres of forest lie just outside its borders.

The outdoor enthusiast should certainly add Anchorage to his or her top wilderness destination lists. Whether you enjoy ice climbing, kayaking, hiking or fishing, you will never become bored in Anchorage's expansive backyard.

The aurora borealis can be seen all year in Alaska, but are best viewed from late August to early April.

Roughly the size of the state of Delaware, Anchorage stretches from Portage Glacier to Eklutna, encompassing 1,955 square miles. It sits at the base of the Chugach Mountains along the coast of Cook Inlet located in the south-central portion of the state.

You can see the Chugach, Kenai, Talkeetna, Tordrillo, Aleutian and Alaska mountain ranges from Anchorage, and perhaps Alaska's most famous mountain attraction, Mount McKinley, the tallest mountain in North America (20,320 feet/6,193.6 meters). If you're lucky, you can also catch a glimpse of the aurora borealis (the northern lights) from your hotel room. Although the northern lights can be seen all year, they generally need a dark Alaskan night sky (during late August through early April) to appear the most vivid.

Shelly Wozniak, public relations manager for the Anchorage Convention and Visitors Bureau, says a visitor can be hiking in a state park one minute and in a short time be back for a massage and dinner in the city. The convenience makes a vacation action packed in Anchorage, but it's the scenery that makes it unforgettable.

"Many visitors don't quite expect the mammoth scale of the beauty here. The mountains look down on the city, which is graded to the ocean. It really is stunning," Wozniak says. "Yet downtown Anchorage is very metropolitan with theaters, a night life and culture. Everything a big city should have."

Metropolitan, yes, but that is not to say the wildlife stays on its side of the fence. Anchorage is home to nearly 2,000 moose that munch on the city's trees. (Last year, one ate too many fermented crab apples and inherited the name "Buzzwinkle.") A few black bear also have been known to wander into town.

On the ocean side, blue whales migrate to the waters outside of Anchorage in July and early August. The city is also a haven for bird-watchers, especially those seeking migratory waterfowl.

The area's early settlers were American Indian tribes and then later, in 1784, Russian explorers established themselves in southern Alaska. The English explorer Capt. James Cook is credited with first exploring the Anchorage area in 1778 during his third voyage of discovery.

Relatively young, even by North American standards, the city's roots trace back to 1915, when it was a tent camp for some 200 Alaskan Railroad workers. With the discovery of oil in nearby Prudhoe Bay and the construction of the Trans-Alaska Pipeline in the mid-1970s, the city of Anchorage evolved rapidly. The oil industry still ranks among the top industries in the state (Alaska produces 14 percent of the United States' crude oil, according to the Energy Information Administration), along with fishing and logging. Anchorage claims a large cargo port, and the U.S. military has a strong presence there, with two major bases.

Today, Anchorage has more than 277,000 residents—an amazing 42 percent of the state's population—making it Alaska's largest city.

Though nature gets top billing here, the downtown area does have its own beauty. During the summer, dazzling displays of flowers adorn homes and storefronts, and "Wild Salmon on

How Cold is It?

Alaska is divided into five distinct regions with climates that can vary somewhat dramatically. Travel to the Far North and you'll discover an arctic climate with long, cold winters. The north is dry and windy with average annual snowfall of 30 to 35 inches and an average annual temperature of 10 degrees Fahrenheit (-12 degrees Celsius). Average high in the summer is a relatively balmy 47 degrees F (8 degrees C).

The Interior region, which covers the largest land mass, is considered a continental climate and temperatures vary greatly. The summer months see highs in the 70s F (up to mid-20s C), compared to lows averaging -20 to -25 F (-29 to -31C) come January. The area gets about 65 inches of annual snowfall.

The Southwest, Southcentral and Southeast (also known as the Inside Passage) regions all have maritime climates, meaning temperatures won't get too high in the summer or too low in the winter. Although more windy than other areas of the state, the average annual temperatures are above freezing. These areas also see the most precipitation. Valdez, a town east of Anchorage, boasts more than 300 inches of snowfall annually.

Weather conditions on the state's west coast, or Bering Sea Coast, vary depending on sea ice cover, the presence of which substantially reduces the Bering's maritime influence and flood conditions.

FIGURES COURTESY OF THE ALASKA CLIMATE RESEARCH CENTER.

Anchorage Facts

The people: Anchorage prides itself on its newfound diversity. A once predominantly white and American Indian population now features a growing number of Hispanic people, Pacific Islanders and those of every creed and color. A telltale sign of the city's melting pot status are the amazing 95 different languages spoken in the school system.

When to go: May and September bookend the peak tourism season. The summer months boast warm, bright and beautiful weather. Daylight lasts nearly all day in June and most of July, with highs in the 70s and even low 80s (Fahrenheit). Dubbed the city of flowers, Anchorage also blooms with color during this time.

For the true northern experience, locals will say go in the dead of winter, December and January. It's cold (average 20 degrees Fahrenheit) and very dark, but the skiing and snow-covered landscapes are spectacular.

If you want to catch the start of the Iditarod dogsled race, however, you have to be in town in early March.

What to see and do: Take a walk or rent a bike. Anchorage features 128 miles of paved trails and 300 miles of unpaved and wilderness trails. Depending on when you go, you can pull out your skis and just take in the scenery. Hit the trailheads just outside of town to ski into the backcountry or hike just a few miles to be completely absorbed by the Alaskan wild.

To learn about Alaska's indigenous people, visit the Alaska Native Heritage Center, a renowned cultural museum that reveals the rich heritage of the area's 11 cultural groups. The Anchorage Museum, the largest museum in the state, offers exhibits and programs to learn about the culture and science of the north, from the pioneer days to its cosmopolitan present.

Shoppers will find that Anchorage has an eclectic range of galleries, art shops and craft bazaars. On weekends from May to September, stroll down to the Anchorage Market and Festival where local farmers and artisans sell their goods.

As one would guess, many visitors seek out the mountains and surrounding terrain to ski, snowboard and snowmobile. Two popular spots are the nearby Hilltop Ski Area and the Alyeska Resort, located 45 minutes south of the city. Chugach State Park offers infinite ice climbing options for those of all skills and fear tolerances.

In the warmer months, fish or raft on the nearby Eagle River, which weaves through quiet primeval forests, or on Ship Creek River, located in the heart of downtown. Many locals head there right from work to slip on some hip waders and land 40-pound king salmon.

Want to see it all? Go "flightseeing." Helicopter and plane tours provide stunning views of gorges, alpine glaciers and glacial amphitheaters. Afraid of heights? Take a boat tour. Two good bets are the Prince William Sound glacier cruises and the blue whale watching tours in the summer.

Where to eat and drink: The restaurant scene in Anchorage is getting better all the time.

One standout is Orso Ristorante, a fine place to sample Alaskan seafood like king salmon and prawns that are paired beautifully with local vegetables. Jen's Restaurant, located in midtown, is a lively place with fine service and an extensive menu.

For an intimate dining experience, Sacks Café specializes in healthy and adventurous fusion cuisine. The meat and seafood will sound familiar, but where else will you find Alaskan king crab with grilled pineapple and banana basil red coconut curry?

A touch of elegant dining can be had at the Marx Bros. Café, which has a vast wine list and a trim but star-studded menu.

Anchorage has become a beer capital, and the city contains several brew houses and breweries. Snow Goose beers should hit the spot.

Don't leave Anchorage without trying a reindeer hot dog. Yes, it's actually reindeer meat. The dogs look more like bratwurst and are typically served on a hoagie roll with caramelized onions and sauerkraut or relish.

Where to stay: The Hotel Captain Cook claims to be Anchorage's only true luxury hotel. It just might be. The Captain Cook, named after the famous explorer Capt. James Cook, features an athletic club, three restaurants and a coffee and wine bar. The hotel's four-star Crow's Nest restaurant offers panoramic views of Cook Inlet, the downtown area and the Chugach Mountains.

If a room with a view is what you are looking for, check into the Inlet Tower Hotel and its sleek, modern accommodations.

Go back in time and book a stay at the historic Anchorage Hotel. Opened in 1916, the hotel has been elegantly restored and furnished. It's one of the oldest properties in town, and also the most haunted. Some say the spirits from the gold rush era still reside there.

The area's best bed and breakfast inns are located just south of Anchorage in the town of Indian, Alaska. Many offer great views of mountain scenery and Cook Inlet.

Ride the Rails into the Wilderness

PHOTO COURTESY OF ALASKA RAILROAD CORPORATION.

You can't only visit Anchorage. At least, you shouldn't. Alaska's many wild wonders need to be explored and what more romantic way to reach them than by rail?

Whether it's just a day trip, or an extended tour, the Alaska Railroad provides the best seat in the house to see mountains, forests, glaciers, rivers, and—if you pay attention—moose, bear, eagles and the occasional fox.

The 500-mile railway system heads north to Fairbanks, south to Seward and stops at a host of destinations in between. Sit back, gaze out the window and wait for the gentle lurch to whisk you through scenic wild and panoramic vistas.

Each train features dining areas, comfortable seating, domed cars, knowledgeable tour guides and even gift shops. The Alaska Railroad has three main types of service: standard (adventure class), private dome and the new "GoldStar," which is offered exclusively on the Denali Star and Coastal Classic train lines.

Amenities and cost vary. The standard service places you in a single-level car where fellow "adventure class" passengers shuffle in and out of the attached dome and dining cars. Private dome service will get you a seat in a restored "Budd" coach from the 1950s and guaranteed dome access. Introduced in 2006, the two-level GoldStar railcars feature large dome windows, upscale dining service and a private outdoor viewing deck. Seats go fast, so book ahead.

The popular Denali Star train line stops at Talkeetna, Denali National Park and Fairbanks. Visitors flock to Talkeetna, once the supply center for a gold mining district, to enjoy fishing, rafting and scouting the local arts scene. Talkeetna is also a hub for "flightseeing" tours over Denali, the 6 million-acre park that is home to color-brushed tundra and North America's highest mountain, the 20,320-foot-tall Mount McKinley. Denali's tenants include grizzly bear, moose, wolves, Dall sheep and caribou.

Hop back on the train to reach historic Fairbanks, the northern line's final stop. Once there, take a ride on the *Riverboat Discovery*, a sternwheeler boat that coasts along the Chena and Tanana rivers. Or strike it rich at the El Dorado Gold Mine where you can learn about old and new mining methods, and pan for your own.

In the winter (late September to early May), take the Aurora Winter Train, a 350-mile wilderness run between Anchorage and Fairbanks that goes past snow-blanketed landscapes, Denali and other inspiring scenery. Ride north on Saturday with a return trip on Sunday. The Aurora is a flag-stop train, meaning you can wave it down anywhere.

In any season, buy a ticket for the Coastal Classic, which travels south to the small coastal town of Seward, gateway to Kenai Fjords National Park. The park's crystal green waters contain otters, sea lions, harbor seals, humpback whales and other marine animals that swim in the shadow of sheer glacier cliffs.

Seward, located about 125 miles south of Anchorage, sits at the head of Resurrection Bay on the Kenai Peninsula. The town dates back to the early 1900s and has only 3,000 year-round residents. The population swells considerably during the summer, when thousands come to visit the bustling harbor and historical downtown district filled with quaint shops, art galleries and seafood restaurants. The town is famous for its Fourth of July celebration that features a grueling footrace to the top of Mount Marathon. Seward also is home to the Alaska Sealife Center, a non-profit marine science facility that has extensive seal and salmon exhibits.

Want to yell "mush" and mean it? Go to Mitch Seavey's Iditarod Racing Kennel. The kennel lets you dress in racing gear and mush two miles on an Iditarod sled.

Seward also offers great charter salmon fishing, kayak experiences and whale cruises.

The railroad's Coastal Classic line stops at Girdwood and the Spencer Glacier, where no roads lead. Once there, combine a scenic rail trip with a gentle float tour of Chugach National Forest Park to see iceberg-choked Spencer Lake.

Tara Stevens, a spokeswoman for the Alaska tourism agency, says that riding the rails is a must.

"The scenery is just fantastic," Stevens says. "It's very old-fashioned, fun and unique. I love it. You sit there in total comfort while a guide points out glaciers, mountains and wildlife. All you have to do is get your camera ready."

Mount McKinley reflected in a tundra pond, in Denali National Park.

Parade" sculptures appear along city blocks. Thousands of lights decorate downtown in the winter.

The city also loves to party and hosts many annual festivals. Each year, Anchorage famously kicks off the Iditarod, the 1,150-mile trail dogsled race beginning downtown and ending in Nome, Alaska. In 2007, the city adopted a new annual tradition, the Running of the Reindeer. A dozen reindeer are set loose downtown in late February to "safely" chase down participants. Nearly 1,000 people took part in the inaugural event, which is part of the city's winter festival, called Fur Rendezvous.

In 2009, Alaska turns 50. To celebrate the signing of the Declaration of Statehood, Anchorage will host a Grand Ball on Jan. 3, 2009. "It will be a huge celebration," Wozniak says. "The mother of all shows with national headlining acts, parades, a festival and bonfires."

The downtown area's newest draw is the "SoNo" district, a homage to New York's SoHo area that translates to south of Nordstrom. This part of town contains an array of boutique shops and hosts an annual fashion week that culminates with a Paris- and Milan-inspired fashion show.

Downtown has become a "cool" area, Wozniak says, and has never been livelier. Truly cool sights not to miss in Anchorage are the nearly 60 glaciers that reside within 50 miles of the city, with Portage Glacier being the most popular.

Dorn Van Dommelen, chair and professor of geography/environmental studies at the University of Alaska, Anchorage, says that the city was literally shaped by glaciers. "It's a glacial landscape bonanza," says Van Dommelen, who recommends seeing one of the icy cliffs close up, but notes the trip involves a drive.

But he says it's worth going the extra mile. "There are vast tracts of wilderness out there that 99 percent of visitors to Alaska will never see," he says. "It's fascinating to see such a very North American city in the middle of an area that is so unsettled, or very sparsely settled by its native people."

Anchorage is a versatile destination, so live it up in the city, but be sure to get out of town.

Looks Can Be Deceiving

Don't flirt with danger—make sure products are compatible before pressing them into service

By Phil Kimble

At a waste-to-energy facility, part of the operating procedure is to periodically dislodge the buildup of ash that collects on the internal walls of the scrubbers (air cleaners) so that it can be removed for proper disposal. This is done to maintain efficiency of the scrubbers and to prevent the ash from being released into the atmosphere.

At one such facility, the method of dislodging the ash was with a sudden release of compressed air. The "boom" from the air release vibrated the scrubber, making the ash release from the walls and fall into a hopper.

Occasionally, the ash would partially plug up the valve, and, when the valve was opened to begin the process, there was more of a small "pop" rather than the large "boom" that was needed to shake the ash loose. When this happened, the air piping had to be dismantled, and the valve removed and cleaned. Then, everything had to be screwed and bolted back together. This process was quite time-consuming.

The site foreman decided that the valve cleaning process needed to be done faster but really wasn't sure how to go about it. One day, while looking for something in the storeroom he shared with the sanitation department, he saw a hose with fittings. Both ends had handles that allowed the couplings to be connected or disconnected quickly. The "light bulb" above his head lit up. He went to the storeroom manager and asked him to order a hose exactly like the one he had seen. Knowing he would need other parts to make this work, he began looking through catalogs in the storeroom office. He found what he was looking for! He ordered the plastic parts because they were half the price of the metal ones and looked "exactly" the same.

The next time the scrubber valve plugged, the site foreman sent one of his maintenance men up to the platform to install the new hose and fittings. All the piping was removed, and the plastic adapters were screwed into place where the flanges had been. But when it was time to install the hose, the arms on the couplings just would not close. Luckily a little persuasion with a ball-peen hammer did the trick. After opening the valve on the air tank and charging the hose, he walked across the platform to the scrubber valve. Before he could open the valve, the hose blew off the plastic fitting connected to it. The hose whipped, striking him in the mouth, breaking his front teeth, and knocking him out.

Even when two couplings look exactly alike they may not work exactly the same. For example, metallic cam and groove couplings are machined to a standard (Mil-C-27487) that ensures interchangeability between manufacturers. Non-metallic cam and groove couplings are made to individual manufacturer's standards, but do not interchange with their metallic counterparts. In addition, cam and groove couplings are designed for use with liquids.

Let's "keep it safe" by fully researching our selections. Even if products appear to be the same, call the distributor or the manufacturer to make sure they are compatible. Looks can be deceiving … and dangerous.

On the Trail

Dixon Valve & Coupling wins the 9th Annual *Progressive Distributor* Manufacturer Product Training Award

By Rich Vurva

In recognition of its program to educate distributors and end-users, Dixon Valve & Coupling Co. was named winner of *Progressive Distributor* magazine's 2008 Manufacturer Product Training Award.

The focus of Dixon's education efforts is its 35-foot Mobile Connections trailers, which tour the United States serving as mobile training centers. The trailers bring product applications knowledge and safety training direct to distributors and end-user sites.

The trailers are equipped with audio-video capabilities, an onboard computer, a product display center that presents the full line of Dixon products and components and a 42-inch plasma screen TV for running videos and PowerPoint training modules. The trailers have been driven hundreds of thousands of miles to take training about fluid handling and transport systems to distributors and their customers.

John House of hose and accessories distributor Lewis-Goetz of Baton Rouge, La., has arranged to take the trailer to several petrochemical plants in his market to educate maintenance and operations personnel on safety practices. "They have done an outstanding job on working with people at plant sites on safety, and on the handling of hoses," he says. "They do the industry a service on handling hoses safely."

Since being introduced in 2004, the trailers have made stops at mining facilities, steel mills, dairies and food processing plants. The company schedules between 75 and 100 presentations each year. In addition to the Mobile Connections trailers, Dixon's educational efforts are augmented by two other programs: Dixon's Hose Assembly Safety Survey program and Hose Coupling Workshops.

Safety Survey

During Safety Surveys, Dixon visits an end-user site with a local distributor to perform a visual inspection of hose assemblies and related accessories. They take photographs of damaged or misapplied hose couplings or potentially unsafe practices, then prepare a formal report with recommendations for corrective actions. Trainers incorporate examples from safety surveys into training demonstrations.

"We'll go through a slide presentation of things we've seen over the years by conducting our safety program at end-users' [facilities]. Then we allow them to give us feedback on specific things that might pertain to their plant," says Scott Jones, Dixon's vice president of sales and marketing. Phil Kimble, a Dixon product training specialist who spends two weeks each month on the road with a Mobile Connections trailer, says end-users often underestimate the potential danger associated with industrial hose. "People will back away from the hydraulic hose at the same time they're stepping on, kicking and disrespecting the industrial hose, which has a whole lot more wallop if something bad happens," he says.

Hose Coupling Workshops

Dixon conducts Hose Coupling Workshops at its Maryland factory and other sites around the United States. The distributor-only training sessions are one-day workshops that incorporate classroom instruction and hands-on experience in testing and assembling different hose assemblies.

"In the morning classroom instruction, we talk about what it takes to properly select and install couplings," says Kimble. The afternoon session enables attendees to experiment with various clamping devices, test hose pressure and assemble different hose and coupling configurations.

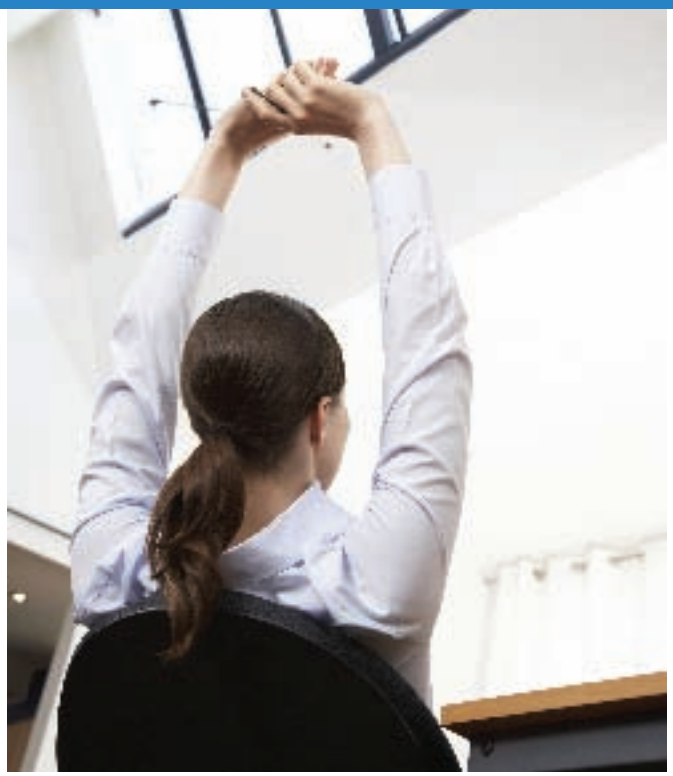
Kimble says training efforts are making a difference. They not only help end-user customers reduce recordable incidents that result in injuries and lost work time, but can also help companies lower their workers' compensation costs and product liability claims. "We've got a lot of distributors now that are doing a great job getting into these plants, talking to the right people, raising the awareness from a safety aspect. It has helped us tremendously," he says.

This article originally appeared in an expanded version in the July/August issue of Progressive Distributor *magazine. Reprinted by permission.*

Getting Fit at the Office

It's hard to find the time to exercise, so do some of your workout … at work

By Virginia Hughes



More than half of all American adults report spending less than 30 minutes a day on moderate exercise, including walking, gardening, vacuuming or anything else that causes small increases in heart rate, according to the Centers for Disease Control and Prevention. The same sorry trends hold true in most of the First World, despite the fact that most everyone has heard of the benefits of exercise: increased energy, focus and flexibility and a decreased risk of heart disease and obesity. So why are the rates so low?

"Lack of time is consistently the No. 1 reason people cite for not exercising on a regular basis," says Cedric Bryant, chief science officer at the American Council on Exercise (ACE). "And that time is the time that we spend at the workplace."

But being confined to an office job is no excuse for inactivity. "Exercise is like loose change: a few nickels here, a few dimes there—it all adds up to real money at the end of the day," Bryant says. Scientific research has shown that stretching or mild cardiovascular sessions of even five or 10 minutes, when done throughout the day, add up to increased range of motion, better balance and release of muscle tension.

To help the desk-bound work fitness into their daily routine, *BOSS* talked to some exercise experts to find out the best ways to exercise at your desk.

A Few Suggested Stretches

Neck:
Turn your neck slowly to the left as far as you can and hold the stretch. Then repeat on the right side.

Follow on each side with a lateral stretch: slowly move your ear to your shoulder and hold.

Shoulders:
Place your left palm flat against your middle back. Reach your right arm over your right shoulder and stretch until you touch your left hand. Repeat on opposite side.

Hamstrings:
Sit in your office chair with your right leg bent and foot on the floor and the left leg stretched out straight ahead of you, toes pointing upward. Rest your right arm on your right knee. With your left arm, reach for your left toes and hold stretch.

Wrists:
Standing at your desk, place your hands palm down on its surface. Lean forward over hands and hold stretch.

Stretch your right arm out straight in front of you, with fingers extended upward. Use your left hand to pull your fingers toward your body. Repeat for the left wrist.

Stretch

"Unfortunately, most people look at fitness as only aerobic conditioning and strength training," says New York University physical therapy professor Marilyn Moffat. "But flexibility is a parameter of fitness that should be considered, too."

As we age, the connective tissue in our muscles becomes less elastic, limiting our normal range of motion. "I see more and more older bodies that are tight tight tight," Moffat says. "They're sorry that they didn't maintain the normal range of motion within the joints during their younger years."

There are dozens of stretches that can be done—standing or sitting—to decrease muscle stiffness. (See sidebar.) Each should be held for a minimum of 30 seconds and a maximum of 60 seconds, according to Moffat.

All of these stretches help to relax your posture and relieve the neck and back strain that most people experience when they're stuck at a computer all day, Bryant says.

Tone and Balance

Building muscle tone doesn't require a bench press. Moffat suggests keeping small weights under your desk, and lifting

them with your arms or legs every time you make a phone call. "As long as you make a maximum effort, it doesn't have to take a long time. You don't have to do three reps of 15," she says. (See sidebar for more toning tips.)

Move!

Experts say clever office workers can fit some aerobic conditioning into the day, too—without a treadmill.

"Even if you're trapped in an office eight, 12, 15 hours a day—the important thing to remember is to choose the most active way of doing anything," says Joan Price, author of *The Anytime, Anywhere Exercise Book*. She says that standing, because of the leg, back and abdominal muscles used, burns 25 percent more calories than sitting. Instead of sitting down during phone calls, Price suggests buying a telephone headset and walking around the room.

"Take fitness breaks whenever you have to wait for something," she adds, like when waiting for a phone call or a report to print. Coffee breaks provide another great opportunity for exercise. "Instead of caffeine and sugar, why not head out the door and powerwalk the hallways?" Price says.

Moffat adds that hallway walks can be times for stretching, too. "You can do neck turns to challenge your balance, or walk on your toes," she says.

Wear Jeans

A few years ago, ACE commissioned a study at the University of Wisconsin that explored whether someone's activity changed with their outfit. Strapping ankle pedometers to 53 office workers, the researchers found that when their subjects wore casual clothing (on their weekly "Casual Day,") the number of steps they took throughout the day was 8 percent higher than when they wore uncomfortable business attire.

Most people are shocked to learn that relatively small changes can improve their health, says Bryant. "Most people think that if you don't have 45 minutes, why even bother? That's why we have to get the message out there: every minute you have is going to be beneficial."

Some Suggested Toning Exercises (15-20 reps each)

One-Legged Squats
Stand up straight. Raise your right leg off the floor. Bend your left leg while lowering your body slowly into a squat. Hold for 30 seconds. Repeat on other leg.

Desk Push-Ups
Stand in front of your desk and put your hands down on the surface. Take a big step backward with both feet and then do slow push-ups against the desk.

Ab Pulls
While sitting down or standing up, pull your abdominal muscles in and up—as if they were being pushed toward your spine and then up your back. Breathe normally.

Coming into Focus

The story of eyeglasses, from scholarly orb to fashionable necessity, isn't always crystal clear

By Lindsay Roylance

Imagine if as you got older and had to hold this magazine farther and farther from your eyes, there was nothing you could do to correct the problem. Eventually, you would have to rely on family or friends to read aloud for you as your sight continued to decline in old age.

In ancient cultures, there were no spectacles to assist wise men whose eyesight might be failing. Marcus Tullius Cicero (106-43 B.C.), one of Rome's greatest statesmen, orators and philosophers, wrote to his friend Atticus-Cicero, complaining that his old age forced him to have his slaves read aloud to him as he could no longer read for himself.

A solution to Marcus Cicero's problem was not discovered for more than 1,000 years.

It was medieval Venetian glass blowers who applied the mathematical research conducted by the "father of modern optics," Arabian physicist Abu Ali Hasan Ibn al-Haitham, known in the West as Alhazen, to create reading stones. With a flat surface and a convex curved top, the clear stones magnified text as they were dragged over it, allowing European monks to pore over manuscripts as they aged and their eyesight failed.

Evidence of spectacles—a pair of hand-ground quartz lenses encased in metal, bone or leather whose handles were joined in an inverted "V"—didn't appear until 1289, when a man named di Popozo wrote from Florence, "I am so debilitated by age that without the glasses known as spectacles, I would no longer be able to read or write."

Only the wealthy and scholars had access to books, so over the next century eyeglasses were a mark of status, as well as a symbol of intelligence. Then, German Johannes Gutenberg's invention of the printing press around 1450 and the spread of books fueled demand all over Europe.

Despite advances in lens technology including German Cardinal Nicolas de Cusa's 15th-century concave lenses allowing the "nearsighted" to see far away, the mechanical design of glasses changed little in 300 years. Finally, during the 17th century, Spanish craftsmen took advantage of human anatomy by looping silk ribbons around the ears to hold lenses in place.

Demand—and affordability—increased with the launch of the first newspaper, *The London Gazette*, in 1665. Street peddlers with baskets of eyeglasses for sale were a common sight in most European cities.

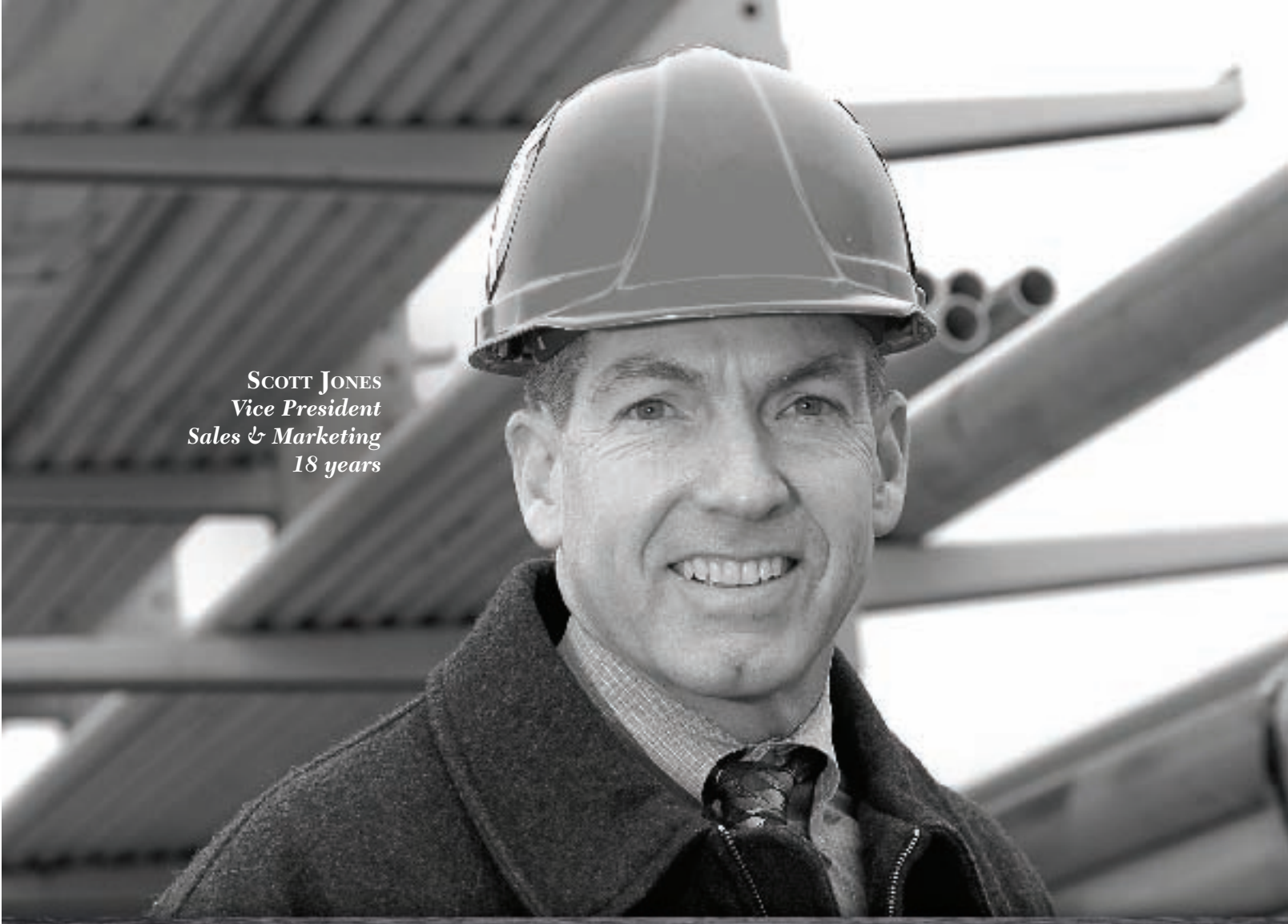
In 1730, glasses with rigid arms that clung tight above the ears appeared; soon after came longer, double-hinged temples for greater comfort and to accommodate the wigs of the Colonial era.

There is evidence to suggest that in the 1780s, Ben Franklin invented bifocals—a concave lens on the top half for distance and a convex one on the bottom for reading—so he could stop switching between two pairs. The invention, however, was not documented until 1784 when Franklin himself wrote a letter describing his "double spectacles." Although U.S. history credits Franklin as the inventor, skeptics claim that British opticians invented bifocal lenses 20 years earlier.

The next century was a time of eyeglass refinement, including the development of lenses for astigmatism (an irregularly shaped cornea) by Englishman Sir George Airy in 1825 and the first pin-in-slot side arms adjustable for length.

Then, in the 20th century, advances in plastics catapulted the popularity of eyeglasses—and introduced sunglasses—as a personal fashion statement. In 1958, France's Essilor International unveiled Varilux, the first progressive multifocal lens (bi- and trifocal lenses without the traditional lines between lenses).

Color, style, comfort and functionality have continually expanded, and "eyewear" has become a multibillion-dollar industry.



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Vice President
Sales & Marketing
18 years

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