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WANT MORE? THIS ISSUE OF THE HENRY FORD MAGAZINE IS AVAILABLE FEBRUARY 2013 ON IPAD AND ANDROID TABLETS. >



What secrets can a CT scan tell us about the construction of a 300-year-old violin from the great Antonio Stradivari?



BEHIND THE SCENES

Who We Are and What We Do

ABOUT THE HENRY FORD

The Henry Ford in Dearborn, Michigan, is the world's premier history destination and a national historic landmark that celebrates American history and innovation. With an unparalleled collection of authentic artifacts that changed the world and the stories of some of the greatest innovators that ever lived, The Henry Ford is a significant educational resource for understanding America's history of innovation, ingenuity and resourcefulness. Its mission is to use its assets to inspire future generations to help create a better future.

The institution's collections are comprised of 26 million authentic artifacts and documents, including Thomas Edison's Menlo Park laboratory, the bus on which Rosa Parks refused to give up her seat, the Wright brothers' home and cycle shop and Buckminster Fuller's Dymaxion House.

Five distinct attractions captivate and inspire more than 1.5 million visitors annually: Henry Ford Museum, Greenfield Village, the Ford Rouge Factory Tour, the Benson Ford Research Center and The Henry Ford IMAX® Theatre. The Henry Ford is also home to Henry Ford Academy, a 500-student public charter high school.

The Henry Ford also has a website, thehenryford.org; manages an extensive public digital collection; powers a series of online educational resources at oninnovation.com; and publishes The Henry Ford Magazine.

The Henry Ford is an independent nonprofit organization. By supporting The Henry Ford you are supporting programs that connect and inspire the stories we share as Americans. Donate online at thehenryford.org/support.

THE HENRY FORD **PROVIDES A UNIQUE CULTURAL ENVIRONMENT. BOTH EDUCATIONAL** AND INSPIRATIONAL, **DESIGNED TO EFFECT POSITIVE CHANGE IN THE WORLD BY FUELING THE SPIRIT OF AMERICAN INNOVATION AND INSPIRING A "CAN-DO" ENTREPRENEURIAL** MINDSET AND CULTURE.

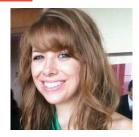
OUR CONTRIBUTORS



CYBELLE CODISH

is an award-winning photojournalist and has traveled the globe as a tour and editorial photographer. Her work has been featured in Rolling Stone, Martha Stewart Living and Spin, among others. Her work has recently been displayed at the Smithsonian National Museum of the American Indian in New York and the National Geographic Museum in Washington, D.C.

The Classic Cocktail, Page 7 Comfort Food, Page 40 A Sense of Space, Pages 22-23



ERICA HENDRY

is a journalist based in Washington, D.C. As a musician, she is drawn to stories about music issues and artists. As story research, she has lived off the grid on Sapelo Island in Georgia, been forced into a barn with breeding horses during a rainstorm and sat next to sight-impaired teenagers as they testdrove cars for the blind.

The Sweet Sound of Collaboration, Page 26



AMBER HUNT

is a Detroit-area writer, improviser and self-proclaimed karaoke queen. She owns a small zoo of pets: two dogs and three cats. Two of the cats are the size of baby polar bears. When she's not singing R. Kelly songs at karaoke, she's likely losing the ongoing battle to keep the house clean.

A Sense of Space, Page 20



MARVIN SHAOUNI

is a photographer serving both editorial and advertising clients. His aim is to seize culture through the photography of people, food and the everyday. His strength as a photographer stems from his curiosity of people and their ways of life. He always strives to evoke an emotion, illustrate an idea or give a deeper sense of a person or a place.

How We Grow, Why We Grow, Pages 14-15



WENSDY VON BUSKIRK

is a freelance writer whose articles have appeared in Marie Claire, Modern Bride, HOUR and the Detroit Free Press, among many other newspapers, magazines and online sources.

The Classic Cocktail, Page 7 Comfort Food, Page 40 Sweet Inspirations, Page 58











LETTER FROM THE PRESIDENT

Casual Thoughts and Serious Correspondence



parents, we want our children to think big, aspire to be self-sufficient and to develop a sense of purpose and a passion for making a difference. We want them to understand that ordinary

people have done extraordinary things that have changed the world, and that they can, too.

In the '70s, I was a teenager growing up during a time when women were redefining their roles in society. I watched my mother challenge the status quo, go back to school and get a second degree. Although I didn't realize it at the time, what was happening in the world and unfolding in my own home was shaping my thinking, my future — sparking my desire to serve and make a difference.

At The Henry Ford, we work every day to make sure such aspirations seem attainable to every child — every person — that walks through our doors, visits our website or reads this magazine.

We want to inspire young people to be out-ofthe-box thinkers and doers, to embrace innovation, exercise creativity and persevere through failure. We want them to be able to imagine their future and reach for it with unwavering determination, a can-do spirit and a willingness to take necessary risks. So, how do we inspire seemingly ordinary individuals to make their mark in this world and become agents of change? We do so through the stories we tell of American innovation, ingenuity and resourcefulness, through access to our collections and through the immersive experiences we present each day on our campus.

Last year, more than 1.5 million people visited The Henry Ford. Thousands of others accessed our website and digital collections and used our educational resources. Never taking our position for granted, we are determined to do even more to connect people in our communities, the region and our nation with their individual potential for "greatness." It's why The Henry Ford exists.

I have no doubt that we can live up to these lofty aspirations, continuing to make The Henry Ford a world-class source of inspiration for all, regardless of geography or circumstance. This is THE place where you discover your potential through America's history.

PATRICIA E. MOORADIAN, PRESIDENT



MICHELLE ANDONIAN



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KINGSFORD CHARCOAL

The Kingsford charcoal briquet was the brainchild of Ford Motor Company founder Henry Ford and E.G. Kingsford as a way to reuse wood scraps from the production of the Ford Model T in the 1920s.



WASHED UP

An industrial design student in London hated to see all that hot water from the shower go down the drain. So he created a recirculating shower with a miniature treatment plant that continuously captures, cleans and recirculates 70 percent of the water used during a shower.

OFF THE SHELF

Gorilla Glass, an ultrathin, super-strong lightweight glass developed by Corning Inc., was sitting on the invention shelf for nearly 50 years due to lack of demand. The glass - which is difficult to break, dent or scratch - resurfaced a half century later as one of the highest in-demand screen technologies for consumer electronics and mobile devices.

KICK BACK

The SOCCKET is a soccer ball that can reuse playtime as an energy source. The ball harnesses the kinetic energy generated during play and stores it as electrical energy that can be used to power appliances such as lamps and water sterilizers.

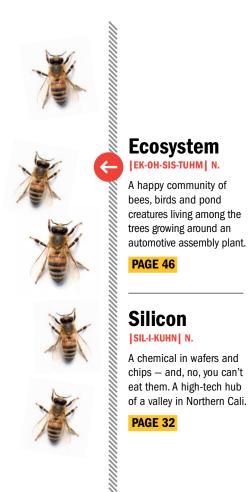
COOL IT

In the 1920s, Albert Einstein co-invented a refrigerator that operated without electricity or any moving parts. Scientists recently resurrected this invention in the hopes of developing more eco-friendly refrigeration techniques for developing countries.



COURTESY OF UNCHARTED PLAY





Courageous

|KUH-REY-JUHS| ADJ.

Having mental or moral strength to venture, persevere and withstand danger, fear or difficulty. Completely defines civil rights icon Rosa Parks.

PAGE 16

Workspace

|WAWRK-SPEYS| N.

An area used or allocated for one's work - coffeehouse, cubicle, hipster hotel lobby. The great inventor Robert Propst redefined this space with his concept called the Action Office.

PAGE 20

Autograph |AW-TUH-GRAF| N.

The signature of an important person. Rosa Parks once scrawled her name on a baseball for center fielder and civil rights activist Curtis Flood.

Instrument

[IN-STRUH-MUHNT] N.

Fellas like Stradivari and Guarneri once crafted these devices for playing tunes with wood, strings and a big dose of tender loving care. Their centuries-old masterpieces will be displayed in Henry Ford Museum in 2013.

PAGE 26

PAGE 52

MOORE'S LAW: THE NUMBER OF TRANSISTORS ON A CHIP WILL DOUBLE APPROXIMATELY EVERY TWO YEARS.





Questions and Replies About Today's Trends, Talk





YES, WE CAN!

But we have to change our teaching methodologies.

In a short six months last year, I dialogued with some 2,000 educational stakeholders, including teachers, administrators, museum and corporate professionals, engineering professors and others in our nation's educational circles. Everyone agreed that there seems to be little room in today's K-12 curriculum for creativity. Everything is taught to you, structured for you and teachers often feel

pressured to teach to the test. Students aren't encouraged enough to ask the "whys" and "hows." Even at the collegiate level, in the engineering schools, for example, students are not entering with an entrepreneurial mindset.

If we want to teach innovation, we have to change our methodologies, our tools of engagement and, last but most important, our mindsets. We have to remind ourselves as educators that catalysts and change-agents in generations past have always asked, "What if?" They have always been risk-takers, the ones to think beyond the norm and question the status quo.

This generation, the iGeneration (for information-

age), learns by discovering and creating. They constantly multitask, like to stay virtually connected all the time and learn more from peers than from elders. They are intrinsically curious.

We must embrace these qualities and develop learning environments where we as educators are not just the "deliverer of content," but the "facilitators of learning." We have to walk the talk, take our own big risks and make room, consciously allow time, for creativity in our classrooms if we want to teach innovation.

If we do — and I know we can — we will empower this iGeneration to become GenerationI, the powerful next generation of Innovators.

PAULA GANGOPADHYAY is chief learning officer, The Henry Ford, the lead author of The Henry Ford's Innovation 101 curriculum and project director for The Henry Ford's Innovation Education Incubator (IEI), which is gathering evidence to prove that innovation can be taught. She was recently appointed by President Barack Obama to serve on the National Museum and Library Services Board (NMLSB) for a four-year term. The NMLSB is an advisory body that includes 20 presidentially appointed members who have demonstrated expertise in, or a commitment to, library or museum services. The board advises the Institute of Museum and Library Services (IMLS) on general policy and practices, and on selections for the National Medals for Museum and Library Service. IMLS awards nearly \$187 million in grants each year to museums and libraries nationwide.



"OBSTACLES
ARE THOSE
FRIGHTFUL
THINGS YOU
SEE WHEN
YOU TAKE
YOUR EYES
OFF YOUR
GOALS."
— Henry Ford

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PERSONAL STORIES AND PERSPECTIVES FROM TODAY'S FORWARD THINKERS

The Henry Ford Magazine recently decided to give some of today's visionaries a pencil and paper and ask them to write about innovation. Unedited and insightful, Innovation Nation is a compilation of their viewpoints. In this issue, you'll find that whether you are a race car driver, a schoolteacher, a scientist or a farmer, innovation asks you to take risks, overcome your fear of failure and tap into your inner ingenuity.





WE'RE ALL MAKERS

I WOULD LIKE TO CONVINCE YOU THAT INNOVATION IS A PARTICIPATORY SPORT. LIKE GOLF OR TENNIS OR KAYAKING, IT'S SOMETHING ANYONE CAN DO AND ENJOY. WE HAVE OUR OWN REASONS FOR PARTICIPATING. HOWEVER, AN IMPORTANT REASON IS THAT WE CAN DO IT WITH OTHERS WHO SHARE OUR PASSION.

Participation is not necessarily easy. It comes with two challenges. One is getting started. The other is getting better. Both are hard in different ways but also very satisfying. Eventually, you begin to think of yourself as a golfer, a tennis player or a kayaker.

Eric Von Hippel writes in his book *Democratizing Innovation* that users generate new ideas and products. He uses the example of extreme sports to make his case. A kayaker sees the need for a new shape of kayak that would navigate certain rivers. He cannot buy that kayak, so he makes it himself. Others see him using his new design and ask where they can buy it. When he tells them that he made the kayak, they ask to buy one, and he begins to consider going into the business of making them for others. He has become an accidental entrepreneur, where his passion created a new opportunity. According to Von Hippel, there are many good examples where users become makers.

Users become makers because they are immersed in learning and discovery. Many



makers today are exploring such things as 3-D printers, high-altitude balloons and new ways of sensing in the physical world. They learn to see where innovation is needed, and they discover new problems to solve.

Making is really something all of us do. We cook, we create, we write, we grill food and grow flowers, we sew and solder. We are tinkerers. We are problem-solvers. We figure out how to do things. It's what makes us human.

The world around us is made and shaped by makers. As Steve Jobs said: "Life becomes much broader once you discover ... that everything around you was made up by people no smarter than you."

Once you start to participate in life as a maker, you will recognize your own ability to create something new or improve something that already exists. You realize that anyone can innovate.

DALE DOUGHERTY is one of the forefathers of the modern-day "Maker Movement." He is the founder and publisher of *MAKE*, a magazine that focuses on do-it-yourself (DIY) and do-it-with-others projects involving everything from engineering, computers and robotics to arts, crafts and food. He is also the developer of the Maker Faire®, a traveling showcase of DIY approaches. Dougherty was recently honored by the White House as a "Champion of Change."





THE RIGHT MENTALITY

I LOVE ENGINEERING AND ESPECIALLY WHAT IS NEW AND DIFFERENT — IN OTHER WORDS "OUT OF THE BOX." MOREOVER, I BELIEVE THAT THE AUTOMOTIVE INDUSTRY IS PRODUCING VEHICLES THAT, HOPEFULLY, WHEN WE LOOK BACK A FEW DECADES FROM NOW, WE WILL THINK, "HOW STUPID WE WERE. SO BIG, SO POLLUTING, SO EGOISTIC!"

When we achieved 128 mpg at 70 mph average (EPA motorway cycle) with the Edison2 during the XPRIZE Competition (a contest to develop a car with mileage greater than 100 MPGe, room for four, a range exceeding 200 miles and a number of other requirements) in 2010, we proved that the technology is already here at a very affordable cost. You can drive this car across the USA with one tank of fuel.

What's really missing to make this car an everyday reality is something else. The mentality.

When my good friend and former Audi engineer Ron Mathis told me he was designing a "unique and peculiar" car for a special project, I loved the idea immediately and nominated myself as a candidate for driver — animated by the sole spirit of adventure and challenge, and for the pleasure of being part of something potentially special.

It wasn't without risk. We were the only internal combustion engine against a bunch of either hybrids or fully electric-powered cars in the competition. I wondered, "If you walk in one direction and everyone else in the other, there must be something wrong, right?" You question yourself.

But the engineers were adamant that the technical choices were correct, and I'm definitely one not yet convinced that fully electric is the way to go for the future of transportation. I also always believed that the great improvement in efficiency of both engines and aerodynamics (coefficient of drag) is being almost totally annihilated by the massive increase in weight and size of cars. Nowadays, if you put a modern engine in a modern-shaped car, but with the weight and size of 30 or 40 years ago, you will achieve stunning fuel mileage.

Our path to victory during that long summer of various tests and competitions was so thrilling that, for me, it can be easily called epic. As far as the driving was concerned, it was far more difficult and rewarding than I could ever have imagined. The required skill and extreme precision needed to achieve the result were high. Rarely in my career have I experienced similar stress, higher concentration and a need for determination. But, the joy when we won ... it was so great that I can easily say it was second to none. Comparable to a 24 Hours of Le Mans win!





EMANUELE PIRRO is a Formula One driver and five-time winner of the 24 Hours of Le Mans. He is also the celebrated driver of the Edison2 (aka Very Light Car #98), winner of the 2010 XPRIZE Competition.



HOW WE GROW

GREENHOUSES ON ROOFTOPS IN CITY CENTERS, NEXT TO SUPERMARKETS, ON HOSPITAL CAMPUSES, IN ANTARCTIC RESEARCH CENTERS, ON GOLF RESORTS AND ON SPACE STATIONS.

I continue to see new applications and extensions of hydroponic growing popping up in nontraditional spaces around the world, especially as populations increase and arable land declines. For me, I consider it my privilege that I have been able to help design cropping systems in some of these spaces — from the British West Indies and downtown Montreal to a suburb of Detroit — that are maximizing production while using less energy and natural resources.

Hydroponics, or growing plants without soil, isn't a new science, but it is a versatile one.

Almost all commercial greenhouse vegetable production is grown hydroponically. Some of the largest growers in the U.S. and Canada, such as Village Farms, Windset Farms, Eurofresh Farms and Houweling's Tomatoes, have hydroponic greenhouse operations equaling 200 or more acres in size, with tomatoes, peppers, cucumbers, eggplants, lettuce and various herbs growing.

One of my most recent challenges was designing a small greenhouse for Henry Ford West Bloomfield Hospital in a suburb outside Detroit (see Page 15). The objective was to produce vegetables hydroponically to increase production in the limited area of the greenhouse. At the same time, they wanted to grow an assortment of vegetables.

To do this, we designed a number of different hydroponic systems to meet the specific needs



of each crop. Plant towers increased production of various herbs, as greenhouses have vertical space that must be optimized in its production systems. A water culture system called nutrient film technique (NFT) was the choice for lettuce and basil. Tomatoes, peppers and other vine crops are grown in buckets of perlite with a drip irrigation system feeding the plants with a nutrient solution.

The versatility of hydroponics applied at its simplest best.

Better by design, hydroponic operations, whether they are large and commercial or smaller

scale like the hospital's greenhouse, require less space, less energy to run and consume less water. And, without the presence of soil, they don't have to rely on artificial pesticides. Instead, they can use Integrated Pest Management (IPM), a biological procedure powered by natural predators and bioagents (pesticides made from natural sources), to control pests.

For the end consumer, that equates to crops free of disease, improved food safety and even increased nutritional value. •

HOWARD RESH is the manager of the hydroponic farm at CuisinArt Golf Resort & Spa in Anguilla, British West Indies, where fresh salad crops are grown for the guests of the resort. Dr. Resh is also an international consultant on the development of hydroponic operations. He has written five books, with *Hydroponic Food Production* in its seventh edition, and also has a website: www.howardresh.com.





WHY WE GROW

A HYDROPONIC GREENHOUSE.
TRADITIONAL THINKING WOULDN'T
PUT SUCH A STRUCTURE AS A
CENTRAL COMPONENT OF A
HOSPITAL'S WELLNESS OFFERINGS.

But what if the greenhouse was a place where patients, visitors and the community could gather together, take a deep breath, relax and enjoy the space? If it created a welcoming atmosphere where learning how to live a healthy lifestyle could begin?

Last fall, Henry Ford West Bloomfield Hospital in Michigan opened its \$1.2 million hydroponic, organic greenhouse, one of the first hospital-based greenhouses in the nation. From the outside, it might look like just a beautiful structure, but once inside you start to get a better understanding of its real purpose.

Obviously, we are growing in the greenhouse, harvesting fresh and organic produce that is delivered with care to the hospital kitchen. It takes less than 24 hours to travel from the greenhouse to the plate, ensuring the highest nutritional value for both patients and guests of the hospital. It also complements the hospital's outstanding clinical care that treats the whole person.

But what happens when that patient leaves our direct care? The greenhouse also serves as a vital educational resource — an engaging



environment — where former patients, guests and the general population can come and learn how to grow food organically with their own resources and use that food in their daily diet to maximize their health. They can gain a better understanding about plant care and harvesting, pest management, hydroponic systems and the environmental impact of growing.

It's also a place where children can learn about good nutrition and do things hands-on, from releasing beneficial insects into the greenhouse to starting seeds, tasting fresh produce right from the vine and making healthy snacks.

I believe food is medicine, and learning about your food plants the seed of healthy living. This can start a symphony of health from within.





MICHELLE LUTZ is the resident farmer at Henry Ford West Bloomfield Hospital's hydroponic and organic greenhouse in Michigan.



TAKING HER STAND

THE STORY OF ROSA PARKS' BUS
ARREST IS SO FAMILIAR THAT WE
RARELY STOP AND TAKE STOCK OF
WHAT MADE HER ACT SO COURAGEOUS.
PARKS HAD BEEN A POLITICAL ACTIVIST
FOR MORE THAN A DECADE BEFORE
HER BUS ARREST AND WELL UNDERSTOOD THE COST, DANGER AND LIKELY
INEFFECTIVENESS OF HER STAND.

And yet she did it anyway.

Rosa Parks became the secretary for the Montgomery branch of the NAACP in 1943. For the next decade, she traveled the state taking testimony from black people who had faced white brutality or legal malfeasance. Though this work was dangerous and these cases garnered almost no success, she continued year after year. She also took numerous personal stands against segregation, refusing to drink from segregated drinking fountains or to pay her money at the front of the bus and then go around back to board. Some drivers told her not to ride if she "was too important ... to go to the back and get on."

On December 1, 1955, bus driver James Blake, who like all Montgomery bus drivers carried a gun, noticed one white man standing and told the four black passengers seated in a middle row to get up. In the midst of the fear, humiliation and inconvenience of that demand, with the real possibility of violence for refusing and little to indicate that her stand would make any difference, Rosa Parks claimed a space of choice. "No," she said.

Given her political experience, Parks was exceedingly cognizant of the dangers a black woman faced in getting arrested. "I didn't even know if I would get off the bus alive," Parks said. She knew people who had been beaten or shot or raped for their bus resistance. Indeed, there had been a number of people over the years who had made similar stands, and little had changed. In her words, "As I sat there, I tried not think about what might happen. I knew that anything was possible."

She certainly did not think any mass movement would follow her action, but as she once stated, "I was resigned to the fact that I had to express my unwillingness to be humiliated in this manner."

Her stand has been misrepresented as an accidental act by a tired seamstress. "I didn't tell anyone my feet were hurting. It was just popular, I suppose, because they wanted to give some excuse other than the fact that I didn't want to be pushed around."

Courage is the ability to take a stand by yourself, even though you've done it before and nothing changed, and even when you well know the harm that might befall you. Rosa Parks summoned that courage December 1, 1955, and many other days as well.



JEANNE THEOHARIS received her Ph.D. from the University of Michigan and is professor of political science at Brooklyn College. She is the author of numerous books and articles on the black freedom struggle, including a new biography *The Rebellious Life of Mrs. Rosa Parks*. She will give a talk on the book at Henry Ford Museum's Rosa Parks National Day of Courage on February 4, 2013.





SKILLS WE VALUE

AS EDUCATORS, WE FACE DECISIONS
DAILY. OUR JOB IS A SIMPLE ONE:
TEACH OUR STUDENTS THE CONTENT
CURRICULUM, 21ST-CENTURY SKILLS,
SOCIAL SKILLS, CRITICAL THINKING,
RESEARCH SKILLS, TEST-TAKING SKILLS,
RESPONSIBLE CITIZENSHIP, STEWARDSHIP,
MORALS, ETHICS AND EVERYTHING ELSE.

Remember to factor in the budget cuts, which have left many educators short on resources, less supportive services for at-risk students and larger class sizes. Don't forget that no matter what decisions you make, your job performance and sometimes your salary will be based on your students' achievement, which is often determined by their performance on a one-time, once-a-year, high-stakes assessment. Sounds simple, right?

After 26 years as an educator, I continue to learn new things every day, but one thing I know is that we need to ask certain questions as we make decisions about what and how we teach. What skills do we value? Which skills lead to success? What inspires and motivates students?

A skill I value is risk-taking. I'm always asking students to take a risk, stretch their comfort zone and explore. So, I decided to practice what I teach and volunteer to pilot the online curriculum from The Henry Ford.

As part of the course, I asked my students to explore an included selection of videos from



current-day innovators. Each student took a laptop and spread out around the classroom. For about 15 minutes, the only sounds were the prerecorded voices of the innovators. Then, the buzz began. "Come see what this person invented." "They said this was impossible, but he did it!" "Can I find out more about her?" My students couldn't stop. They begged to continue the next day. I even received emails from parents jokingly complaining about "their" homework because they had to find out about these individuals who had their children so excited.

My students — from the artists, gamers and dreamers to my strugglers and humanitarians —

were hooked! Conversations continued for days. They did extra research that wasn't required. They created their own learning experiences around these people who had failed, been told their ideas were impossible, persisted, took risks, dreamed and believed in what they were doing.

What skills do I value? Risk-taking, problemsolving, critical thinking and perseverance. What do I want my curriculum to do for students? Motivate. Excite. Stretch. Encourage. To let them know that it's OK to take a risk. It is also OK to fail, because failure is a learning experience and can be a stepping-stone to a greater idea. •



EVELYN EVANS has been an educator for 26 years, 20 in the class-room and six in curriculum development and support. She currently teaches sixth grade in the State College Area School District in State College, Pennsylvania. She was a National Endowment of Humanities participant at The Henry Ford in 2009 and a first adopter for The Henry Ford Innovation Education Incubator pilot project in 2012.



TURN OFF THE TAP

IT'S ESTIMATED THAT SEVERAL MILLION TONS OF PLASTIC MAKE THEIR WAY INTO OUR OCEANS EVERY YEAR, POLLUTING THE ENVIRONMENT AND HURTING OUR MARINE POPULATIONS.

And the problem isn't going away anytime soon.

More plastic washes up on beaches every
day. The only real solution is to turn off the tap
and stop producing products made from virgin
plastic. That may sound strange coming from
the co-founder of a soap company.

The truth is, we know we can't clean up the world's oceans. The scientists who study this problem will tell you there's no practical way to do so; the area is just too remote and the plastic too small. But we can raise awareness about the issue and use our business to demonstrate smart ways of using and reusing the plastics that are already on the planet. We think the best way to do that is to prove that solutions exist, even at a small scale. So that's what we've done.

Over the past year and a half, Method employees, with the help of local beach cleanup groups and volunteers, have hand-collected more than 3,000 pounds of plastic from the beaches of Hawaii. Working with our recycling partner, Envision Plastics, which was willing to take a chance on making the impossible possible, we've taken plastic from the beach and turned it into bottles. In fact, these are the world's very first bottles



made from a blend of ocean plastic and postconsumer recycled plastic (PCR), which explains their uniquely gray color.

Through this new and innovative use of recovered ocean plastic, we hope to show how design can be used to tackle environmental problems. We're not saying that the solution to the ocean plastic problem is making bottles out of trash, but by doing so we can prove that there are alternatives to using virgin materials — like using post-consumer recycled plastic, which we use in all of our bottles.

By recycling and reusing existing plastic, we can turn off the tap. And that, we believe, is the first and most important step toward improving the state of our oceans.

We hope others will follow our lead. •



ERIC RYAN is co-founder of Method, the leading innovator of premium eco-conscious home and personal care products.





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Macy's Gives to initiatives
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community – women's
health and wellness, the
environment, education,
arts, and HIV and AIDS
research and awareness.
Together, we give every
star the chance to shine.





SPACE

FORGET THE CUBE. CULTURE, CREATIVITY AND COMMUNITY ARE REDEFINING THE WORK ENVIRONMENT

A warm, amber glow surrounds you. It's the sunlight bouncing off salvaged wood and raw brick. You smell java and hear the cacophony of hushed conversations. All together, it feels cozy, comfortable and somehow seems to be the perfect space to hunker down and do some ... real work. BY AMBER HUNT





Ad Hoc Office The lobby at the Ace Hotel in Manhattan.

he corner coffeehouse as a communal workspace. Now a common scene in many U.S. cities, this phenomenon is intended and often strategic, and part of a bigger national trend among businesses big and small to develop thoughtful gathering areas that attract creatives and breed innovation

and productivity. For all the quintessential worker bees out there, spaces that act as an alternative to the office-cube farm that's all too familiar and so often artistically stifling.

Communal meeting areas, inventive offices, spaces that are a direct extension of a brand and home office hybrids that encourage a work/life balance by literally living where you work are just some examples of what is gradually becoming a more common representation of today's work environments. Many big-name companies (beyond top-of-mind Google or Facebook when listing the coolest and craziest office spaces) are listening to the needs of their employees and responding by giving them spaces that allow them to be as creative, comfortable, innovative and above all else — happy — as possible.

GO TO A HAPPY PLACE

Making a "cool" office space isn't rocket science, and the concept certainly isn't new to the block. Today, you can hire a talented architecture firm, pay a pretty penny, wait a few years for the renovation to be completed and pat yourself on the back once you're on the cover of *Fast Company* being touted as the next big thing in workspaces.

But, as Richard Sheridan, president of software company Menlo Innovations in Ann Arbor, Michigan, explains, a truly creative and inspiring space is much more than a conglomeration of the latest trends in office furniture, SMART Boards and engaging lobby art installations. A smart and successful workspace design must be guided by the company's culture from the get-go; culture is never just an afterthought once the new space is created.

"Like Thomas Edison, we believe that serendipitous moments occur when a lot of creative people share a space," Sheridan said. "All of our employees benefit from sharing a common, open space, but also by sharing ideas, challenges, failures and successes.

"Our space is set up for collaboration, but our culture is the driver behind our success."

Menlo's "software factory" is big, wide open without walls or doors, noisy and somewhat messy at times. According to Sheridan, these physical elements personify Menlo's culture, which is charged by a youthful team spirit that thrives on organized chaos and a desire for a balanced lifestyle. Employees at Menlo, for example, are "required" to keep their hours at 40 per week. They can also bring their baby or pooch to work if they choose to or need to.

Sheridan openly admits that he derived inspiration for his space from great innovators such as Edison and others. Edison, of course, understood the need for a workspace that had personality as well as full functionality, expertly crafting an aura of mystery and mystique around his Menlo Park laboratory.

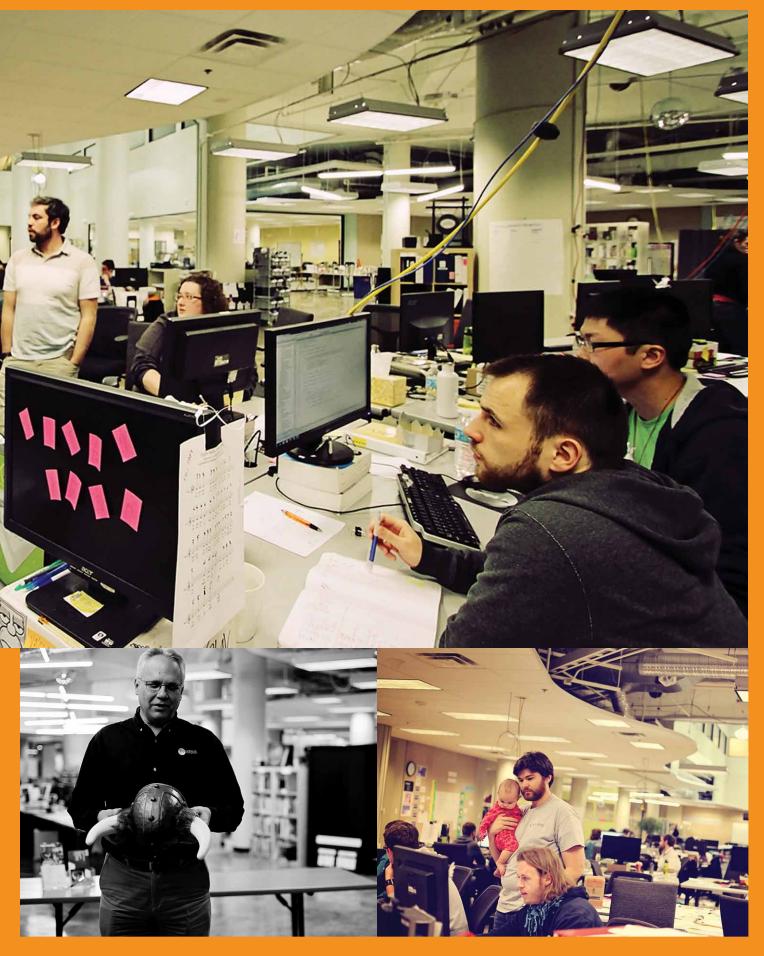
Edison and Menlo connections aside, more companies are incorporating their values into the spaces they design, hoping to create healthier, happier, more productive employees.



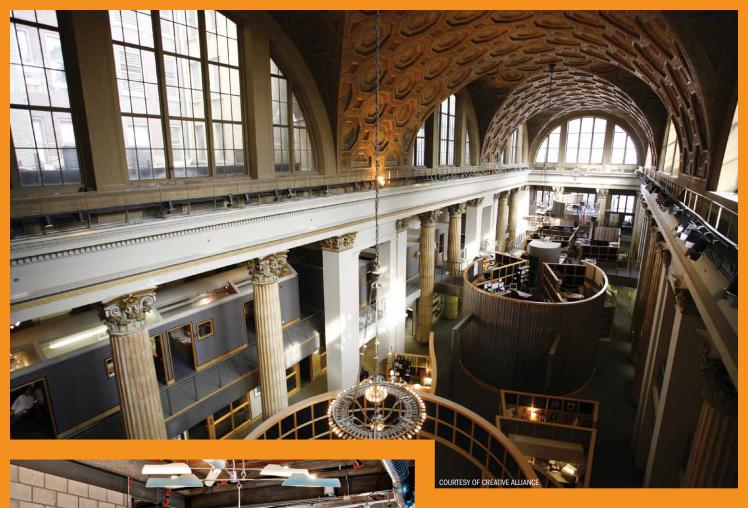
Culture and Collaboration
Clockwise from above:
The organized chaos of Menlo Innovations work environs; babies in arms are common during workdays at Menlo; and Menlo's leader Richard Sheridan with an unlikely office prop.

"LIKE THOMAS
EDISON, WE
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MOMENTS OCCUR
WHEN A LOT OF
CREATIVE PEOPLE
SHARE A SPACE"

- RICHARD SHERIDAN, MENLO INNOVATIONS



CYBELLE CODISH







Inspired Places Above: Creative Alliance in Louisville, Kentucky. At left: Quicken Loans M@dison Building and its headquarters in Detroit.

BIG, BAD TECHNOLOGY

But is that really all that's driving this trend? Unlikely. Melissa Price, director of facilities for mortgage lending giant Quicken Loans, asks us to also examine the obvious.

"Companies are starting to figure out that while the way we produce work has drastically changed, the environment in which that work is created has not. Technology — computers, networks, laptops, smartphones — we've come a long way from telephones and adding machines. Yet, many of us are still stuck in environments that harken to the era that gave us the typewriter."

Price has visited many major players in the creative spaces game during company travels for Quicken, one of *Fortune's* Top 10 Best Places to Work in 2012. Quicken and its family of companies have office facilities all across America, ranging from San Diego and Scottsdale to Cleveland and Charlotte. Price says a total-package office solution is still hard to define and difficult to find.

"As we grow nationally, we're looking at ways to give our teams a space that meets their needs not only as employees but as a parent, athlete, techie or whatever their personal preferences are. Our focus is to empower employees to do their best, and we feel the most effective way to do that is to respect and accommodate all of their needs, not just the ones that directly benefit us."

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CUTTING UP THE CUBE

Ever have an idea that just got away from you? Things started out with the best intentions in mind, and then before you knew it, a perfect storm carried your idea away, along with all of those good intentions? That's the story behind the office cubicle we all love to hate and its underappreciated designer Robert Propst.

Before it was known as the cubicle, it was called the Action Office System. Propst invented the concept in the 1960s after intense study of how "the world of work" operates. The Action Office debuted under the Herman Miller name in 1968 and literally transformed the nation's idea of the workplace.

"The name was intentional," said Marc Greuther, chief curator at The Henry Ford, which has an archived collection of Propst's work. "Propst believed in fluidity and movement. He had an active mind and wanted to create a space that wouldn't pen you in."

The Action Office System contained movable walls, shelves, stand-up desks and other modular components.

"The idea was that everyone had a unique way of working," noted Greuther, "so Propst created an area that was highly customizable, allowing workers to transform their space in a way that best suited them."

Things started to go awry when the government began offering tax incentives to businesses for office expenses. Since the Action Office System's square cubicle could create the most workspaces in a single area — equating to the biggest tax break — it quickly became the Action Office option that sold the best. And Propst became the unintentional father of the office-cube farm we know today.

"Propst attacked the things that attacked him," Greuther added. "He liked solving problems and had his hands in many areas, from toys and playground equipment to hotel carts." Propst, in fact, had more than 120 patented inventions to his name when he died in 2000.

"He is a truly underappreciated and under-recognized designer of our time."

OFFICE FOR THE DAY

Until that overarching office solution exists, people will continue to search for alternative locations outside of the home or office to work, like the corner coffee shop mentioned previously.

When you sit in the coffee shop, it's easy to understand why this works. In your office for the day, your new "coworkers" might be law students and a singing bartender. There's a fresh energy that comes along with the literal and figurative humming of work being done, even if you're not directly interacting with those doing the work. You're sharing a space and all working independently, yet together. And that's inspiring.

It's also the reason why places like Manhattan's hipster Ace Hotel have scored such recent acclaim and popularity. Here, designers, academics, writers and ad execs are gathering together in a hotel lobby creating an ad hoc collective workspace that's laid-back and comfortable, yet full of an understated, communal vim and vigor that's contagious.

In contrast to the Ace Hotel's ultra-chic, contemporary approach, Creative Alliance in Louisville, Kentucky, decided to merge classic architecture with a modern aesthetic — renovating a bank building built in 1913 as the ad agency's new home.

"We were looking for a space that promoted continuity and collaboration," said Toni Clem, president of Creative Alliance, one of the largest independent ad agencies in the U.S.

Clem explains that the building's cathedral ceilings and 34,000-square-foot floor plan do not alienate employees, but instead bring people together. "Our entire creative team sits together on the second floor, but the space is open so they can look over the balcony and see other teams working. There's a neat, contagious energy. You can feel the vibrations when people are speaking and collaborating with one another. You can't help but be inspired when you walk in here."

There are obviously all kinds of options out there, but the real question is: Do these spaces create better workers who in turn create better, higher-quality products? Or is this really nothing more than a "cool" factor with none of the ever-coveted ROI attached?

The answer is ... it depends. Several psychological studies have attempted to measure the impact that a space has on work produced. Most have generated varying results. What is known is that a cool office cannot create a culture that leaves employees feeling excited. It alone cannot inspire innovative thinking. A stimulating space is like the icing on the cake, but no matter what some fitness gurus would have you believe, you can't just eat the frosting and be truly satisfied.

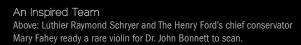
Tube slides instead of elevators or free lunches are great, fun office perks, but a space that actually inspires and is conducive to producing great work — that's what today's best talent considers having your cake and eating it, too.



THE SWEET SOUND OF COLLABORATION

MUSEUM
EXPERTS,
A RADIOLOGIST
AND DISTINGUISHED
INSTRUMENT
MAKERS LOOK
INSIDE SOME
OF THE WORLD'S
RAREST FIDDLES

BY ERICA HENDRY





MENTION A CT SCAN
AND MOST OF US THINK
MODERN MEDICINE:
DOCTORS TAKING A
DIGITAL PICTURE OF
OUR BRAIN OR OUR
KIDNEYS SO THEY CAN
SFF IF FVFRYTHING IS

ut what if we took a CT scan of a more than 300-year-old violin constructed by the great Antonio Stradivari? Could this scan tell us certain secrets about the intricate layers of this instrument's superior architecture — see into its past in order to create a better future for instrument makers and those who play what they make?

IN WORKING ORDER

Probably not questions Henry Ford, the father of the Model T and the assembly line, pondered when he began collecting an impressive set of 18th-century classical violins — many of them by famous makers such as Stradivari and Giuseppe Guarneri — in the 1920s (see sidebar on Page 30). Ford was indulging his passion for the fiddle and his desire to revive the old-fashioned country dancing of his youth.

But these were questions a team of museum experts, musicians and medical professionals started asking each other. Questions that eventually led to a sweet collaboration among medicine, a museum and music.

THE MEDICINE

"There's a lot that can't be seen by the eye," said Dr. John Bonnett, a radiologist at Henry Ford Hospital in Detroit

By day, Bonnett watches his patients as they have CT scans, which he then examines looking generally for stomach and other abdominal issues.

"THE SCANS CAN SEE THROUGH THE GRAIN PATTERNS INSIDE THE INSTRUMENT WITHOUT HAVING TO TAKE IT APART."

- DR. JOHN BONNETT



Setting the Stage Luthier Raymond Schryer aligns the violin before it is scanned at Henry Ford Medical Center. Bonnett does admit that by night, when human subjects aren't on the schedule, he has, on occasion, sent an inanimate object or two through the machine's narrow tunnel. He's not the first. Look online and you'll find that CT scans of a variety of objects have been taken, from iPhones and toasters to Big Macs and Barbies.

Easy to see why Bonnett jumped at the opportunity to add a rare musical instrument to his extracurricular list of scanned objects when curators and conservators from The Henry Ford in Dearborn approached him with an intriguing proposition. They had three violins in their collection, crafted by some of the world's most renowned instrument makers, which they wanted to scan. Their mission was to get a better idea about the instruments' construction. In addition, they wanted to learn more about any possible undetected damage.

Bonnett had heard of such examinations before and thought the idea brilliant. "The scans can see through the grain patterns inside the instrument without having to take it apart."

THE MUSEUM

Mary Fahey, chief conservator of The Henry Ford, said the scanning process was fascinating. "It's the joy of being able to explore a violin by looking through the layers of the wood. The scans allowed us to see areas that have been damaged previously or, in some instances, repaired previously."

In general, the curators discovered that despite about two-and-a-half centuries' worth of moves, climate changes and handling by countless musicians, the three instruments scanned were in extremely good condition.

For example, a Guarneri violin — the rarest in the collection — did have some insect damage, where bugs long ago had eaten into the scroll and the top surface of the instrument.

"But amazingly enough," said Fahey, "the violin has been repaired, which we had never seen from the surface because the repairs are just so skillfully executed."

THE MUSIC

Because Ford's collection boasts some of the oldest and rarest violins, musicians and instrument makers alike ask to hold the violins, play them and study what makes them so superior to violins by other makers.



Brilliant and world-renowned violinist Itzhak Perlman, for instance, has examined and played violins from the collection. In addition, the museum recently loaned its 1709 Stradivari to violin virtuoso and Sphinx Laureate Gareth Johnson for concert play.

Instrument makers were also an important part of the team that organized and conducted the scanning at Henry Ford Medical Center — actually acting as the impetus for the project. (Read Adrian Bagale's story on Page 31.)

At the center of these studies within the music world is a storied discussion about which of the famed instrument makers — Stradivari or Guarneri, both part of Italian instrument-making families in the 17th and 18th centuries — crafted better instruments.

For decades, instrument makers have tried to copy the Italian models to achieve the same sweet sound, a quest that often brings them to Henry Ford Museum.

One of the theories on the books claims that Stradivari and Guarneri applied chemicals or varnish that repelled insects from eating the wood, giving "it a richer sound because the chemicals penetrated into the wood," explained Fahey.

Another: the wood used to make the violins — from trees that likely grew in Europe during the mini Ice Age — was more dense, with less space between the rings on the tree trunks.

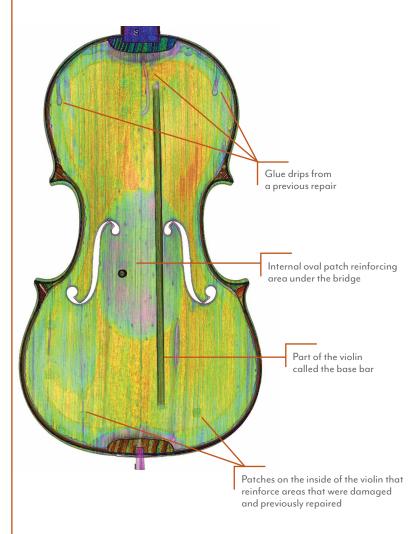
The latest is speculation about the interior volume of the violins and the amount of movement air gets as it travels in and out.

While technology has allowed the museum better insight into the collection Ford held so close to his heart (the discussion continues about what makes these violins superior), it's playing the instruments and putting them out in front of the public that gives a true read on their condition and, more important, their societal importance, Fahey said.

A tradition that will continue and achieve new meaning as the violins, in storage for the past decade and a half, will return to exhibit in Henry Ford Museum in honor of the 150th anniversary of Henry Ford's birth on July 30, 2013.

A LOOK INSIDE A STRADIVARIUS

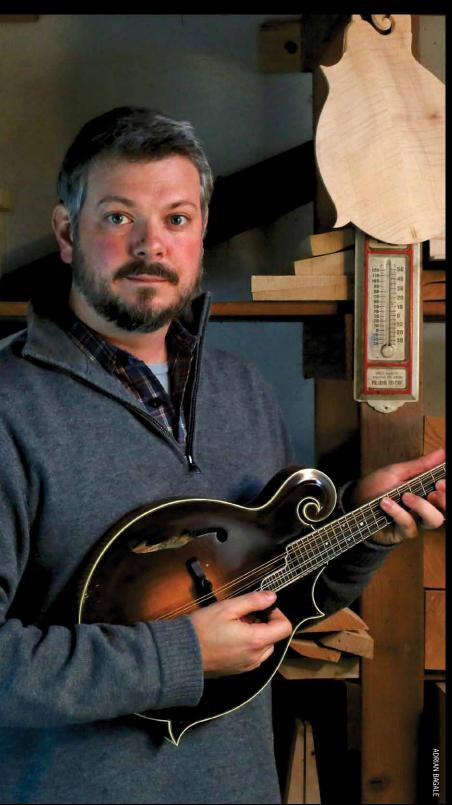
Among other findings, the CT scans revealed areas of old insect damage previously unseen by the naked eye. In addition, delicate repairs to the Strad's interior were discovered.



8

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Musical Notes Above: Adrian Bagale in his Northfield Mandolins workshop. Opposite: Henry Ford playing a violin, circa 1920. Opposite bottom: Henry Ford's first violin, made 1880-1900.

IN HIS OWN WORDS

As a builder, collector and absolute dreamer about vintage instruments, the attraction to classic instruments is hard to explain in words. As Mike Kemnitzer, fellow mandolin builder, once said to me, "The Cremonese instruments of the 17th and 18th centuries are part of our modern-day psyche."

Truly. Old instruments such as a Stradavari or Guarneri evoke a kind of emotion that can only be explained by the voice of the instrument itself.

The provenance of these particular instruments is a trip back to one of the most amazing times in the history of the world. We've heard the stories, and we long for more of them. For many, these instruments remain the iconic examples that occupy our minds and theories about instrument building and design on a daily basis. For others, they create the soundtracks that inspire so much of what we do and reflect on throughout our lives.

I would get the chance to peer inside such amazing examples of these instruments when in a serendipitous way, Mike Kemnitzer and I proposed a project to The Henry Ford. It would involve the examination and study of some of the most rare, and arguably most valuable, items in their collection – the Stradavari and Guarneri violins that were acquired by Henry Ford decades ago.

Our idea was to use new technologies in CT scanning to digitally explore the violins. The data captured during scanning would give the museum information on neverbefore-seen repairs or insect damage. For myself and other instrument builders, the origins of the wood and the material densities, details in the arching and construction and a variety of other things could be studied and analyzed. Most important of all, the findings could be shared with the public.

Most of the time, secrets about old instruments remain, well, secrets. The kind of data that could be uncovered from this sort of digital technology is very seldom seen and even less so offered to the public for free. Just imagine what could happen if you gave such incredible details to instrument makers around the world?

The Henry Ford has a unique position and mission to educate as well as curate. It's because of this goal that builders and enthusiasts alike will benefit from this project. Using new techniques and technologies to study, experiment with and put to use is really at the heart of so much of what Henry Ford did to change the world. In some ways, this project just carries on that tradition. Innovate and things you never thought possible can become reality.

Adrian Bagale, musician and instrument maker, has traveled around the world in the quest to produce great musical instruments. His projects are as diverse as the instruments he's been involved in making. He is currently the COO of Voyage-Air Guitar, the California-based company that made the first-ever folding acoustic and electric guitars. He is also the founder of Northfield Mandolins, a small, specialized team building premierlevel instruments with shops in both the USA and northern China. Bagale was also part of the expert team that conducted the CT scans of three rare and celebrated violins that were part of Henry Ford's personal collection and are now part of The Henry Ford's massive collection of historical artifacts.

Powered by The Henry Ford, Onlnnovation is a video oral history project designed to advance a culture of innovation through interviews with today's visionaries. Here are edited excerpts from one of those interviews, which can be viewed in its entirety online at the OnInnovation (OI) website www.oninnovation.com.





theCHEMIST

THE INTEL CO-FOUNDER SAYS FORGET ABOUT THE POSSIBILITY OF FAILURE AND GO FOR IT

In the 1950s, before Silicon Valley was Silicon Valley, a young chemist named Gordon Moore was in someone else's lab trying to develop efficient, affordable silicon semiconductor devices. (Catch the "silicon" connection?) In a bold move, Moore decided to leave that lab and form his own company with seven coworkers and some help from financial backers. That little venture became Fairchild Semiconductor in 1957, the place where the first commercially practical integrated circuit was invented.

By 1968, Moore and colleague Bob Noyce, a physicist and co-inventor of the integrated circuit, decided it was time to risk it all again, throwing caution and a comfortable lifestyle to the wind to form yet another startup. They called it Intel Corporation,

which went on to produce the world's first microprocessor and become the world's largest producer of computer microchips those mysterious, tiny, high-tech wonders that power everything from our smartphones to our laptops, kitchen appliances and the antilock brakes on our cars, and even help us find our lost pets.

Moore is now Intel's chairman emeritus. When The Henry Ford sat down with him as part of OnInnovation and its Collecting Innovation Today initiative, Moore talked about his early days in the Valley and the easygoing attitude toward taking big risks. He also shared what he wants today's budding engineers and entrepreneurs to know about the strong connection between great failure and great success. >



Continuous Stories From Today's Visionaries

The semiconductor industry. Take us back and sort of paint the picture of what it was like. Was it like sort of the gold rush? Everybody out in California inventing the future? The big bang of the hightech business?

Pretty much so. Maybe the big bang was the invention of the transistor at Bell Laboratories. But in particular, silicon technology was lagging behind. The original transistors were made of germanium, which was an easier material to work with. On the other hand, it didn't make as good transistors.

So, when we set up Fairchild, we decided to pursue the diffuse silicon transistor. And that was a very important technology. It was something that made transistors in a batch manner so all the costs weren't on one particular piece of silicon; you could spread them across several pieces of silicon.

And it looked like a much more economical way to make a much better transistor. Just required a lot of technology to be developed. And that's essentially what we did in the early days of Fairchild. Then, as we started exploiting this technology, we developed a whole bunch of other opportunities that resulted in, really the formation of what generally is called Silicon Valley today.

It was the development of the engineer-entrepreneur. The engineer would see the opportunity, run off and get financing, set up a company to exploit it. It was really the blossoming of the venture capital industry along with the technology out here that created the phenomenon known as Silicon Valley.

Was the engineer-entrepreneur focused more on personal gain and wealth or seeking better places to innovate?

It's always difficult to try and guess what peoples' motivations were. I suspect some of it was make your own fortune commitment. But more than that, it was wanting to exploit a technological idea in an environment you controlled. A company like Fairchild just couldn't pursue all these opportunities.

If an engineer came up with a new idea, it was rather frustrating to see his/her idea wither on the vine while the business of the company was being pursued as diligently as it could. It was much more attractive to spin off.

Financially, none of them felt they could suffer either. That was another thing that happened. It became relatively low risk to set up your own company. In this area, failure wasn't a stigma. You could go out and set up a company and fail and get a job the next day at another company, probably at a higher salary because of your experience.

And that's been the case all along. Failure has not been something that has been negative here. I think that's one of the big advantages Silicon Valley has had. Certainly over some, such as the European environment, where nobody wants to go out and be a part of a failure.

Here, people just didn't seem to give a darn.

What motivated you, drove you?



You know, what got me in the technical area was when my neighbor got a chemistry set when I was about 11 years old.

I found out you could do some really neat things with that. You can't get those chemicals anymore!

I decided very early I wanted to be a chemist, not necessarily knowing what they did.

I did have a home laboratory where I turned out small production quantities of nitroglycerine. which I made into dynamite. A couple of ounces of dynamite make a fantastic firecracker. So, I kept my interest in chemistry. Then, I gradually got into the more technical aspects.

I guess to make a bigger bang was more my motivation.

You've certainly made a couple big bangs. Can you share stories behind some of the major breakthroughs? The planar transistor, the invention of the integrated circuit?

Depending on the planar transistor technology, the extrapolation to the integrated circuit was relatively straightforward. You make planar transistors; you could start making integrated circuits soon after that invention.

There were a couple of other bits of technology. There was something called epitaxial growth, which was a new way of growing silicon that contributed greatly to making integrated circuits practical. Before that, you could make them, but it was a messy operation requiring high temperature treatment of very thin wafers. Ended up looking like potato chips when they came out of the furnace.

With epitaxial growth, you could take a wafer and grow a layer on top of it. Grow a thin layer of the kind of material you wanted. And that made the whole integrated circuit process a lot easier and made much better devices. But there were a





1965

Moore's Law, which states that the number of transistors on a chip doubles about every two years, is born when Intel's Gordon Moore makes a prediction about the semiconductor business.



Intel launches its first microprocessor, Intel® 4004. Initial clock speed: 108KHz Transistors: 2,300 Manufacturing technology: 10 micron



1978

Intel® 8086 processor Initial clock speed: 5MHz Transistors: 29,000 Manufacturing technology: 3 micron

MOORE'S LAW PHOTOS AND CONTENT COURTESY OF INTEL CORPORATION

lot of other things along the way, a lot of innovation required as we went from single transistor to hundreds, thousands, millions and billions.

I remember in the early days of Fairchild, Bob [Noyce] and I, we split up the technology, and I had a couple areas where we had problems. For example, in our diffusion area where we were putting impurities into the silicon, the electrical properties of the devices weren't coming out right. And we were struggling to find out what the heck was causing the variation.

One day, Bob suggested that I de-plate nickel on the back of the wafer. For no good reason I could think of. But, I'd run out of ideas, so I said, "OK, I'll risk putting nickel in one of the furnaces."

I put it in and the electrical properties came out perfect. I didn't know why at the time; I'm not sure he did either. But his suggestion solved that problem.

He did it again with the metal we were using for interconnections on the transistor. We wanted to find a metal or alloy that would make good contact at two different kinds of silicon, the P-type and the N-type that are necessary to make a transistor. But this requires metals that have different electrical properties when they get dissolved in the silicon. So, I was working with complicated alloys, the silver and gallium and one thing or another. Kind of going up and down and not making much progress. Bob came by and said, "Why don't you try aluminum?"

Everybody knew aluminum interacts with silicon to make P-type. You didn't want a P-type contact to the N-type silicon. Not having anything better to do, I tried it. Lo and behold, made good contacts to both the N-type and the P-type.

I think it was five years later before I understood why and before the industry understood why. But, switching to aluminum made the thing practical.

Moore's Law states that the number of transistors the industry can place on a computer chip will double every 18 to 24 months. Tell me something about the scientific law you authored in 1965 that you've never told anybody.

This was an article in one of the industry throwaway magazines — its 35th anniversary edition. I was in a unique position to see what was happening with the development of integrated circuits. Up until then, they'd just been expensive. They didn't compete commercially. But I could see things were changing — that this was going to be the cheap way to make electronics. And that was the art really. The purpose of the article was to get across the idea that the trends in the technology are going to make electronics cheap because of increased levels of integration. And I just took the first few points. They'd been about doubling every year since the first planar transistor. And we were

So, I extrapolated for 10 years and continuing to double every year. Went from 60 to 60,000, which is pretty wild. And had no idea it was going to be at all accurate. I was just trying to get the trend in there.

making the things in the laboratory then with

about 60 components on it.

One of my colleagues named it Moore's Law. I couldn't say the term for 20 years. It was embarrassing. I finally have gotten relaxed with it. In fact, I Googled it recently, and I Googled Murphy's Law, and there were twice as many references to Moore's Law. So, I'm better known than Murphy at this stage of the game.

What did you do at Intel to make it easier for people to invent, try things like you did, not to be afraid of failure?

GM w

We tried to just preserve an environment where people could do new things if they were consistent with the business model.

For example, when one of our engineers invented the microprocessor. For years, the industry had talked about putting a whole computer on a chip. Well, that was way out in the future. But one of our engineers is looking at a family of calculators that we were asked to produce. Saw, heck, I could make a general purpose computer architecture, do all the calculators and make it useful for a variety of other things, too. And it wouldn't be much more complex than the memory chips we're making.

That was really an intellectual breakthrough. He saw the opportunity to make what has become the microprocessor and we pursued it. And it became one of Intel's principle businesses by far.

We've always tried to encourage our engineers to think like that and come up with completely new ideas. And they've been successful often enough that the company has grown quite significantly.

OI

What's something that was just an absolute failure for you?

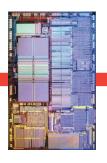
GM

Our watch business. Well, again, as with calculators, watches were something where you could make a chip and sell it in large volume. And we were the first any in the liquid crystal watch business.

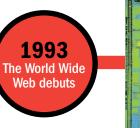
company in the liquid crystal watch business. One of the first ones out, too. We acquired a very small startup that had the liquid crystal



1981IBM introduces the first personal computer.



1989
Intel486™ processor
Initial clock speed: 25MHz
Transistors: 1.2 million
Manufacturing technology:
1 micron



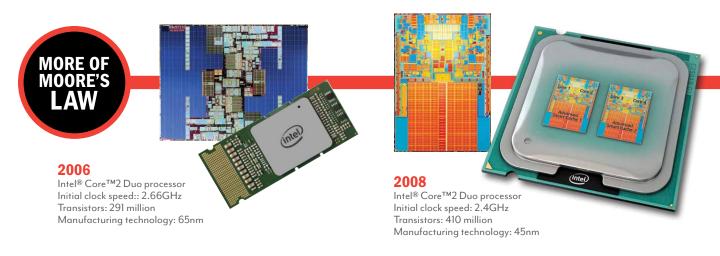
1999 Intel® Pentium® III processor Initial clock speed: 600MHz Transistors: 9.5 million Manufacturing technology: 0.25 micron



2001Apple rolls out the first iPod.

PHOTO COURTESY OF APPLE





Continuous Stories From Today's Visionaries

technology and started trying to make watches. By the time we got out of the business, the chip was costing us less than the push buttons on the side for setting the time. So, that was, you know, a failure as a business. I kept one of the latest model developmental watches, which I referred to as my \$15-million-dollar watch for many years.

You've been the engineer in the lab doing the research and development, the manager, the entrepreneur and the chairman of the world's largest producer of the microchip. What did you do to keep people motivated and happy and coming up with the innovations?

You give good people the opportunity, and they go out and do the innovations. It's hard to control. In fact, I think the more you control it, the more you're likely to stifle innovation. It requires the people be given a fair amount of latitude if they're going to proceed and come up with new and different things. Give them sufficient flexibility and ownership so they can really have an intellectual contribution to make to the project. So they can feel they've accomplished something when they're done.

We also tried to prevent hierarchy. Free flow of information is extremely important. There are so many technical decisions, they have to be made by the people that understand technical problems.



We have a bunch of schoolkids in the room. What would you tell them?



Find something that they really enjoy doing and pursue it. Things are changing so rapidly that the first thing they ought to do is get a good education with a strong basis in the fundamentals. The details you learn you're probably not going to use for very long. But the fundamentals don't change. And during your career, you'll probably have three or four really different jobs. But you won't depend upon



position to be flexible.

And if someone wants to be an engineer?

exactly the same skills. So, you have to be in a



It can still be a great career. On the other hand, it's harder for the individual to do something great anymore. It tends to be

done by fairly large teams. The complexity of the products is so great now that no one individual can really span it.



Is there still something about America that makes this a great place for innovation?

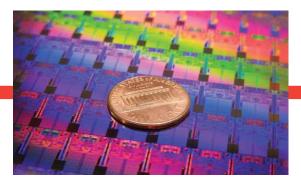


I think there is. The lack of fear of failure is an important part of it. People are willing to try things. They figure if they don't make it, they can do something else. The availability of venture capital is important; people with a good idea can generally get it financed. I hope that continues to be the case.

And there are a lot of successful examples where engineers with no previous business experience have succeeded in setting up major companies.

I think this has developed an entrepreneurial environment unmatched anyplace else in the world.

OnInnovation archived interviews such as the one conducted with Gordon Moore, along with related resources, can be accessed at www.oninnovation.com.



Processors on an Intel 45nm Hafnium-based High-k Metal Gate "Penryn" Wafer photographed with a penny.



The first transistor radio had four transistors – Intel's Intel® Core™2 Duo processor chip has 410 million (dual-core) / 820 million (quad-core)



22_{nm}



2012 3rd generation Intel® Core[™] processor Initial clock speed: 2.9GHz Transistors: 1.4 billion Manufacturing technology:



DRIVING AMERICA IS A PHOTOGRAPHIC CELEBRATION OF SOME OF THE WORLD'S MOST HISTORIC AND FABULOUS AUTOMOBILES THAT ARE PART OF THE HENRY FORD'S EXTENSIVE COLLECTION. >

Sprinkled with the photos are the colorful essays and private thoughts on America's enduring love affair with the car from Jay Leno, celebrity TV host and car enthusiast; Edsel Ford II, great-grandson of Ford Motor Company founder Henry Ford, and others. Matt Anderson, the new curator of transportation at The Henry Ford, also contributes his own essay and photo captions that share fascinating insights about the book's featured vehicles.

Driving America is set for release in the first quarter of 2013 by Beckon Books and will be available at traditional bookstores and through online outlets such as www.amazon.com. You can also find it at the variety of gift shops at The Henry Ford or on the website at giftshop.thehenryford.org.

The following excerpt from the book's introductory essay shares the intriguing story of the survival of the 1931 Type 41 Bugatti Royale.

Why is a one-of-a-kind French car with a German body in a collection that aims to document America's experience with the automobile? Well, listen to its story.

The original owner was Joseph Fuchs, a wealthy Nuremburg obstetrician who commissioned Ludwig Weinberger to craft a two-door cabriolet on one of Ettore Bugatti's massive Royale chassis. He took delivery in 1932. A vear later, Hitler rose to power, and Dr. Fuchs fled to Switzerland. Ultimately, he shipped his Royale to Shanghai and headed there himself. By 1937, Japanese armies were sweeping across China, and Shanghai was no longer a safe haven. With a U.S. visa in hand and his Royale stowed in the hold, Fuchs sailed for North America. Eventually, he drove his Royale across the United States and established a new medical practice in New York City. There, this great car that had been saved over and over from the furies of war succumbed to mundane neglect. Failure to winterize the

engine resulted in a cracked block, and by 1943, the once-magnificent Royale was derelict in a Bronx salvage yard.

The Royale was rescued by a longtime admirer, Charles Chayne, who happened to be the chief engineer at Buick. Chayne repaired the engine, changed the color scheme, and modified the steering wheel, seats and floorboards to accommodate his 6' 3" frame. He also replaced the mechanical brakes with hydraulics and installed a new intake manifold set up for four carburetors. After Chayne and his wife, Esther, had enjoyed their Royale for many years, they offered it to the Henry Ford Museum in 1957.

Although Henry had died 10 years earlier, he certainly would have appreciated the saga of a European classic that spent all but its first few years in the United States and owed its rescue to a top engineer at General Motors, who reconfigured it to suit his own tastes.



WHAT ARE WE READING + WATCHING?

DONNA BRADEN

Curator of Public Life The Henry Ford

PAVING THE WAY: THE NATIONAL PARK-TO-PARK HIGHWAY (2009)

Directed by Brandon Wade

Paving the Way is an awardwinning documentary that recounts the little-known attempt to connect 12 western national parks with a 5,000-mile motor route in 1920. Long before the days when the national government funded road improvement, the story is filled with accounts of adventurous people and their harrowing experiences on poor to nonexistent roads. The film footage is fantastic.



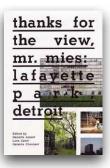
MARC GREUTHER

Chief Curator The Henry Ford

THANKS FOR THE VIEW, MR. MIES

Edited by Danielle Aubert, Lana Cavar and Natasha Chandani

This book is easily in my top five books published last year. Thanks for the View, Mr. Mies is part history, part field guide, part visual celebration of Lafayette Park, a landmark housing complex in Detroit with the largest collection of buildings designed by Ludwig Mies van der Rohe in the world. The book is a Detroit story and a design, architecture and thriving community story. Includes interviews with and essays by Lafayette Park residents, along with new and previously unpublished photographs.



JEANINE MILLER

Curator of Domestic Life The Henry Ford

QUEEN OF VAUDEVILLE: THE STORY OF EVA TANGUAY

By Andrew L. Erdman

In the early 1900s - long before performers such as Madonna and Lady Gaga made their mark charismatic Eva Tanguay was dazzling audiences on the vaudeville circuit. Eva's bold, energetic and self-confident performances pushed boundaries symbolizing a new, emancipated American woman. **Author Andrew Erdman** does a splendid and meticulous job bringing Eva's story to life, taking us along on her journey through a successful career and an often-tumultuous personal life. A few years ago, The Henry Ford acquired Eva Tanguay's personal collection of photographs, clippings and documents. Soon after, Erdman visited the Benson Ford Research Center to research the materials. Rare photos from this collection were reproduced in Erdman's book.



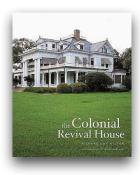
CHARLES SABLE

Curator of Decorative Arts The Henry Ford

THE COLONIAL REVIVAL HOUSE

By Richard Guy Wilson

This book not only has lavish photographs but also provides the origins and evolution of a major theme in American architecture and decorative arts. The Colonial Revival began as an outgrowth of the Centennial Celebration in 1876 and gradually evolved into a movement in design that has ebbed and flowed since. The Colonial Revival House leads readers on a tour of 40 of the finest extant examples. This book is a must have for designers, architecture enthusiasts and lovers of Americana.



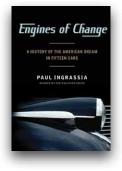
MATT ANDERSON

Curator of Transportation The Henry Ford

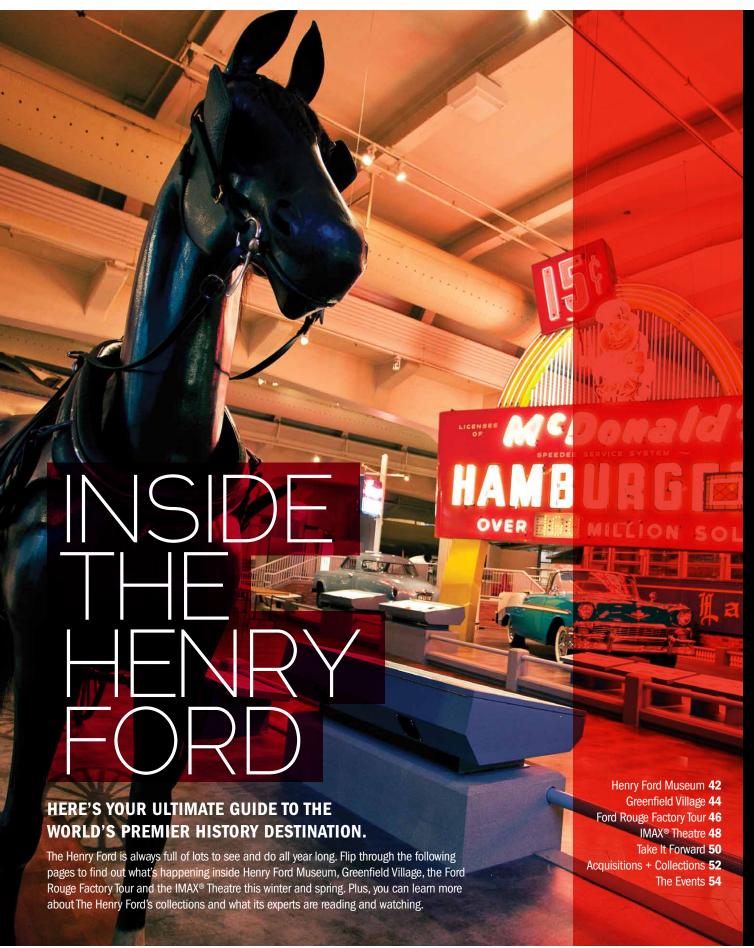
ENGINES OF CHANGE: A HISTORY OF THE AMERICAN DREAM IN FIFTEEN CARS

By Paul Ingrassia

Pulitzer Prize winner Paul Ingrassia profiles 15 cars that either changed the country's cultural landscape themselves or perfectly reflected the zeitgeist of their times. Engines of Change is a thorough yet highly entertaining review of a century of American "automobility." When you've finished reading, you can come see 13 of the cars Ingrassia depicts in the book at The Henry Ford.









ROSA PARKS, A SINGLE PERSON WHO CHANGED THE FUTURE FOR MILLIONS



walking the exhibits in Henry Ford Museum, something is different. Children are climbing aboard the great 1941 Allegheny Steam Locomotive, moms and dads are taking a tour inside

R. Buckminster Fuller's Dymaxion House and couples are enjoying a slice of pie and a Faygo Red Pop at the counter of Lamy's, a restored 1940s American diner. No protective glass, restricting ropes or signs saying "Do Not Enter."

You don't just see a piece of history on exhibit in the museum — you get to immerse yourself in it.

When The Henry Ford acquired the Montgomery city bus that Rosa Parks boarded on her way home from work December 1, 1955, the same rules applied when it was put on exhibit. Visitors weren't going to walk around the bus, doors

For more information, hours and pricing > visit **thehenryford.org/museum**

locked and a velvet rope wrapped around it. They, like Parks, could sit on the bus and relive the experience of being told to give up their seat to another because of the color of their skin.

Parks refused to surrender her seat to a white man that day, and her courageous rise to iconic status as the mother of the civil rights movement began. Sitting on the bus in Henry Ford Museum, listening to Parks as she recounts her story, is lifechanging for those unfamiliar with the particulars of that December day nearly 60 years ago. It's a moment in history that lends undeniable proof that just one person, willing to take a stand, can be a catalyst for sweeping changes that can benefit us all.

The Rosa Parks Bus can be found in the With Liberty and Justice for All exhibit in Henry Ford Museum.





Learn more about how you can participate > visit thehenryford.org or dayofcourage.org

HATS, FROM EXPRESSIONS OF SOCIAL STATUS TO FABULOUS FASHION STATEMENTS



into Greenfield Village and 300 years of American history is in motion. Model Ts chug along the streets, the smells of openhearth cooking and canning fill the air at working century-old farmhouses, Thomas Edison's

Menlo Park Laboratory and the Wright Brothers Cycle Shop are charged with activity and excitement. And all are waiting for you to step inside, make yourself welcome and experience longtime traditions.

In one quiet corner sits Cohen Millinery, moved to Greenfield Village from its original location in Detroit, Michigan's Corktown, where it was operated in the 1890s by Mrs. "D." Elizabeth Cohen. The young widow lived upstairs and supported her four children by selling "fancy goods, dry goods and gents' furnishings" on the first floor. Cohen became best known, however, for her fabulous hats, which she bought wholesale and trimmed with a wide assortment of silk flowers, colorful ribbons, feathers and even whole stuffed birds.

Thanks to celebrities such as Kate Middleton, the Duchess of Cambridge, more and more women are experimenting with hats again. But for ladies in the late 1800s, hats weren't optional accessories worn for fun. A respectable woman never left home without one - the more frills, the better.

"The more you had on your hat, the wealthier you were thought to be," said Greenfield Village historic presenter Anora Zeiler, one of seven milliners working at Cohen Millinery today.

Greenfield Village guests visiting the charming shop can browse a colorful array of authentic antique hats and other accessories, such as ornate hair combs and hatpins, delicate ladies' gloves, and men's suspenders and ties. They can also chat with the milliners - all dressed in period costume - as they layer a variety of adornments on felt or straw hats, always keeping with the style of the 1880s and 1890s.

"We sew on each piece separately and in the proper order, careful to hide the stitches," Zeiler said.

Last year, Cohen Millinery brought another part of history forward to the current day, allowing visitors to not only admire the milliners at work and the headwear on the shelves but to purchase handmade beauties on site as ladies did more than a century ago. Each properly packaged in period hatboxes tied with bows.

"We're making hats in style again," said Zeiler proudly.





ONLINE For more information, hours and pricing > visit thehenryford.org/village



NSPIRE

URBAN BEEKEEPING, AN EXPERIMENT BUILDS ENVIRONMENTAL AWARENESS



you buy a ticket for the Rouge Factory Tour, you expect to see an assembly line work - and you will. The tour gets you so close to the particulars of the line building the Ford F-150 that the only way you could

learn more is to work the line yourself.

But what about the things you don't expect to see during a vehicle assembly plant tour? Like a living roof made of thousands of tiny plants above you or a surrounding outdoor sanctuary where birds sing, flowers bloom and honeybees flourish.

Cynthia Jones is the manager of the Ford Rouge Factory Tour. She also doubles as the plant's resident beekeeper, tending to three hives filled with more than 50,000 honeybees.

"I can honestly say that I had never thought much about bees before I started working here," said Jones. "Now, they've become somewhat of a fascination for me."

Jones has turned the urban beekeeping experiment into an unexpected and welcomed part of the factory's outdoor Living Laboratory Tour.

For most visitors, she said, it's surprising to find beehives on the grounds of an auto plant.

The beehives were introduced in the mid-2000s as part of a larger effort to re-create an ecosystem on the industrial site that hadn't seen plants, trees or wildlife for some 90 years.

"When we started talking about the bees, none of us understood urban agriculture. It was not a conversation," said Jones, who has learned a great deal in the last 10 years about the pollinating power attached to bees. "Turns out, we were on the cutting edge by happy accident. People took notice."

In conjunction with the general public's growing environmental awareness and concern for what we eat and where it comes from, the seasonal, guided Living Lab Tour has evolved into a popular tool for local educators.

"The majority of kids from visiting school groups are afraid of bees. They think bees are bad," said Jones. "Then we talk about some of their favorite foods that require pollination to grow - apples, cherries, peaches, watermelon - and they start to realize that bees matter."



THE ROUGE

does not commercially produce honey. However, the honey was once harvested for William Clay Ford Jr., the catalyst for the Rouge Plant's innovative, sustainable business practices, for Christmas gifts.

ONLINE For more information, hours and pricing > visit thehenryford.org/rouge



15/70, FILM AT THE ABSOLUTE HEIGHT OF PICTURE QUALITY



movie at The Henry Ford IMAX® Theatre is an experience more

frame (15/70). Images aren't just crisp and clean, noted Bartsch, they literally draw you in





TAKE IT FORWARD

BOLD IDEAS SHAPING OUR WORLD

CALL ON ME

Was there a time before the smartphone? Remember when ...

YOU HAD TO TURN THAT DIAL >

Henry Ford probably loved the classic 1930s rotary desk phone because it mostly came in black. Before you go buying a knockoff for \$50 online, take a gander at an original specimen.

Made in America, Henry Ford Museum



LAB WORK

No, we're not talking about blood tests checking for diabetes or high cholesterol; we're talking about what happens in those mysterious spaces where great minds escape to do their thing.



< SPARK IT UP

Beakers on tables, Mason jars of mystery powders, equipment unexplained. Trigger your inner inventor into high gear in the invention factory of Thomas Edison.

Menlo Park Laboratory, Greenfield Village

THE BODY ELECTRIC

Currents, charges, circuits. Explore electricity and how it transports us around town.

FOR THE LADIES >

Almost 100 years ago, women loved the idea of a car without a hand crank and a stubborn transmission. Henry Ford's wife, Clara, loved to motor in this 1914 Brougham electric beauty.

Driving America, Henry Ford Museum



WHAT'S COOKIN'?

We are what we eat. See and smell America's culinary history reborn.

SEALED WITH A BEE'S KISS >

Today's casual canning terms are Kerr and Ball, pectin and bands. How about beeswax, animal bladders and spirit-soaked parchment? Let's go canning on the farm.

Firestone Farm, Greenfield Village



OH, YES, YOU CAN

Grab a glass Mason jar and preserve some produce like they did way back when.



Watch our canning video > http://bit.ly/T1b00i













< PHONES GOT SMART

Touch-Tone? No, touch screen! Slim and sleek from the get-go, the iPhone has transformed our view of what a mobile electronic device should be.

Made in America, Henry Ford Museum



< IF THESE SHOP WALLS

COULD TALK Once upon a time, two brothers who owned a cycle shop decided to abandon bike building for making flying machines. Wright Cycle Shop, Greenfield Village



< PONDS, POLLEN AND PRODUCTION

Making trucks and honey in the same space seem impossible to you? A little natural sanctuary lives right beside a vehicle assembly plant in perfect harmony.

Living Laboratory, Ford Rouge Factory Tour



IT WOULDN'T FIT IN YOUR POCKET >

Made in America, Henry Ford Museum

Expensive, bulky and the battery didn't last long. But,

you could take the mobile flip phone with you if you

wanted to. And no more rotary roundabouts required.

YOUR CHARIOT AWAITS >

The 1980 Comuta-Car may not be very pretty on the outside, but on the inside you'll find early electric travel at its raw and basic best.

Driving America, Henry Ford Museum



A POGO STICK ON WHEELS? >

You don't bounce your way on a Segway. You glide on this modern-day statement to personal, electric transportation.

Driving America, Henry Ford Museum





< PATIENCE, PLEASE ...

Open-hearth cooking is low on heat, slow to finish and so worth the wait. Our hearthers have mastered that open flame, and soup's simmering, peas are stewing and chicken's roasting.

Daggett Farmhouse, Greenfield Village



< NEW AGAIN

Sure, kitchens changed a lot when electricity and running water were to be had. But when you admire that way-cool black-and-white kitchen floor tile at Ikea, think back a bit to what was on your grandma's floors 80+ years ago.

Home Arts, Henry Ford Museum



PLACE JARS IN CANNER AND COVER WITH LID FOR 30 MINUTES.



WATER SHOULD BE AT LEAST ONE INCH 1 INCH ABOVE THE JARS.



LET JARS SIT. THEN REFRIGERATE AND ENJOY!



AFIGHT FOR PLAYERS' RIGHTS

CURT FLOOD, AN UNSUNG HERO FOR CIVIL RIGHTS INSIDE AND OUTSIDE AMERICA'S FAVORITE PASTIME



made of cork, rubber and yarn and covered with white cowhide stitched by hand with exactly 216 stitches made from 88 inches of red thread. An average of 60 to 70 of them are used and discarded in every Major

League Baseball game. Little leaguers all over the country leave them in the outfields of thousands of parks across the country every season.

The baseball. What makes one special, worth keeping? Most would say when it's signed by one of the game's greats like Ty Cobb or Cal Ripken Jr. But what about a baseball autographed by Rosa Parks, the iconic mother of the civil rights movement?

The Henry Ford acquired this one-of-a-kind baseball after learning its story and its potential to bring a somewhat unknown hero of civil rights into today's conversations.

Parks autographed the ball for Curt Flood, a former All-Star St. Louis Cardinal center fielder and civil rights activist who sued Major League Baseball in the 1970s to challenge the club's ability to trade him without permission. Eventually, his embittered battle with the league over what was called the reserve clause led to the establishment of the free agency that we know today.

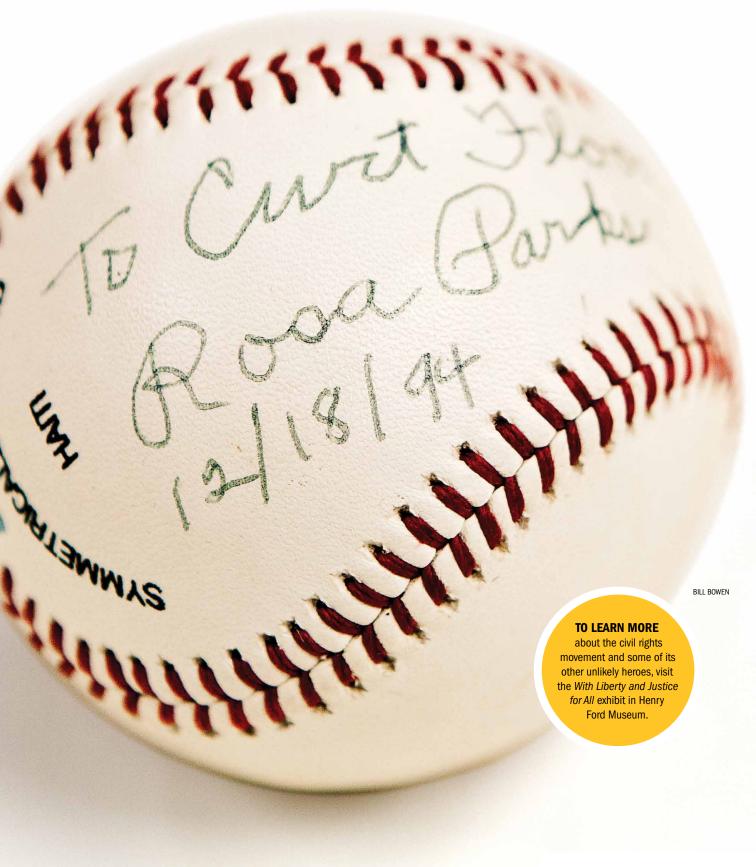
Flood's story may not be as well-known as Parks', but he, too, decided to stand up publicly for his rights and the rights of others, which made an indelible mark on the social landscape and certainly changed the game of baseball forever. In exchange, Flood, however, paid a hefty personal price. He only played ball briefly after filing suit in 1970, and his personal relationships and emotional health suffered greatly for years to come.

"Curt Flood was always on my radar screen as an important character in sports history," said Jim McCabe, chief collections manager and curator of buildings at The Henry Ford. "He internalized the experiences he had in the minors with racism and segregation and couldn't stand silent as somebody limited the ability of a person to reach their full potential."

In many circles, it wasn't even known that Parks and Flood had ever met, let alone that he asked her to autograph a baseball.

In addition to the autographed ball, The Henry Ford has other memorabilia from Flood's storied baseball career and his legal battles to abolish the reserve clause.

ONLINE For more information about the collections of The Henry Ford > visit collections.thehenryford.org



INSIDE THE HENRY FORD

THE EVENTS

WHY READ ABOUT THE PAST WHEN YOU CAN RELIVE IT FIRSTHAND?

DESIGNING TOMORROW: AMERICA'S WORLD'S FAIRS OF THE 1930s

APRIL 27-SEPTEMBER 2, 2013

Planes, trains, automobiles and talking robots ... oh, my! Tens of millions of Americans in the 1930s turned to world's fairs to get a sneak peek at what the future might bring — for everything from aviation and ground transportation to home furnishings and city metropolises.

Designing Tomorrow: America's World's Fairs of the 1930s is on exhibit in Henry Ford Museum to help explain why these fairs became a community platform, where corporations, designers, architects and even governments gathered to introduce new ideas and products to a hopeful American public.

Expect to see nearly 200 artifacts in this multi-gallery exhibit, from building models and vintage TVs to chatting space-age robots and funky furniture.

The exhibit showcases the six prominent Depression-era fairs that heavily influenced modern design and consumer culture.

CHICAGO, ILLINOIS

A Century of Progress International Exposition (1933-34)

SAN DIEGO, CALIFORNIA

California Pacific International Exposition (1935-36)

DALLAS, TEXAS

Texas Centennial Exposition (1936)

CLEVELAND. OHIO

Great Lakes Exposition (1936-37)

SAN FRANCISCO, CALIFORNIA

Golden Gate International Exposition (1939-40)

NEW YORK, NEW YORK

New York World's Fair (1939-40)

CLOCKWISE FROM TOP: ASSEMBLY LINE IN GM EXHIBIT, A CENTURY OF PROGRESS INTERNATIONAL EXPOSITION, CHICAGO, 1933, COURTESY ALBERT KAHN FAMILY OF COMPANIES; OFFICIAL Jouvenir GUIDE GREAT LAKES EXPOSITION GUIDEBOOK, CLEVELAND, 1936, COLLECTION OF THE NATIONAL BUILDING MUSEUM; SOUVENIR COASTER, CALIFORNIA PACIFIC INTERNATIONAL EXPOSITION, 1935. CLEUELAND 1936 25

> Designing Tomorrow: America's World's Fairs of the 1930s has been made possible in part by a major grant from the National Endowment for the Humanities*: Because democracy demands wisdom; and the National Endowment for the Arts. This exhibition was organized by the National Building Museum, Washington, D.C

*Any views, findings, conclusions or recommendations expressed in this exhibition do not necessarily represent those of the National Endowment for the Humanities.







ONLINE visit thehenryford.org/worldsfairs



CIVIL WAR REMEMBRANCE MAY 25-27, 2013

Take your children, your spouse or a grandparent to Civil War Remembrance Weekend in Greenfield Village this Memorial Day weekend, and you'll all have fabulous war stories to tell friends, family and strangers you meet. You can tell the story of how you enlisted and became Union recruits, holding mock drill rifles, learning maneuvers from a drilling officer such as marching in formation, wheel left and about face.

Or maybe you will witness reenactors portraying two companies of Union and Confederate soldiers, weapons gleaming, traveling across the Village Green toward each other, ready to fight. The scene is dramatic and oh so real, from the attire and sounds to the general feeling of anticipation on the mock battlefield.

"Powerful and moving," said Brian Egen, Civil War historian and program development offiicer at The Henry Ford. "Every year, I say to myself that I will not get choked up, and I always end up tearing up when the current veterans are called out to 'fall in on the colors' in the middle of the field. When taps is played toward the end, there is not a dry eye to be found."

Civil War Remembrance in Greenfield Village is hands-on and hard-core living history, the ultimate tribute to those who lived and died during this turbulent time in American history.

"We want visitors to experience what Civil War-era life might have been like," said Egen, "and to inspire them to learn more."

Visit our website for more information about the program, including military reenactments, special presentations, hands-on activities and re-creations of military and civilian camps.

ONLINE visit thehenryford.org/civilwarweekend

INSIDE THE HENRY FORD

YEAR-ROUND

MACY'S 2ND MONDAYS CHILDREN'S **PROGRAM**

10 a.m.-noon January 14, February 11, March 11, April 8, November 11. December 9 Henry Ford Museum

May 13, June 10, July 8, August 12, September 9, October 14 Greenfield Village

TARGET FAMILY DAYS

January 21, February 4, September 2, November 5 Henry Ford Museum

TINKER. HACK. INVENT. **SATURDAYS**

January 26, February 23, March 30. April 27. May 25, June 29, July 27, August 31, September 28, October 26, November 30, December 28 The Henry Ford



JANUARY

LEGO® ARCHITECTURE: TOWERING AMBITION

Open through February 24 Henry Ford Museum

LEGO® Architecture: Towering Ambition was developed by the National Building Museum, Washington, D.C. Play area sponsored through in-kind donation from LEGO® Systems, Inc. LEGO®, its logo and the brick and knob configuration are trademarks of the LEGO Group.@2010-13 The LEGO Group.

WITH LIBERTY AND **JUSTICE FOR ALL** SYMPOSIUM: **MARTIN LUTHER** KING JR. DAY

January 21 Henry Ford Museum Free admission courtesy of Target

FEBRUARY

BLACK HISTORY MONTH

February 1-3, 6-10, 13-17, 20-24 and 27-28 Henry Ford Museum

ROSA PARKS' 100TH BIRTHDAY: NATIONAL DAY OF COURAGE

February 4 (Open 'til 9:30 p.m.) (Henry Ford Museum

Free admission courtesy of Target

WINTER LOCAL ROOTS **EVENING DINING***

February 8 (Lovett Hall

APRIL

OUTDOOR LIVING LAB TOUR*

April 15-October 12 Ford Rouge Factory Tour

DESIGNING TOMORROW: AMERICA'S WORLD'S FAIRS OF THE 1930S **PREVIEW RECEPTION***

April 25 (Henry Ford Museum





MICHELLE ANDONIAN

RAILROADERS' **BREAKFAST***

April 27-28, May 4-5 and 11-12 **Greenfield Village**

DESIGNING TOMORROW: AMERICA'S WORLD'S FAIRS OF THE 1930S

April 27-September 2 Henry Ford Museum

Designing Tomorrow: America's World's Fairs of the 1930s was organized by the National Building Museum, Washington, D.C. This exhibition has been made possible in part by a major grant from the National Endowment for the Humanities*: Because democracy demands wisdom; and the National Endowment for the Arts. *Any views, findings, conclusions or recommendations expressed in this exhibition do not necessarily represent those of the National Endowment for the Humanities.

MAY

SPRING LOCAL ROOTS **EVENING DINING***

May 2 (Henry Ford Museum

MOTHER'S DAY BRUNCH*

May 12 Lovett Hall

STAR TREK ~ INTO **DARKNESS: AN IMAX®** 3D EXPERIENCE*

Opens May 17 IMAX® Theatre

CIVIL WAR REMEMBRANCE

May 25-27 (Open Saturday 'til 9 p.m.) (Greenfield Village

JUNE

MEMBER **APPRECIATION DAYS**

June 7-9 The Henry Ford

HISTORIC BASE **BALL GAMES**

June 8-9, 15-16, 22-23 and 29-30

Historic Base Ball in Greenfield Village is made possible through the generous support of Cynthia and Edsel B. Ford II.

NATIONAL GET **OUTDOORS DAY**

June 8 Greenfield Village

MOTOR MUSTER

June 15-16 (Open Saturday 'til 9 p.m.) (Greenfield Village

SUMMER IN **GREENFIELD VILLAGE**

June 15-August 18 Greenfield Village

SUMMER **DISCOVERY CAMP***

June 24-28, July 8-12, 15-19, 22-26, July 29-August 2 and August 5-9 The Henry Ford

JULY

SUMMER IN **GREENFIELD VILLAGE**

Running through August 18 Greenfield Village



ANNUAL SALUTE **TO AMERICA***

July 3-6 (Greenfield Village





Watch a stop-motion construction of the LEGO® Clocktower > Available February 2013 for iPad and Android tablets









HISTORIC BASE BALL **GAMES**

July 6-7, 13-14, 20-21 and 27-28 Greenfield Village

RAGTIME STREET FAIR

July 13-14 (Open Saturday 'til 9 p.m.) (Greenfield Village

MAKER FAIRE® DETROIT*

July 27-28 (Open Saturday and Sunday 'til 6 p.m.) (The Henry Ford

AUGUST

HISTORIC BASE BALL **GAMES**

August 3-4 and 17-18 Greenfield Village

BLUES. BREWS AND LOCAL ROOTS BBQ*

August 8 (Greenfield Village

WORLD TOURNAMENT OF HISTORIC BASE BALL®

August 10-11 Greenfield Village



SEPTEMBER

63RD ANNUAL OLD CAR FESTIVAL

September 7-8 (Open Saturday 'til 9 p.m.) (Greenfield Village

FALL FLAVOR WEEKEND

September 28-29 Greenfield Village

FARMERS MARKET

September 28 Greenfield Village

OCTOBER

FALL FLAVOR WEEKEND

October 5-6 Greenfield Village



MICHELLE ANDONIAN

FARMERS MARKET

October 5 Greenfield Village

HALLOWE'EN IN **GREENFIELD VILLAGE***

October 11-13, 18-20 and 25-27 (Greenfield Village



MICHELLE ANDONIAN

HALLOWE'EN IN **GREENFIELD VILLAGE DINNER PACKAGE***

October 11-12, 18-19 and 25-26 (Greenfield Village

JAMES CAMERON'S **AVATAR: THE EXHIBITION™**

October 26-January 26, 2014 Henry Ford Museum

AVATAR: The Exhibition was organized by EMP Museum and developed in partnership with **Twentieth Century Fox Consumer Products and James Cameron's** Lightstorm Entertainment.

ROY RITCHIE

NOVEMBER LOCAL ROOTS FALL **EVENING DINING***

November 7 (**Eagle Tavern**

MEMBER APPRECIATION DAYS

November 8-10 The Henry Ford

JOHN F. KENNEDY **LECTURE: AN EVENING** WITH FORMER SECRET **SERVICE AGENT CLINT HILL AND** LISA MCCUBBIN*

November 19 (Henry Ford Museum

THE HUNGER GAMES -CATCHING FIRE: THE IMAX® EXPERIENCE*

Opens November 22 IMAX® Theatre

MEMBERS 20TH ANNUAL HOLIDAY LIGHTING CEREMONY*

November 25 (Henry Ford Museum

HOLIDAYS IN HENRY FORD MUSEUM

November 29-January 5, 2014 Henry Ford Museum

DECEMBER

HOLIDAYS IN HENRY FORD MUSEUM

Running through January 1, 2014 Henry Ford Museum

HOLIDAY NIGHTS IN GREENFIELD VILLAGE*

December 6-7, 13-15, 19-23 and 26-28 (Greenfield Village

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December 6-7, 13-15 and 19-23 (Greenfield Village

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December 6-7, 13-15, 19-23 and 26-28 (Greenfield Village

THE HOBBIT -THE DESOLATION OF **SMAUG: AN IMAX® 3D EXPERIENCE***

Opens December 12 IMAX® Theatre

- ADDITIONAL FEE AND/OR ADVANCE RESERVATION REQUIRED
- **SPECIAL EVENING HOURS DURING THESE EVENTS**

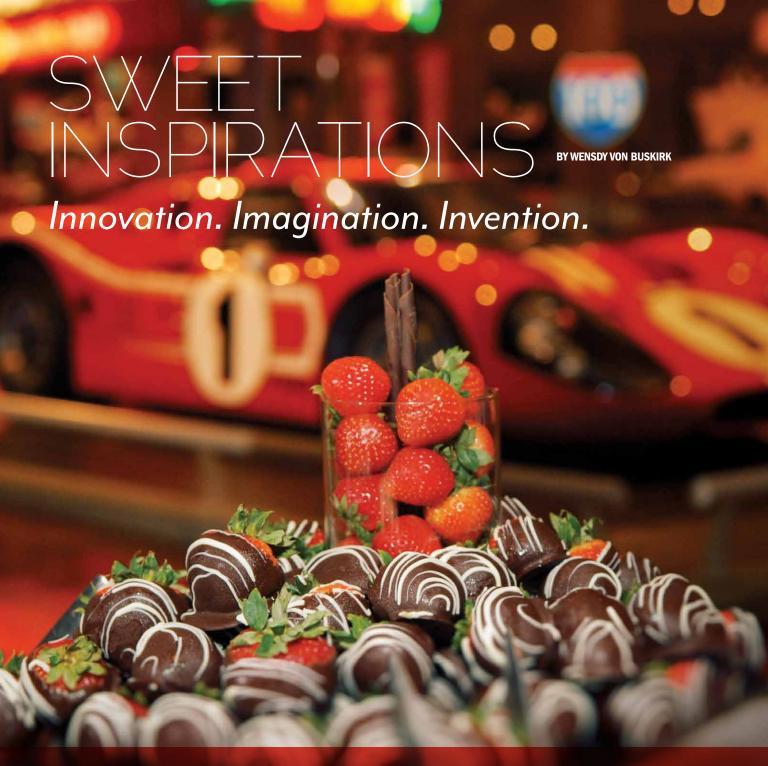
ALL PROGRAMS AND DATES ARE SUBJECT TO CHANGE.

BEFORE YOU VISIT.

It's a good idea to give a quick call or check the appropriate website to confirm dates, times and locations for all events.



Get an inside look at the experiences of The Henry Ford > blog.thehenryford.org



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THE FIVE DISTRICTS OF THE D



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GREATER NOVI

масомв

OAKLAND

To help you get a better grip on the lay of the land, the region has been organized into five destination districts: Keep in mind that The Henry Ford is located within the Dearborn/Wayne district.

STAY, EXPLORE + SAVOR ⊖ **ACCOMMODATIONS AT A GLANCE**

HOTEL		LOCATION AREA	DRIVE TIME*	SLEEPING ROOMS	POOL	PETS	MEETING ROOMS	MEETING SPACE (SQ. FT.)	AD ON PAGE
FULL-SERVICE	Adoba Hotel Dearborn	Dearborn	5	773	Indoor	•	30+	62,000	66
	Best Western Greenfield Inn	Dearborn (I-94 corridor)	10	209	Indoor	•	4	1,047	65
	Detroit Marriott at the Renaissance Center	Downtown Detroit	15	1,298			29	100,000	69
	DoubleTree Hotel Detroit/Dearborn	Dearborn	10	353	In/Out		16	12,000	70
	Holiday Inn Southgate - Banquet & Conference Center	Downriver (I-75 Corridor)	15	160	Indoor		8	9,000	63
	Sheraton Detroit Metro Airport	Airport (I-94 corridor)	15	359	Indoor	•	13	18,000	66
	The Henry, an Autograph Collection by Marriott	Dearborn	5	323	Indoor	• \$	14	26,000	67
HISTORIC	The Dearborn Inn, a Marriott Hotel	Dearborn	3	229	Outdoor		17	17,000	64
	The Westin Book Cadillac	Downtown Detroit	15	453	Indoor/Spa		13	26,000	66
LIMITED SERVICE	A Victory Inn Dearborn	Dearborn	7	77	Outdoor		0		69
	Comfort Inn · Dearborn	Dearborn	6	116	Indoor		1	250	65
	Comfort Inn & Suites · Taylor	Dearborn (I-94 Corridor)	10	78	Indoor		1 (15 PEOPLE)		67
	Comfort Suites · Southgate	Downriver (I-75 Corridor)	15	78	Indoor		1 (50 PEOPLE)		64
	Courtyard by Marriott · Dearborn	Dearborn	10	147	Indoor		2	1,274	69
	Hawthorn Suites by Wyndham	Dearborn	10	128	Outdoor	• \$	0		69
	Holiday Inn Express & Suites · Allen Park	Dearborn (I-94 Corridor)	10	163	Indoor		2 (15 PEOPLE EA.)		71
	Marriott TownePlace Suites · Dearborn	Dearborn	10	148	Outdoor	• \$	0		68
	Marriott TownePlace Suites · Livonia	I-275 Corridor	20	94	Outdoor	• \$	0		66
	Red Roof Inn · Dearborn	Dearborn	7	111		•	0		69
	Red Roof Inn · Taylor	Downriver (I-75 Corridor)	15	111		•	0		66
	SpringHill Suites by Marriott · Southfield	Southfield	15	84	Indoor		1	249	66
BED & BREAKFAST	Bishop-Brighton Bed & Breakfast	Downriver	20	3			1	350	68
	Dearborn Bed & Breakfast	Dearborn	4	4			2	800	70
	York House Bed & Breakfast	Dearborn	10	3			0		70
CAMPING	Camp Dearborn	NW Oakland County	45	191	Outdoor		0		69
	Detroit Greenfield Campground/RV Park	I-94 Corridor	20	212	On Lake	•	Outdoor Pavilion	600	68

*Drive time in minutes to The Henry Ford.



Today we didn't make a budget.

Today we made mermaid tails at the shore.

Today we didn't have lunch with the client.

Today we had a tea party that served only lake water.

Today we didn't wear multiple hats. Today we wore dune grass wigs.

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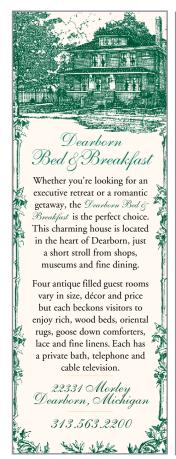
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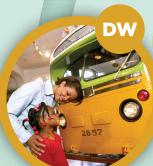
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