



IMMERSIVE STORYTELLING

MARCELO GALDIERI, SVP BRAND MANAGEMENT

NATIONAL GEOGRAPHIC	JUNE 2017	LYING • GALAPAGOS
NATIONAL GEOGRAPHIC	JULY 2017	ANTARCTICA • VENEZUELA
NATIONAL GEOGRAPHIC	AUGUST 2017	RACE TO THE MOON •
NATIONAL GEOGRAPHIC	SEPTEMBER 2017	ADDICTION • BATA CA
NATIONAL GEOGRAPHIC	OCTOBER 2017	JANE GOODALL • DR
NATIONAL GEOGRAPHIC	NOVEMBER 2017	HAPPIEST PLACES •
NATIONAL GEOGRAPHIC	DECEMBER 2017	JESUS • JAGUARS • HER
NATIONAL GEOGRAPHIC	JANUARY 2018	WHY BIRDS MATTER
NATIONAL GEOGRAPHIC	FEBRUARY 2018	THEY ARE WATCHING
NATIONAL GEOGRAPHIC	MARCH 2018	STREET PHOTOGRAPHERS
NATIONAL GEOGRAPHIC	APRIL 2018	THE RACE DUEL • GENETICS
□ 05 2018		BEHIND PICASSO • MUSLIMS IN AMERICA •



FROM
REVERENCE

TO
RELEVANCE



NATIONAL GEOGRAPHIC



OUR ECOLOGICAL CRISIS

POLLUTION, THREAT TO MAN'S ONLY HOME 730
GORDON YOUNG, JAMES P. BLAIR

THE WORLD—AND HOW WE ABUSE IT 762
SPECIAL MAP AND PAINTING SUPPLEMENT

THE FRAGILE BEAUTY ALL ABOUT US 765
HARRY S. C. YEN

LAND DIVING WITH THE PENTECOST ISLANDERS KAL MULLER 799

OLD SALEM: MORNING STAR OF MORAVIAN FAITH ROWE FINDLEY 818

EDITOR FREDERICK G. VOSBURGH RETIRES; SUCCEEDED BY GILBERT M. GROSVENOR ROBERT W. MADDEN

SCIENTIST STUDIES JAPAN'S FANTASTIC LONG-TAILED FOWL MELVIN M. PAYNE 838

SEARCHING OUT MEDIEVAL CHURCHES IN ETHIOPIA'S WILDS FRANK I. OGASAWARA 845

ELI MIYAZAWA

GEORG GERSTER 856

SEE "ETHIOPIA: THE HIDDEN EMPIRE" WEDNESDAY, DEC. 2, ON CBS TV (page 884A)

OFFICIAL JOURNAL OF THE NATIONAL GEOGRAPHIC SOCIETY, WASHINGTON, D.C.

Pollution,



Threat to Man's Only Home

By GORDON YOUNG

Photographs by JAMES P. BLAIR
Both National Geographic Staff

FACTORY CHIMNEYS belching black smoke—like those of a Birmingham, Alabama, steel mill on the preceding page—once were hailed as signs of prosperity, of recovery from the Great Depression of the 1890's, of a future with "two cars in every garage." Today, with eighty million more Americans and also eighty million more cars, trucks, and buses than 40 years ago, we see smoking stacks and acrid exhaust fumes as poisons of the air we breathe, as examples and symbols of man's befuddlement of the only home he has.

Full realization of this sober truth has come since Christmas Eve 1968, when—through the eyes and cameras of moon-sighting Astronauts Frank Borman, James A. Lovell, Jr., and William A. Anders—we first saw our earth as a planet, and saw ourselves, in the words of poet Archibald MacLeish, "as riders on the earth together, brothers on that bright loveliness in the eternal cold—brothers who know now they are truly brothers."

Though worldwide and enormous, the problems of pollution surely are solvable by a human race capable of such a feat of science and technology as flight to another heavenly body—given the most precious ingredient of all: "Peace on earth, good-will toward men."

—THE EDITOR.

WE ARE ASTRONAUTS—all of us. We ride a spaceship called Earth on its endless journey around the sun. This ship of ours is blessed with life-support systems so ingenious that they are self-renewing, so massive that they can supply the needs of billions.

But for centuries we have taken them for granted, considering their capacity limitless. At last we have begun to monitor the systems, and the findings are deeply disturbing.

Scientists and government officials of the United States and other countries agree that we are in trouble. Unless we stop abusing our vital life-support systems, they will fail. We must maintain them, or pay the penalty. The penalty is death.

Nature Operates in Precarious Balance

Air, water, and land—those are the systems. How do they work?

Look into a pond. A fish feeds there on tiny plants and animals called plankton. In time, the fish dies. Micro-organisms in the water break the creature down into basic chemicals, consuming oxygen from the water in the process. Plant plankton, nourished by those chemicals, produce oxygen to replace it. Animal plankton feed on the plants, fish eat the tiny animals, and the cycle begins anew.

On land, too, nature moves full circle. Living things are nourished there, grow old and die, then decompose to enrich the land again.

"The 'Dawning Life of a Pond,' by William H. Allen, NATIONAL GEOGRAPHIC, August 1970.

A thin envelope of air surrounds the planet. We use its oxygen, exhaling carbon dioxide, which vegetation absorbs. Plants use the carbon for growth by the marvelous process called photosynthesis, and return oxygen to the atmosphere. Thus nature's delicate balance is maintained (see painting on the reverse side of *The World* map supplement).

Consider First Our Overloaded Air

For some "air pollution," let us give thanks. Dust and other particles in the atmosphere serve as nuclei about which raindrops form. But man has overloaded the sky. For centuries he has pumped particulate matter and gases into the atmosphere. As far back as 1661, a tract on air pollution was published in England: *Fumifugium; or the Inconvenience of the Air and Smoke of London Dissipated*.

Today much of the world suffers from the eye-smarting, lung-scarring curse we call smog. In Los Angeles and other great cities it comes in large part from automobile engines.

Last March I braved the streets of Tokyo, in that careening, cacophonous time of day the Japanese call rush hour. I was there for the first International Symposium on Environmental Disruption, where scientists from 15 countries had gathered to exchange views.

"Environmental disruption" was easy enough to see from the window of my taxi. Where else in the world, I wondered, must traffic policemen pause regularly to breathe oxygen (page 347). Conditions became so bad last summer that all cars were banned from

122 Tokyo streets on Sundays—the busiest of Japan's shopping days.

In Essen, Germany, I saw disruption in another form—smog caused mainly by industries. The chief of air-pollution control and land protection for North Rhine-Westphalia, Dr. Heinrich Stratzmann, showed me two small steel squares. The first was bright and new. The second, exposed to the Ruhr's smog for only two months, was chocolate brown and deeply corroded.

But the fight to clear the air was under way. In a laboratory I peered through electron microscopes, watched particle counters "talk" to computers, and visited special rooms where plants were being grown in scientifically polluted environments. Leaving, I ran into the laboratory's own rush hour. Forty Volkswagens flocked into the parking lot. Their drivers had spent the day taking air samples that would be analyzed and plotted on the daily air-pollution map.

The Ruhr's battle is far from won. Still, industry and power generation have doubled in the region during the past two decades, without an increase in air pollution; that is a victory, of sorts.

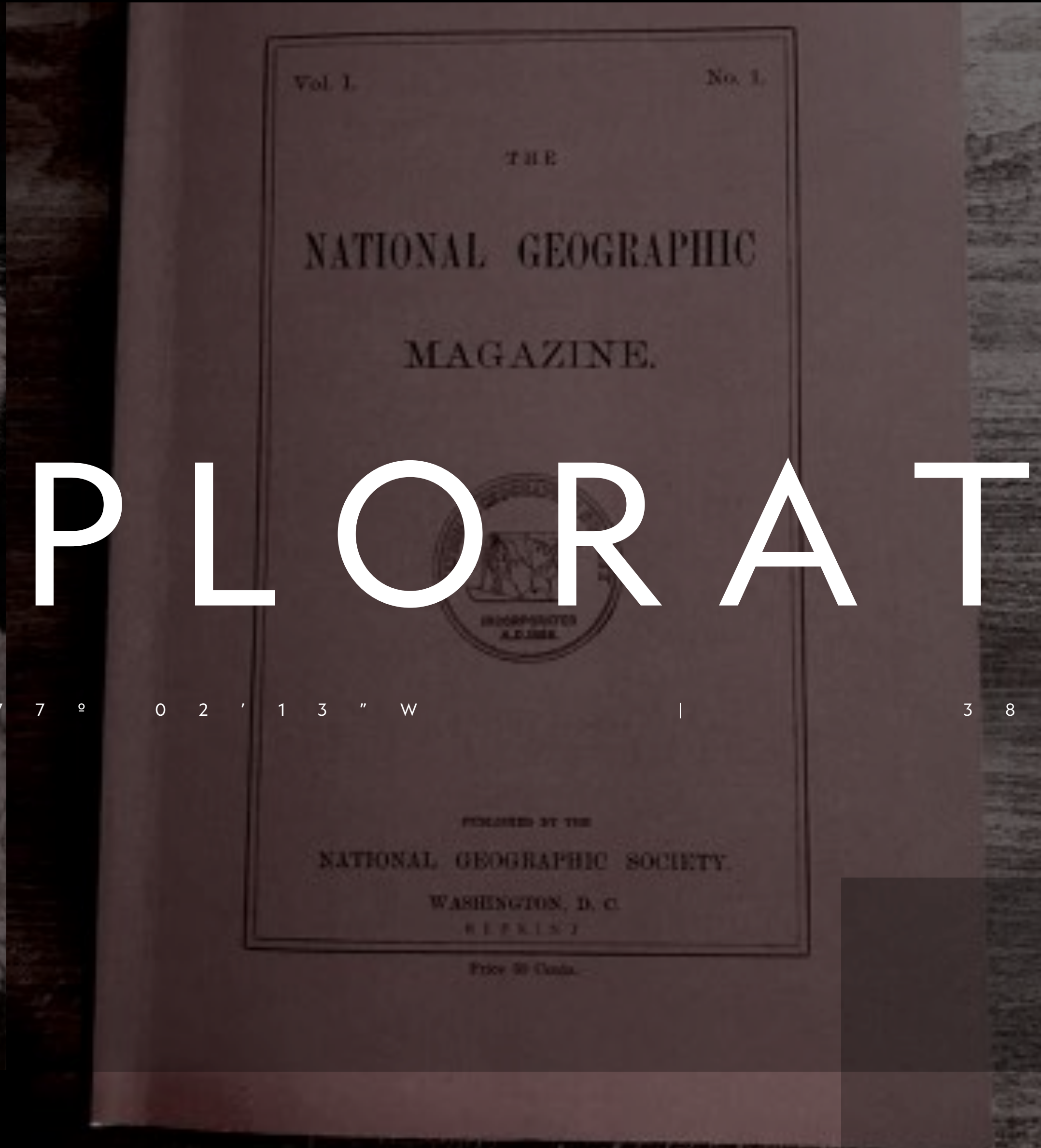
Polluted Air Circles the Earth

We can clean up land before we use it, and purify water before we drink it, but—except in air-conditioned rooms—we must breathe air as it comes to us. Scientists have tracked one type of air pollution—radioactive fallout—twice around the globe. The hazy air I am



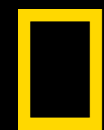
*“We’re all together watching television,
but we’re not all watching television together.”*





EXPLORATION

7 7 ° 0 2 ' 1 3 " W | 3 8 ° 5 4 ' 1 9 " N



WHAT WE BELIEVE IN

WHEN PEOPLE UNDERSTAND THE WORLD
THEY CARE MORE DEEPLY FOR IT.

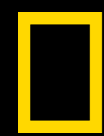
38° 54' 19" N

77° 02' 13" W





JULY 1906











DEEP OCEAN DROPCAM



HYBRID DIGITAL SURVEYING



360° CAMERA TRAPS





iNATURALIST



INSTANT WILD



OPEN EXPLORER





ONE STRANGE ROCK

13 THINGS THAT MAKE LIFE ON EARTH POSSIBLE

Earth is well equipped as a planet, and ideally placed in our solar system and galaxy to support life as we know it. The product of some 4.5 billion years of cosmic construction, our planet is flush with life thanks to a fortunate set of conditions, from the optimal chemical mix of our planet's upper atmosphere to our safe distance from the hidden black hole at the heart of our galaxy.

BY MARCO CARACULI
AND TONY W. COOPER
ILLUSTRATION BY JAMES

- 1 Our planet recycles life-friendly surface water**
Water is essential for life. On Earth, it is recycled through the water cycle. The sun's energy causes water to evaporate from the oceans, lakes, and rivers. The water vapor rises into the atmosphere, where it condenses into clouds. The clouds release rain or snow, which falls back to the ground. The water then flows back into the oceans, lakes, and rivers, completing the cycle.
- 2 We have an ozone layer to block harmful rays**
The ozone layer is a layer of ozone in the upper atmosphere. It absorbs most of the sun's harmful ultraviolet radiation, preventing it from reaching the Earth's surface. This helps protect life on Earth from the damaging effects of UV radiation.
- 3 We have a big moon to stabilize our axial wobble**
The moon's gravitational pull helps stabilize Earth's axial tilt. Without the moon, Earth's axial tilt would vary significantly over time, which would cause extreme climate fluctuations. The moon also causes tides, which help mix nutrients in the oceans.
- 4 Earth's varied surfaces support many life-forms**
Earth's diverse landscapes, including mountains, valleys, and oceans, provide different habitats for various life forms. The variety of environments allows for a wide range of species to thrive.
- 5 Our magnetic field deflects solar winds**
Earth's magnetic field, known as the magnetosphere, acts as a shield against solar winds. It deflects charged particles from the sun, preventing them from stripping away the atmosphere and causing damage to life on the surface.

THIS IS SATURN

The second largest planet in our solar system is known for its dramatic ring system and dozens of moons. Shown here are the major moons beyond the rings. The planet itself is big enough for 764 Earths to fit inside.

AFTER APOLLO

Nearly half a century has elapsed since humans last visited the moon in 1972. But we never stopped exploring. We've established research stations, sending Earth-orbiting satellites and rovers to study our planet from space. We've also sent probes to study other planets, moons, and comets, and we've sent humans to space again.

INNER SOLAR SYSTEM

THE MOON AND ITS PROXIMITY
The moon is the only natural satellite of Earth. It is the only celestial body in the solar system that is visible from the ground without the aid of a telescope.

OUTER SOLAR SYSTEM

THE GIANT PLANETS
The four giant planets (Jupiter, Saturn, Uranus, and Neptune) are the largest in the solar system. They are composed primarily of hydrogen and helium, with a small rocky core.

ICE GIANTS
The ice giants (Uranus and Neptune) are composed primarily of water, ammonia, and methane. They have a rocky core and a thick atmosphere of hydrogen and helium.

COMETS AND METEORS
Comets and meteors are small, rocky bodies that orbit the sun. They are composed of dust and ice. Comets have long tails of dust and gas that point away from the sun.

GETTING THERE AND BACK

APOLLO
The Apollo program was the first human spaceflight program to reach the moon. It consisted of 16 flights, including 11 lunar landings.

SHUTTLE
The Space Shuttle program was the first reusable human spaceflight program. It consisted of 35 flights, including 28 orbital flights and 7 test flights.

FALCON 9
The Falcon 9 is a two-stage, partially reusable launch system. It is the most commonly used launch vehicle in the world.

SOVIETS IN SPACE
The Soviet Union was the first to launch a satellite (Sputnik 1) and the first to send humans into space (Yuri Gagarin).

U.S. REACHED THE MOON
The Apollo 11 mission was the first to land humans on the moon. It consisted of the Saturn V launch vehicle, the Apollo 11 spacecraft, and the Lunar Module.

U.S. GOES COMMERCIAL
The Commercial Crew Program is the first program to launch private astronauts into space. It consists of the Space Launch System (SLS) and the Orion spacecraft.

ROUND-TRIP TICKET
The world's first reusable spacecraft, the Space Shuttle, was launched in 1981. It was designed to be used for multiple missions.

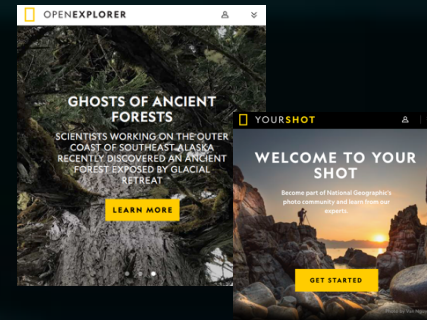
U.S. GOES COMMERCIAL
The Commercial Crew Program is the first program to launch private astronauts into space. It consists of the Space Launch System (SLS) and the Orion spacecraft.



LOCATION-BASED ENTERTAINMENT



COMMUNITIES



LIVE EVENTS



CONSUMER PRODUCTS



TRAVEL



EXPERIENCES

IMPACT

MEDIA

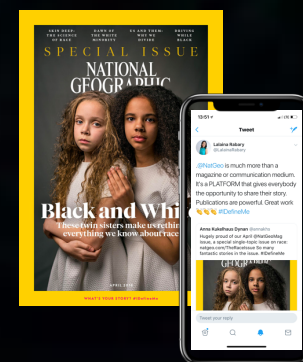
INITIATIVES



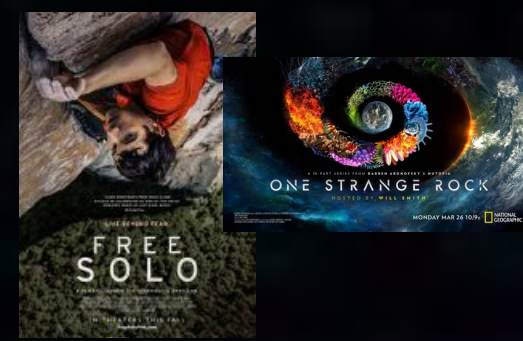
KIDS



EDITORIAL



UNSCRIPTED



SCRIPTED

Genius.



NATIONAL GEOGRAPHIC

"I want to go out and
be a face in the crowd
that no one looks at."
KATE STEWART'S
FACE TRANSPLANT
MOMENT

THE STORY OF A FACE

Inside the
groundbreaking
face transplant
that has given
a young woman
a second chance
at life





Surgeons focus into a transplant operation at the Cleveland Clinic. In other surgeries, that the absolute task of removing the face from an organ donor. As soon as the light and by the gravity of their work, the team falls suddenly silent as staff members discover the brain between its two feet. The surgeons would spend 15 more hours attaching the face to Katie Stubbiefield.

www.fox.com

This story is difficult to look at. Yet we are asking you to go on the remarkable journey of how a young woman received a face transplant because it reveals something profound about our humanity. Our face conveys who we are, telegraphing a kaleidoscope of emotions. It's our doorway to the sensory world, allowing us to see, smell, taste, hear, and feel the breeze. Are we our faces? Katie Stubbiefield lost hers when she was 18. When she was 21, doctors gave Katie a new face. This is a story of trauma, identity, resilience, devotion, and amazing medical miracles.

KATIE'S NEW FACE



Katie Stubbiefield in 2010
© Fox.com

BY JOANNA CUNNINGHAM
PHOTOGRAPHY BY WAGNER STUBER AND LYNN JOHNSON





 NATIONAL
GEOGRAPHIC

STORY OF A FACE



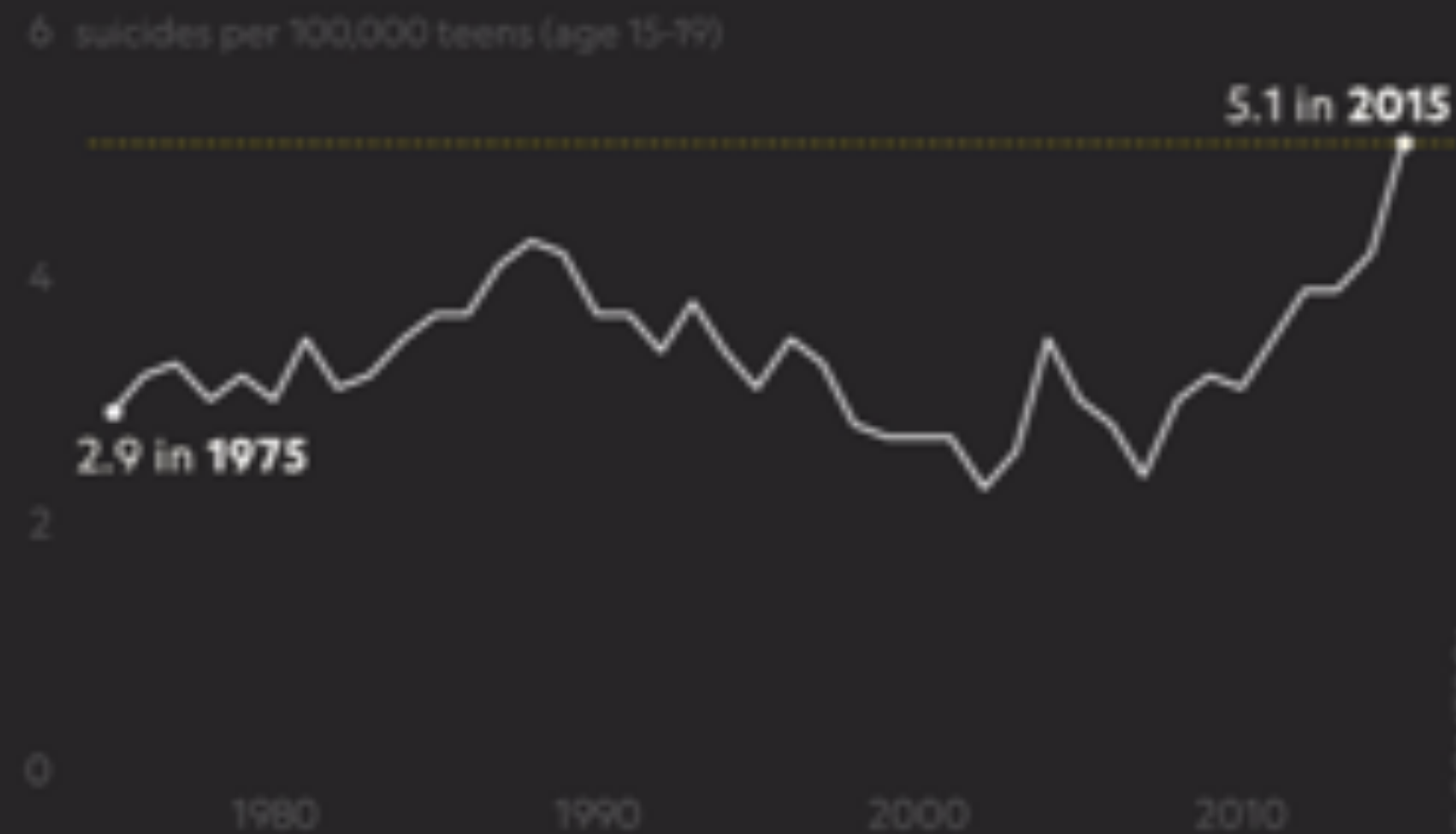
At 18,
She Survived
a Suicide
Attempt.
Hear What
She Has to Say.

TAP →



lil

Suicide rates for teenage girls in the U.S. hit a 40-year high in 2015.



It is the second leading cause of death in all 15- to 24-year-olds in the U.S.

SOURCE: CENTERS FOR DISEASE CONTROL (CDC); NATIONAL INSTITUTE OF MENTAL HEALTH

lil

But the **prefrontal cortex**, which regulates emotions and decision-making, takes until the early- to mid-20s to fully develop.



ILLUSTRATION: GUY CARO/SANTAMARIA/ISTOCK/SHUTTERSTOCK

DOES ALL THIS EFFORT WORK?





#1 BRAND

113M FOLLOWERS
@NATGEO

(444M Total Followers
on Social Media)



417M+

HOUSEHOLDS
IN 172 COUNTRIES



67M+

PRINT & DIGITAL READERS
IN 37 LANGUAGES



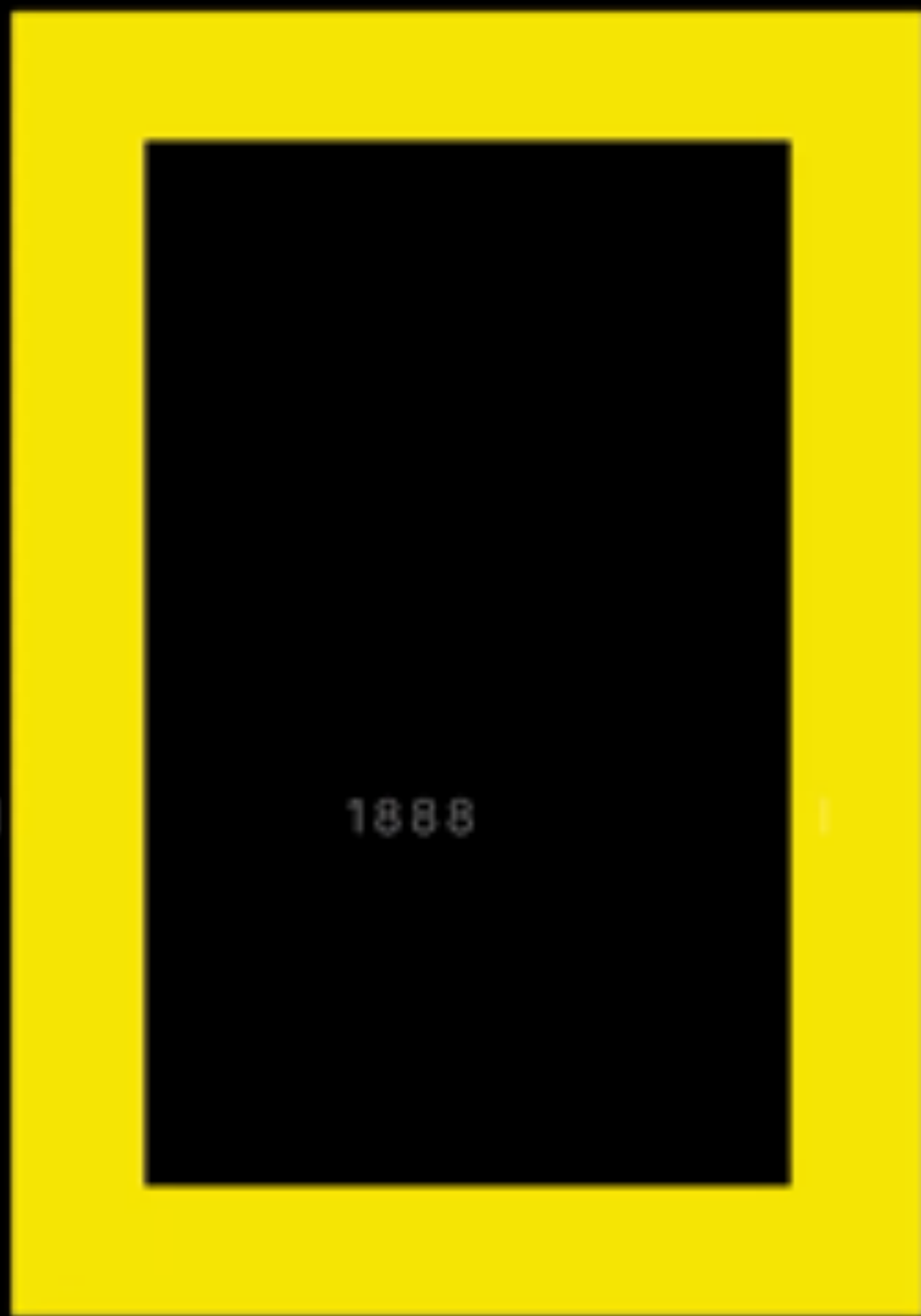
1959

|

|

1888

|





T H A N K Y O U