

一目了然 / 365-day Grids of Air Quality, Beijing,



Inspired by the Smog

Beijing residents concerned about breathing the capital's thick gray air are adapting, inventing and even creating businesses to protect the health of their families and others. Some of their efforts could help people around the world ■ X3



- MOVIES: THE RED TURTLE
- BOOKS: A GREAT PLACE TO HAVE A WAR
- MUSIC: A GIRL A BOTTLE A BOAT BY TRAIN
- WINE: THE EFFERVESCENT EAGLE
- FOOD & DRINK: KENTUCKY BOURBON TRAIL BUZZING

DRIVE IN

Jake Coyle, AP

LOVINGLY CONSTRUCTED 'RED TURTLE' ENTERTAINS SLOWLY

When was the last time an animated film actually lowered your pulse rate? In its typical Hollywood form, an animated feature is usually the cinematic equivalent of a sugar rush — a frantic barrage of colors and movement and jokes and sounds.

It's safe to say that "The Red Turtle," a fortuitous collaboration between Japan's famed Studio Ghibli and Dutch animator-director Michael Dudok de Wit, is very, very different. A fable, beautifully drawn in calm, soothing colors, it doesn't

even have dialogue, let alone a throbbing soundtrack. Those sounds you hear are the sounds of silence, and eventually they become hypnotic. As Dudok de Wit tells it, he received an email out of the blue in 2006 from the vaunted animation studio, asking if he'd be interested in working on his first feature (the director is known for his animated shorts.) He was, and he came up with the story of a man cast away on a deserted island.

The director's research took him to his own deserted island, in the Seychelles,

where he shot thousands of photographs. He wanted to recreate the feeling of how time stands still in such a place. He spent nine years creating that animated world. And you can tell.

The film begins with a roiling sea. A man is lost in the waves; we don't know how he got there. Finally, he washes up on a tranquil island, inhabited seemingly only by a few friendly crabs on the beach.

Exploring the rocky cliffs, he slips and falls into a crevasse, and seems about to drown in the water below when he steels his nerves, dives deeper down, and finds a way out. Slowly, in this way, he learns how to cope with the forces of nature around him. And slowly we relax, too, into the rhythms of this natural world.

There are some lovely greens and blues and grays here, but unlike many animated films, the palette is limited and the colors fairly muted — as they are in life. It's beautiful, but we also know that the man — of course we don't know his name, or anything about him — aches to find a way back to civilization.

He builds an impressive raft and sets sail, only to have some unknown underwater force — could it be a shark?



AP PHOTO

— destroy it and send him gasping to the shore. He rebuilds the raft and tries again, but the same force destroys it once more.

It turns out this is no shark, but a big, beautiful red turtle that is thwarting our man's dream of escape. But why? And how will this confrontation end?

It's tempting to continue recounting the plot here, but this is one of those films where the less you know beforehand, the better. Suffice it to say that as our main character learns to be patient with nature, we too sense the

need to slow down and wait for our own gratification.

Of course nature can be terrifying, too, in sudden ways, and so another thing this expressive film manages to convey is how vulnerable man is to the caprices of nature. Finally, we're also asked to contemplate our attitudes toward death — but now we're really getting ahead of ourselves. No more plot revelations here, other than to say that the entire cycle of life is lovingly portrayed.

After watching "The Red Turtle," you might find you-

rself checking out flights to your own deserted island. Especially now, with so much turbulence in the headlines, you could do worse than submit to 80 minutes of watching crabs crawl in the sand and feeling some cool ocean breezes — if you pay close enough attention, you can actually sense them wafting through the screen.

"The Red Turtle," a Sony Pictures Classics release, is rated PG by the Motion Picture Association of America "for some thematic elements and peril." Running time: 80 minutes. ★★☆☆

AP PHOTO



BOOK IT

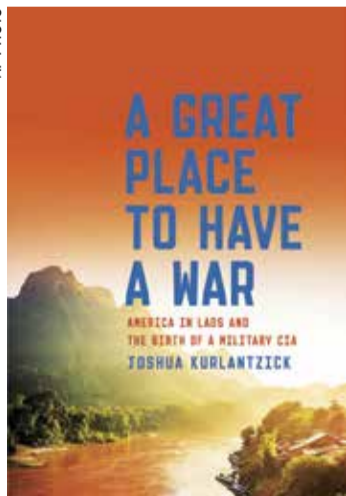
THE CIA IN LAOS CHANGED THE WAY AMERICA WAGES WAR

Even with the hindsight of history, it's mystifying that 56 years ago when John F. Kennedy was preparing to become president, the fate of the Southeast Asian backwater of Laos was considered critical for America. Joshua Kurlantzick recounts how the fear of the spread of communism that gave rise to the Vietnam War also led to the secret, devastating U.S. intervention in neighboring Laos, a nation of rice farmers that was cursed by its location on the geopolitical map.

During the presidential transition in 1961, Dwight Eisenhower was advising Kennedy that Laos was the most pressing foreign policy issue facing the United States. The CIA was starting to arm Hmong hill tribe fighters to resist Vietnamese-led communist forces, but what began as a low-budget, guerrilla training mission morphed into a decade-long U.S. bombing campaign bigger than that unleashed on Japan and Germany in World War II.

The story of this highly unconventional war has been told before, but Kurlantzick provides a more complete picture using declassified CIA histories. He also analyzes how the conflict heralded the agency's support of clandestine, paramilitary operations around the world as a virtual arm of the U.S. armed forces,

AP PHOTO



"A Great Place to Have a War: America in Laos and the Birth of a Military CIA" (Simon & Schuster), by Joshua Kurlantzick

still characteristic of its role today. The brisk narrative weaves events in Laos with machinations in Washington, and centers on four key figures. There is Vang Pao, the dynamic, ruthless Hmong guerrilla leader who commanded up to 30,000 fighters and "could summon death or food in ways that, in Hmong lore, only deities could

do." His CIA handler, Bill Lair, was a shy Texan with a cool, bookish demeanor, who would rue the escalation of the war that Washington championed as a way of drawing in communist forces that might otherwise have fought Americans on the ground in Vietnam. Less wracked by guilt was Tony Poe, a hard-drinking, Kurtz-like figure (a character in the 1979 film "Apocalypse Now") who trained guerrillas for the CIA. As his grip on reality slipped after years in Laos, Poe would stick the heads of communist fighters on spikes, "like a Southeast Asian Vlad the Impaler."

Sinister in a different way was Bill Sullivan, the aloof U.S. ambassador who ran the war for four years. He later won the Nixon administration's respect for his performances at congressional hearings where he lied to lawmakers about the American involvement. Although the war in Laos failed to stop the communists, who remain in power, and left a staggering harvest of deadly, unexploded bombs, CIA chiefs considered the operation a success. Kurlantzick concludes that it also set a troubling precedent in allowing American presidents to conduct war in secrecy.

Matthew Pennington, AP

TTUNES

TRAIN'S NEW CD IS STUCK IN THE SAME SOFT-ROCK TRACK

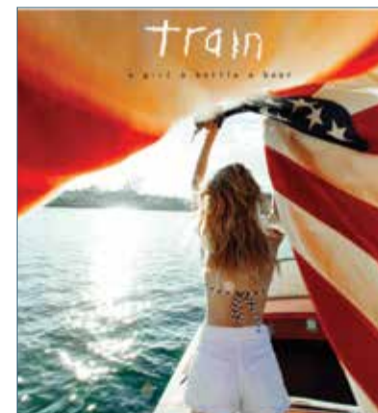
Some people simply adore Train. Others simply loathe them. The band's new album is unlikely to change anyone's mind.

The band — now without lead guitarist and founding member Jimmy Stafford — has returned with an unmemorable, fluffy and yet desperately needy soft-rock CD, "a girl a bottle a boat."

Train, the band behind "Drops Of Jupiter (Tell Me)" and "Meet Virginia," is once again as edgy and raw as a Labradoodle puppy. If Train was an article of clothing, it would be mom jeans.

Take "Play That Song," the new CD's first single. It's instantly cloying and catchy — the way "Hey, Soul Sister" was — until you realize they've swiped the melody from "Heart and Soul," the Hoagy Carmichael tune kids learn to play on the piano. Fans will adore it. Others will consider it a crime against rock.

On the new 11-song disc, Train tries some doo-wop ("Valentine"), some faux-Coldplay ("Drink Up"), dance-pop ("Lost and Found") and a bombastic piano ballad ("You Better Believe"). But it's all so very limp, especially coming off their



completely unnecessary remake of "Led Zeppelin II" last year. Even the album's comma-less title — apparently advocating drunken boating? — doesn't really fit the vibe.

The best song is "Working Girl," but it's marred by typically atrocious lyrics that rhyme "game" with "Aspartame" and "never been" with "Ritalin." Still, lead singer Patrick Monahan does have this advice for anyone firmly anti-Train: "If you don't like it, let me get the door for you."

Mark Kennedy, AP

NEWS OF THE WORLD

Louise Watt, AP



Zou Yi rolls up posters showing years long record of the snaps he takes from his apartment to record the air quality at his apartment in Beijing



Frenchman Ludovic Bodin holds up a filter taken from a heavy duty air filtering machine more often seen in factories, offices and hotels installed at his home in Beijing

Smog pushes Beijing residents to innovate for the world

This year already, the smog-shrouded capital of China has suffered particularly hazardous bouts of pollution caused mainly by coal burning and vehicle emissions. Like other Chinese cities, Beijing is trying to tackle the problem: City authorities say they will spend USD2.7 billion this year to help replace coal with natural gas, close heavily polluting factories and take older vehicles off the road. Official figures show improvement since 2013, but Beijing has a long way to go. With no quick fix available, many residents developing their own partial solutions. Here are some of their ideas:

SHOOTING THE SKY

For the last four years, Zou Yi has diligently captured the sky's change in colors from the window of his central Beijing apartment, where he can — usually — see the landmark Beijing Television tower. The background in his photos runs from dirty brown to deep gray, interspersed with one or more days of cobalt blue. On the worst days, nearby buildings can't be seen. A 10-day period of particularly heavy pollution inspired his project. The government had just started

publishing data on levels of PM2.5 — tiny particulate matter that can clog lungs — and a taboo on state media's discussion of the sensitive topic had just been lifted.

"I couldn't go out, I couldn't open windows, I couldn't see the building next to me because the smog was so bad," he said.

Zou shared the photos on the Twitter-like Sina Weibo and the smartphone messaging app WeChat. He found his friends had similar feelings of frustration and recruited his building manager to take the pictures when he was out of town.

"They wanted me to share a photo with them every day, so I did it every day, every month," said Zou, 50. Hundreds of thousands of people have seen his photos on social media. What started as a way to complain has morphed into his full-time passion. This month, Zou set up the non-governmental organization BeijingAirNow to work with scientists on technology to read pollution levels from around the world by analyzing the tint in the images rather than using expensive monitoring equipment to collect air particles. He says he is handing over more than 300,000 photos for computer analysis.

A PURIFIED HOME

Wang Jiang, 42, and her family had eight air purifiers at home, yet found that the indoor air quality was still not good enough on heavy pollution days. Then they decided to take their efforts up a notch.

But sealing windows and doors and turning on the purifiers caused carbon dioxide levels to spike, leaving Wang to wake up last year with headaches while pregnant with her second daughter.

So now they have installed a \$5,000 industrial-grade filtration system that sucks in outdoor air, cleans it via three filters and distributes it around the house through newly fitted pipes. They filled in vents from their building's central heating system and installed their own.

While some might find that extreme, it's an increasingly popular solution. Filter manufacturer Yuanda says their customers range from the ruling Communist Party's Central Committee to homes and about 1,000 kindergartens and schools. A marketing representative, who only gave his surname, Hu, said their purifying systems often go out of stock. "If you order one today, it won't get installed until

March," Hu said.

Now Wang, a coffee importer, can exercise on a living room treadmill when pollution is bad without worrying about her health.

Her husband, Frenchman Ludovic Bodin, 38, said he thinks every house should have an air filtering and ventilation system pre-installed. "At least if you cannot secure outdoors because it takes time [...] at least try to secure the house inside," he said.

CROWDSOURCING DATA

Frenchman and long-term Beijing resident Yann Boquillod wanted to know what kind of air his five children were breathing at home, so he developed a portable air quality monitor. It also tells users when carbon dioxide levels are high from sealing rooms too tightly, and advises that they should open windows for 10 minutes even if there is pollution outside.

Boquillod's start-up, AirVisual, also provides air pollution readings around the world using data from more than 10,000 monitoring sources, both public and private. The company shares a 3-D real-time global map of air pollution and weather patterns on its website.

On the website Wednesday, easily the largest mass of unhealthy levels of PM2.5 pollution was a swath that covered much of eastern China, from Beijing in the north to Kunming in the south.

Boquillod, 39, sees this as an educational tool and means of self-protection. He consults with schools, hospitals and offices to test air quality and find gaps in door and window frames that could allow pollution in.

"The most important thing is to first start by monitoring the air quality and from that we can take the right decisions on what kind of air purifiers to install [and] know about the leakage inside the building," he said. Children as young as 3 at Ivy Bilingual School know they need to wear face masks when the smog is bad. The school also invites mask makers to come in and cut open masks to demonstrate which ones have extra layers and are better for their health. The children can even educate their parents on the masks and how to fit them, said campus director Victoria Li.

The school monitors pollutant levels and instructs teachers to make sure windows are closed 15 minutes before school starts to give the air purifiers time to work. It also puts up green or red signs indicating whether children can go out and play.

Some international schools in Beijing have installed air-inflated sports domes for athletics, complete with air filters and rotating doors to help keep them sealed.

FOOD & BEVERAGE

Associated Press

AP PHOTO



BOOZE TOURISM: KENTUCKY BOURBON TRAIL BUZZING WITH ONE MILLION VISITS

Forget the bottle, a record number of people are experiencing Kentucky bourbon from the barrel, touring distilleries where they can sniff, sip and see whiskey crafted from the source. Tourism in the heart of bourbon country, on the upswing for years,

reached a milestone in 2016. Visitors made more than 1 million stops at distilleries along the Kentucky Bourbon Trail and Kentucky Bourbon Trail Craft Tour last year, the Kentucky Distillers' Association said yesterday. It shows that "people don't just

want what's in the bottle," association president Eric Gregory said. "They have a thirst for Kentucky's bourbon culture." Many tourists visit multiple distilleries and each stop is counted as a visit, the group said. The tour started in 1999 and has

ridden a wave of popularity as the bourbon and whiskey industries enjoyed growing sales worldwide, in part driven by higher demand for premium spirits and cocktails. The tourism attractions had double-digit attendance growth in 2016 compared with the prior year, and attendance has shot up 300 percent in the past decade, the group said.

Last year, more than 200,000 people visited Jim Beam's flagship distillery in Clermont, Kentucky, and its whiskey-related attraction that features a small distillery in downtown Louisville, Beam officials said.

The parking lot is routinely filled with out-of-state visitors at the flagship distillery.

"There's no such thing now as down time," said Kim Bennett, who leads the Beam brand's bourbon experiences in Kentucky.

Beam now offers tours seven days a week at the Clermont distillery to keep up with demand, she said. Longer tours allow visitors to delve into the intricacies of bourbon making.

"They want to have that true, deep experience, and that's what we're giving them," she said.

The Kentucky Bourbon Trail tour, showcasing nine distilleries, had 888,733 visits, up 17 percent from the 2015 record level, the group said. Those distilleries produce bourbon's biggest brands, including Jim Beam, Evan Williams, Wild Turkey, Maker's Mark, Four Roses and Woodford Reserve.

The Kentucky Bourbon Trail Craft Tour, with 11 small distilleries, had 177,228 visits last year, a 32 percent increase from the previous year and up 187 percent over 2013, the association said. Those

distilleries are spread across Kentucky.

Gregory called the record tourism numbers a "cause for celebration for the entire commonwealth."

"Think of what 1 million tours means to Kentucky in jobs, tax revenue and positive publicity," he said.

The latest boost for bourbon tourism came from a new state law that allows distilleries to obtain licenses to offer by-the-drink sales.

Since the law took effect last July, at least 20 distilleries have obtained licenses, Gregory said. The measure also lets the distilleries sell more of their whiskey and offer slightly larger free samples.

The cocktail bar has been a popular spot since opening last September at Beam's flagship distillery. One out of every three adult visitors has stopped to purchase a mixed drink, Bennett said.

The Woodford Reserve distillery, which drew about 135,000 visitors last year, hopes to start offering classic cocktails sometime this year, said Mark Bacon, global brand director.

Distilleries are also offering mixology and culinary classes.

The continued tourism surge comes amid an overall expansion in the state's USD3 billion bourbon sector. The association said its member distilleries are in the middle of a \$1.3 billion building boom that includes expanded production facilities and new tourism centers.

An industry patriarch, Bill Samuels Jr., who retired after a long career as the top executive at Maker's Mark, said bourbon tourism generates strong promotional value: "Those million, they go home and they tell 20 million," he said.

Demand driven by the farm-to-table movement knows no seasons, so farmers in colder areas of the country increasingly use greenhouses and similar structures to meet wintertime demand for local produce.

While crusty snow and ice covers the ground in January in Vermont, spinach leaves sprout in rows of unfrozen soil inside a high tunnel — a large enclosure covered by plastic film that is warmed by the sun and protected from the wind.

"I can never keep up with the spinach demand," said Joe Buley, owner of Screamin' Ridge Farm in Montpelier, who planted the spinach in November and will sell it in about two weeks.

This time of year, when vegetables are trucked in from California and Mexico, some consumers clamor for fresh local produce.

"I'm definitely interested in supporting local agriculture, and I definitely like eating greens in the winter," said

FARM TO TABLE: A BIT TRICKY IN WINTER, BUT IN HIGH DEMAND

Serena Matt of Marshfield, Vermont, who paid Bear Roots Farm in South Barre, Vermont, ahead to get biweekly bundles of produce that in the winter typically include greens like spinach or baby kale.

The federal government helped spur the growth in winter farming by providing financial and technical assistance to farmers to install high tunnels to extend the growing season, protect crops from harsh conditions, reduce energy use and improve air quality by reducing the transportation of food. Between 2010 and 2016, the U.S. Department of Agriculture's Natural Resources Conservation Service helped producers construct more than 15,000 high tunnels around the country, with Alaska having the most.

Rohwer's Farm in Pleasant View, Colorado, got its first 30-by-72-foot high tunnel that way.

"And it did so well we were able to get a second one, and we added a third one last year," said Heidi Rohwer, estimating they cost about USD7,000 each.

The small farm makes regular trips to Durango, Colorado, in the winter to sell kale, lettuce, carrots, arugula, and bok choy.

"If we don't take enough greens, they get really mad," Rohwer said.

Buley expects his spinach to start taking off soon, when the sun gets higher in February.

"They get really big, and we'll come down through and just start harvesting like crazy," he said. It's also a lot sweeter, with thicker leaves, than summer spinach, because of the colder weather, he said.

"Root vegetables are nice, but usually right around Jan. 1, people are like, if you come at them with a butternut squash, they're going to smack you," he said laughing.

AP PHOTO



WHAT'S ON



TODAY (JAN 27)
MACAU AN OASIS OF CHINESE NEW YEAR TRADITION

Flowers are traditionally an integral part of Chinese New Year festivities, with the Chinese New Year's Eve Flower Market a popular evening treat for families hunting down their favourite plants. While few Asian cities permit such activities, Macau's Firecrackers and Fireworks Zones in Taipa and on the Peninsula attract thousands of spellbound admirers who also purchase pinwheels for luck from the Incense and Pinwheel Stalls at A-Ma Temple.

FIRECRACKERS AND FIREWORKS ZONES
TIME: 12pm (January 27)-12am (February 2)
VENUE: Macau - Av. Dr. Sun Yat Sen (near Macau Tower), Taipa - Shorefront of Est. Alm. Marques Esparteiro

INCENSE AND PINWHEEL STALLS
TIME: 6pm (January 27)-6:30pm (January 28)
TIME: 9am-6:30pm (January 29-February 3)
VENUE: Shorefront of A-Ma Temple
ORGANIZER: Civic and Municipal Affairs Bureau
ENQUIRIES: (853) 2833 7676
<http://www.iacm.gov.mo>



TOMORROW (JAN 28)
MACAU FISHERMAN'S WHARF & MACAU TOWER CELEBRATIONS

Macau Fisherman's Wharf Golden Rooster Celebration 2017 features the jubilant Chinese New Year decorations, God of Fortune Parade, special Chinese New Year menus and beautiful harbour views (January 28) as well as Dragon and Lion Dance performances (January 29) that combine the energetic music of the cymbals, gongs and drums, folk dance and kung fu moves beckoning good fortune. Check out the Macau Tower Charity Walk (January 30) as well.

GOLDEN ROOSTER CELEBRATION 2017
VENUE: Macau Fisherman's Wharf
ADMISSION: Free
ORGANIZER: Macau Fisherman's Wharf

ENQUIRIES: (853) 8299 3300
<http://www.fishermanswharf.com.mo>



SUNDAY (JAN 29)
CHINESE NEW YEAR FLOWER SHOW

Chinese New Year Flower Show features not only flowers but lanterns, festive displays and lantern riddles, as well as a congratulatory greeting cards on which visitors can write down their wishes for the New Year.
TIME: 7am-10pm
UNTIL: February 12, 2017
VENUE: The Taipa Houses, Av. da Praia, Taipa
ADMISSION: Free
ORGANIZER: Civic and Municipal Affairs Bureau
ENQUIRIES: (853) 2833 7676, 2888 0087
<http://www.iacm.gov.mo>



'SPRING BREEZE TO THE SOUTHERN GREENLY LAND - EXHIBITION OF THE LUNAR NEW YEAR TRADITIONS OF GUANGDONG PROVINCE, HONG KONG S.A.R. AND MACAU S.A.R.'

This exhibition features exhibits of divine guidance and fortunetelling from the much-consulted Wong Tai Sin Temple of Hong Kong, Cantonese Opera leaflets, firecrackers, fireworks - and a piggy bank!

TIME: 9am-7pm (Open on public holidays)
UNTIL: February 19, 2017
VENUE: Temporary Exhibition Gallery of IACM, Av. Almeida Ribeiro, no. 163
ADMISSION: Free
ENQUIRIES: (853) 8988 4000
<http://www.icm.gov.mo>



MONDAY (JAN 30)
PARADE - CELEBRATION OF THE YEAR OF THE ROOSTER

Revolving around a tale about the God of Wealth and a Golden Eggs Celebration of the New Year, the 14-float Parade will wend its way through some of the most atmospheric districts of the city, while some dozens of performers from Macau, Hong Kong and Mainland China along with onstage Hong Kong and Macau singers will provide oodles of entertainment. For the convenience of residents and visitors, the spectacle will be broadcast in Chinese and Portuguese on giant screens throughout the city, with a spectacular fireworks display capping festivities on the inaugural evening.

PARADE FLOATS
TIME: 8pm -10pm (January 30)
ROUTES: Macau Science Center to Sai Van Lake Square
TIME: 8pm-9:30pm (February 4)
ROUTES: Rua de Norte do Patane to Iao Hon Market Park

PARADE FLOAT EXHIBITION
TIME: 10pm (January 30) - 5pm (February 4)
VENUE: Sai Van Lake Square
TIME: 10pm (February 4) - 6pm (February 12)
VENUE: Tap Seac Square

FIREWORK DISPLAYS
TIME: 9:45pm (January 30)
VENUE: Macau Tower seafront
Free admission to all activities
ORGANIZER: Macau Government Tourism Office
TOURISM HOTLINE: (853) 2833 3000
<http://www.macautourism.gov.mo>

MACAU TOWER CHARITY WALK
TIME: 10am
VENUE: Macau Tower
ORGANIZERS: Sports Bureau, Macau Tower
ENQUIRIES: (853) 2893 3339
<http://www.macautower.com.mo>



TUESDAY (JAN 31)
LOCAL GINGER - CENOZOIC GRAFFITI ART EXHIBITION

The "Local Ginger - Cenozoic Graffiti Art Exhibition" features the works of Macau graffiti artist PIBG and the graffiti creators of the new generation. PIBG is the forerunner of local graffiti and his most recognized paintings are of human characters and animals in an expressive, humorous style with strikingly bright and contrasting colours. This exhibition will be dedicated to street art, displaying the strong personal style of the graffiti artists of the new generation, in order to bring the visitors a lively visual feast.

TIME: 11am-10pm
UNTIL: April 6, 2017
VENUE: Lakeside Gallery-S1, Anim'Arte Nam Van
ENQUIRES: (853) 2892 4040
Organizers: Cultural Affairs Bureau & Macau Artist Society
<http://www.Macautourism.gov.mo>



WEDNESDAY (FEB 1)
LOVE OF MACAU – PHOTOGRAPHS BY LEE KUNG KIM

Respecting his wishes and in support of cultural activities, Lee Kung Kim's family members unconditionally donated all of his works, including film rolls, to the Macau Museum of Art as permanent collection. In this exhibition, 150 excellent documentary works under the theme of Macau were specially selected and divided into the series patriotism and local customs, showing the life aspects in Macau in the 1960s and 1970s and reflecting a true piece of Macau's history, and conveying to the public deep impressions of the city.

TIME: 10am-7pm (Last admission at 6:30pm, closed on Mondays)
UNTIL: July 2, 2017
VENUE: Macau Museum of Art, Av. Xian Xing Hai, s/n, NAPE
Museum Admission: \$5 (Free on Sundays and public holidays)
ENQUIRIES: (853) 8791 9814
ORGANIZER: Macau Museum of Art
<http://www.mam.gov.mo>



THURSDAY (FEB 2)
LUI CHUN KWONG - THE DISTANT LINE

A dogged advocate of innovation, Hong Kong artist Lui Chun Kwong experimented tirelessly in the 1990s before finally achieving his desired abstract Landscape series. Despite all these self-transmutations, Lui's works never fail to inspire exhibition-goers and give them food for thought. His paintings - featuring long, slender lines flowing across the tableau - evoke a sense of poised beauty and tranquility. In this exhibition, visitors can enjoy 31 specially selected paintings calculated to challenge, provoke and engage.

TIME: 10am-9pm (Open on public holidays)
UNTIL: February 26, 2017
Venue: The Tap Siac Gallery, Av. do Conselheiro Ferreira de Almeida, no.95
ADMISSION: Free
ORGANIZER: Cultural Affairs Bureau
ENQUIRES: (853) 8988 4000
<http://www.icm.gov.mo>

Sands WEEKEND



MONKEY KING

From 9 February
Sands Cotai Theatre, Sands Cotai Central

Monkey King is a spectacular stage show based on the famous Ming Dynasty novel "Journey to the West", considered one of the four great novels of Chinese literature. The Monkey King breaks new ground in interpreting this classic tale to appeal to a modern audience, featuring dance, skilful acrobatics, drama, martial arts, magic and other great Chinese elements. The show also features the most advanced 3D effects, LED screen projections, video mapping and full surround sound together with creative lighting effects, choreography, music and spectacular colourful costumes.

Tickets: From MOP/HKD 420, call reservations +853 2882 8818
cotaiticketing.com



2017 THE 5TH CCTV CHINESE LUNAR NEW YEAR CUP WORLD CHAMPIONSHIP

29-30 January
Cotai Arena

CCTV-5 and IBF present a grand sporting event for global audiences — the 2017 5th CCTV Chinese Lunar New Year Cup - IBF World Championship. The lineup compiles 24 fighters from China, France, Japan, Mexico, Romania, Philippines and Thailand who will compete during two nights of bouts. Sunday's bouts start at 7.30pm and Monday's at 7pm.

Tickets: From MOP/HKD 580, call reservations +853 2882 8818
cotaiticketing.com



PLANET J A UNIVERSE APART

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Planet J, Shop 3009 Level 3, Shoppes at Cotai Central

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Call reservations +853 8791 6000



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SPEND	PARISIAN OFFER
MOP100,000	Two nights in a Suite + an exclusive dinner for two at The Parisian Macao
MOP50,000	One night in a Suite + 30-minutes back massage for two at The Parisian Macao
MOP20,000	One night in a Deluxe Room at The Parisian Macao
MOP8,000	A dinner buffet for two at Le Buffet

*Terms and conditions apply.



澳門金沙度假區
Sands
RESORTS
COTAI STRIP, MACAO

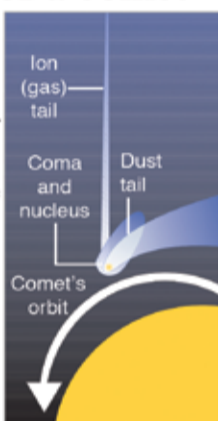


An icy mix

Comets have sometimes been referred to as "dirty snowballs" or "icy mudballs" because they are made of frozen water, gases and dust. The gases are a mix of **carbon dioxide, ammonia and methane**. The dust is thought to be so old, it is from the time when the solar system was formed, about 4.6 billion years ago. Scientists want to study comet dust in order to discover more about the early history of our solar system.

Anatomy of a comet

Comets are relatively small objects with irregular shapes. Comets have a solid **nucleus** (center) made of ice and a cloudy atmosphere of gas and dust called a **coma**. The nuclei of most comets measure about 10 miles



(16 km) across or less; the coma can reach nearly 1 million miles (1.6 million km) wide, and some have tails 100 million miles (160 million km) long.

Comets may look like they are on fire, but their glow is actually icy dust and gas particles melting off the comet as it approaches the sun. The particles reflect the light of the sun. Many comets form one or more tails. Comets with a great deal of dust in the nucleus and coma will form dust tails that create a white or yellowish streak. The bluish ion tails typical of most comets are made of ionized gas. Tails always point away from the sun, pushed away by the sun's radiation pressure and solar wind (electrically charged particles).

The difference?

Comets, meteors and asteroids are often confused.

A comet is an icy body that heats up and begins to outgas when passing close to the sun. When comets lose ice and dust, small bits sometimes enter the Earth's atmosphere. These particles appear as **meteors**, also called shooting or falling stars.

Meteor showers frequently happen when the Earth passes through the orbit of a comet. The Perseid meteor shower happens every year between Aug. 9 and 13, when the Earth passes through the orbit of Comet Swift-Tuttle. Halley's comet results in the Orionid shower in October. Eventually, a comet loses all of its ice and gases, leaving a rocky object similar to an asteroid. Almost half of all near-Earth asteroids are old, worn-out comets.

Asteroids are sometimes called minor planets. They tend to be large, rocky objects that range in size from a few feet to hundreds of miles across.

WORLD OF WONDER

Exploring the realms of history, science, nature and technology

By Laurie Riefeldt

COMETS

For centuries, people have watched in fear and awe when great stars with tails streamed across the skies. Many believed that comets foretold disasters or greatness. Scientists have since discovered that comets are great balls of ice and dust that orbit the sun and sometimes planets. Some researchers think comets may have brought the water and organic molecules that now make up life on Earth.

Spotting comets

Very few comets can be seen with the naked eye. Maybe once every 10 to 20 years, a large comet with the classic long tail can be observed. The best way to watch a comet is with strong binoculars or a telescope. Because they are relatively small objects and so far away, they often look like a fuzzy star moving slowly across the sky. Some comets are visible for weeks or even months.

Studying light

Scientists study comets by analyzing the light that the comets reflect. Telescopes on the ground and in space gather the light information. When Halley's comet passed by in 1986, scientists learned a great deal about its composition. Eighty percent of the ice was water ice, and 15 percent was frozen carbon monoxide. The remaining materials were a combination of frozen carbon dioxide, methane and ammonia.

Missions

In 2005, NASA's **Deep Impact** purposely crashed into **Comet Tempel 1**. The explosion revealed the interior composition and structure of the nucleus.

In 2009, NASA's **Stardust mission** returned with samples from **Comet Wild 2**.

In 2014, the European Space Agency's **Rosetta** spacecraft orbited **Comet Churyumov-Gerasimenko**.

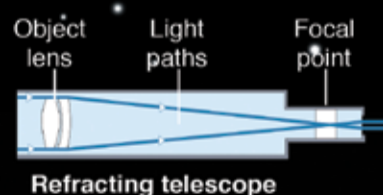
Its lander module, **Philae**, touched down on the comet.

What's in a name?

The word "comet" is from the Greek "kometes," which translates to "head of hair." Comets are often named for the people who discover them.

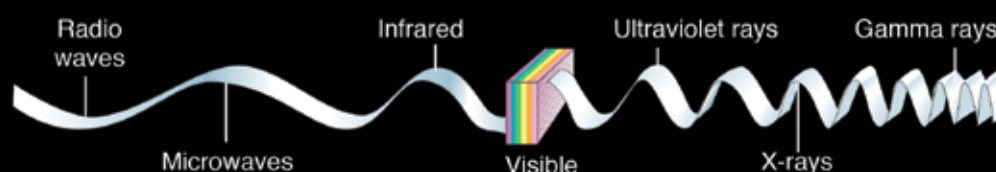
Who's counting?

As of 2014, more than 5,000 comets have been identified. Roughly one comet per year is visible to the naked eye, although faintly.



Electromagnetic spectrum

Telescopes take pictures of the electromagnetic spectrum.



Before telescopes, most comets passed by Earth without notice. Now astronomers track comets and let the public know when to look for them.



George W. Ritchey photographed Halley's comet on May 8, 1910, using the 60-inch (1.5 m) telescope at Mount Wilson Observatory in California.

Halley's comet

Halley's comet is probably the most famous of all comets. There are Chinese records of this comet that go back to as far as 240 B.C. It is visible to the naked eye every 76 years when it nears the sun. It is expected to be seen again in 2061.

Observations of Halley's comet proved that comets move in an orbit and that their sightings could be predicted.

In 1705, an English astronomer named Edmond Halley predicted that the comet recorded in 1531, 1607 and 1682 would return in 1758. The comet returned and was named in Halley's honor.

In 1986, five spacecraft approached Halley's comet. The European Space Agency's Giotto managed to get within 375 miles (600 km) of the comet's nucleus. Giotto took close-up photographs, and its instruments gathered new information.

Paths and orbits

Most comets orbit the sun, but some break that rule, like **Comet Shoemaker-Levy 9**, which orbited Jupiter. Comets can be viewed from Earth only when they are close enough to the sun for their light to be reflected. Comets generally have long, elliptical orbits that bring them close to the sun and then swing deep into space.

Scientists classify comet orbits into two classes: **Short-period comets** orbit the sun in less than 200 years; **long-period comets** take 200 years or longer to orbit the sun. It has been theorized that short-period comets originated from a band of objects called the **Kuiper belt**, located beyond Neptune's orbit. Long-period comets are thought to be from a cluster of icy fragments called the **Oort cloud** far beyond the orbit of Pluto.

Did you know?

The closest point in a comet's orbit to the Sun is called the **perihelion**. The most distant point is called the **aphelion**.

Comet Shoemaker-Levy 9 had a two-year orbit around Jupiter. It collided with Jupiter in 1994.

A sample from comet Wild 2 (pronounced VILT two) contained the amino acid glycine — an essential building block of life.

SOURCES: World Book Encyclopedia, World Book Inc.; <http://www.space.com>; NASA; www.kidsastronomy.com; space-facts.com; nineplanets.org